



2nd ICHMS & 2nd LSC

PROCEEDING

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The 2nd International Conference of Medical and Health Sciences (ICMHS) and The 2nd Life Sciences Conference (LSC) 2016

*"Towards a Better Quality of Life
through Interdisciplinary Research"*

Yogyakarta, 9th-10th December 2016
The Alana Hotel and Convention Center

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**The 2nd International Conference of Medical & Health Sciences
and
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**Chair person of The 2nd International Conference of Medical and
Health Sciences and The 2nd Life Sciences Conference 2016**



Welcome to Jogja, sugeng rawuh!

For the second time, the Faculty of Medicine and Health Sciences Universitas Muhammadiyah Yogyakarta is going to conduct the 2nd International Conference of Medical and Health Sciences (ICMHS) this December in vibrant Yogyakarta, Indonesia. This year we are going to collaborate with the Life Sciences Society of Pakistan for their 2nd Life Sciences Conference (LSC) with Dr. Zahid Iqbal as the general secretary.

This year's conference theme "Towards a better quality of life through interdisciplinary research" will be celebrating an era of seamless interdisciplinary integration and collaboration in scientific innovations with the involvement of more extensive topics and disciplines in the conference. We aim to exhibit the products of that kind of approach in solving challenges, improving the quality of life, and creating sustainable developments. We are happy to announce that our conference is filled with Invited speakers from Pakistan, United States of America, Uni Emirates Arab, Malaysia and Indonesia. Presentations will be conducted in oral as well as poster that covers topics from medicine, public health, dentistry, pharmacy, biomedical to agriculture. To put more credibility to the conference we are collaborating with Isra Medical Journal and the Asian Journal of Agriculture and Biology to publish selected papers from the event. Other paper will be published in the ISBN Proceeding book.

The last but not least, enjoy the conference, start networking and sharing ideas, and let immerse yourself to the heritage cultural ambient of Jogja, sumonggo!

Yogyakarta, 1st December 2016

dr. Iman Permana, M.Kes, Ph.D.

**The 2nd International Conference of Medical & Health Sciences
and
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**Dean of Faculty of Medicine and Health Sciences,
Universitas Muhammadiyah Yogyakarta**



Assalamu'alaikum Wr. Wb.

Science, especially in the areas of health and life growing more rapidly. We need to work together in the research of various disciplines to the advancement of science and to provide benefits to human life.

After successfully organized international scientific meeting last year, the Faculty of Medical and Health Sciences Universitas Muhammadiyah Yogyakarta, held the second scientific meeting ICMHS along with "2nd Life Sciences Conference". In this second scientific meeting, FKIK UMY collaborates with various researchers, among others from Pakistan, Malaysia, and the United States. Taking the theme "Towards a better quality of life through interdisciplinary research" we hope to establish cooperation with various parties to be able to contribute ideas to the civilization of human life.

Finally, we congratulate the scientific meeting in the city of Yogyakarta Indonesia. Enjoy the beautiful city of Yogyakarta with priceless historical relics. We hope that this meeting can run smoothly and provide benefits to the advancement of knowledge.

Wassalamu'alaikum Wr. Wb.

Yogyakarta, 1st December 2016

dr. Ardi Pramono, M.Kes, Sp.An.

**The 2nd International Conference of Medical & Health Sciences
and
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Rector of Universitas Muhammadiyah Yogyakarta



Assalaamu'alaikum Wr. Wb.

Ladies and Gentlemen,

Welcome to the 2nd International Conference on Medical and Health Science in conjunction with the 2nd Life Sciences Conference 2016

Welcome to Yogyakarta City of Tolerance

Our Faculty of Medicine and Health Sciences has been doing such international conference almost every year for the last ten years. This and other previous conferences are the things that supporting our vision as an excellence and Islamic university, a young and global university. We will always try to keep monitoring the development of science through sending more lecturers to do the sabbatical leave overseas, doing international research collaborations and also the international conference. Each department should do this strategy of internationalization so that each department has its own network. Faculty of medicine and health science is one of the most progressive units in implementing this strategy by inviting international experts on a regular basis. This program will certainly strengthen our vision.

International conference on medicine and health sciences is a smart choice to offer our lecturers access to the most recent development of the subjects. The participants will also gain the same knowledge and latest information on medicine and health sciences. As everyone knows that the development of science and technology are faster today compared to the previous period. Information technology, computer, and other development havefastened the transformation of medicine and health science into the different and more complex stage.

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Cellular technology, for instance, can be used for several functions including those that directly impacts our daily life. There is no long distance call anymore today because cellular phone can do everything we need to contact other people far from where we stand anytime anywhere. People will finally innovate cellular phone for the sake of personal health services. We will in the future using our simple cellular phone to detect our body temperature, blood pressure, even how much fat we have in our body and how much it is supposed to be. We may also be able to check the health of our body without leaving our house and order medicine without going into the drug store. Everything is almost possible as long as we think hard for the better of people in the future. Enjoy the conference and don't forget to visit our rich tourist destinations, mountains, beaches or caves (underground waterways).

Thank you

Wassalaamu'alaikum Wr. Wb.

Prof. Dr. Bambang Cipto, MA

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Keynote Speech

**by Head of Provincial Health Office Special Region of Yogyakarta
in International Conference
of Medical and Health Sciences and Life Sciences Conference**

The Alana Hotel and Convention Center, Yogyakarta, December 9-10, 2016

The honorable:

- Rector of Muhammadiyah University of Yogyakarta,
- The Dean of Medical and Health Sciences Muhammadiyah University of Yogyakarta,
- The chairman of organizing committee of the international conference of medical and health,
- Distinguished guests and colleagues.

Assalamu'alaikum Warahmatullahi Wabarakatuh,

First of all, we thank God for His blessings that today we may attend the International Conference of Medical Health Towards a Better Quality of Life Through Interdisciplinary Research in Yogyakarta.

My distinguished colleagues,

In Indonesia National Long Term Development Plan (2005-2024), the Indonesian Ministry of Health have determined a paradigm shift that have governed health services in health development plan. There has been a shift from Curative Health Services to Preventive and Promotive Health Services.

Recently, Indonesia suffers from a triple burden of diseases as health development challenges. The triple burden of diseases are: 1) the backlog of common infections, undernutrition, and maternal mortality; 2) the emerging challenges of non-communicable diseases (NCDs), such as cancer, diabetes, heart disease; and 3) mental illness, and the problems directly related to globalization, like pandemics and the health consequences of climate change.

Dear colleagues,

Here are some data that show several health problems in Indonesia:

1. Maternal mortality rate in 2015 is 4,809 cases, infant mortality rate in 2015 is 22,267 cases;
2. Regarding to children under the age of five, the national stunting rate is 37.2% which consists of 18% for very short dan 19.2% for short (Riskesdas 2013);

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3. HIV testing coverage is 14% dan antiretroviral (ARV) therapy coverage is 65.58% (Directorate General of Disease Control and Prevention Ministry of Health, 2015);
4. Tuberculosis (TB) notification rate in 2015 is 73.5% and tuberculosis treatment success rate is 72% (Directorate General of Disease Control and Prevention Ministry of Health, 2015).

Distinguished guests,

Indonesia Health Development Program in 2015-2019 strengths in improving human quality life through Health Indonesia Program with family approach. The Indonesian Ministry of Health issued The Minister of Health Regulation (Permenkes) No. 39 Year 2016 as a Guideline of Implementation of Health Indonesia Program with Family Approach. This program has 12 main indicators as markers of a family health status. Currently, many health programs have been implemented by Indonesian Ministry of Health, Provincial Health Offices, and District Health Offices. However, many health problems, some as mentioned above, still become health burdens. We may ask a question whether the programs that we conducted have answered the health problems we have in Indonesia.

It would be better if all health programs that we implement based on scientific health research, especially interdisciplinary research. The research should be related to detection, prevention, and treatment of diseases or problem solving for better health.

My dear colleagues,

Being a province with speciality, Special Region of Yogyakarta placed Traditional Medicine as one of the priority programs in Provincial Medium Term Development Plan (2017-2022). We still encounter many challenges in developing Traditional Medicine, especially in providing services which are based on scientific evidence.

Distinguished colleagues,

We look forward to results of interdisciplinary research which would support health problem solving, especially by developing traditional medicine in Yogyakarta. We believe that collaboration in interdisciplinary research would improve quality of human life.

Finally,

Thank you for your attention. We wish you a successful conference.

Wassalamu'alaikum Warahmatullahi Wabarakatuh,

On behalf of
the Head of Provincial Health Office
Special Region of Yogyakarta

Drg. Pembajun Setyaningastutie, M.Kes

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**SPEAKER OF
INTERNATIONAL CONFERENCE**

Zahid Iqbal

Al-Nafees Medical College Isra University Islamabad Campus Islamabad, Pakistan
“One Health Program for Public Health Benefit”

Prof. Dr. Abdul Khaliq

Professor, Department of Agronomy, University of Agriculture, Faisalabad
“Role of Agriculture in Poverty Alleviation of Rural Areas”

Fitri Arofati

Universitas Muhammadiyah Yogyakarta, Indonesia
“Continuing Professional Development of Practicing Nurses in Indonesia”

Tri Wahyuliati

Universitas Muhammadiyah Yogyakarta, Indonesia
“Diabetic Neuropathy - A Chance Towards A Better Treatment”

Mohammad Khalid Ashfaq

University of Mississippi, USA
“Natural Products –Use or Misuse”

Muhammad Mukhtar

American University of Ras Al Khaimah, United Arab Emirates
“Emerging Biotechnologies and Genomic Medicines in Human Health and Well-Being”

Muhammad Sasmito Djati

Brawijaya University Malang, Indonesia
“Herbal Medicine a Holistic Approach: in case of food supplement formulation of Sauropusandrogynus and Elephantopuscaberto modulate immune and hormonal system in pregnant Salmonella typhi infected mice”

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REVIEWER

1. Dr. Zahid Iqbal, Ph.D (Isra University, Islamabad, Pakistan)
2. Prof. Dr. Abdul Khaliq (University of Agriculture, Faisalabad)
3. Dr. Mohammad Khalid Ashfaq, DVM, DTVM, MS, Ph.D (University of Mississippi, USA)
4. Dr. Muhammad Mukhtar, Ph.D (American University of Ras Al Khaimah, United Arab Emirates)
5. Dr. Ir. Muhammad Sasmito Djati, MS. (Brawijaya University Malang, Indonesia)
6. Fitri Arofiati, S.Kep., Ns., MAN., Ph.D (Universitas Muhammadiyah Yogyakarta, Indonesia)
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14. Dr. dr. Tri Wahyuliati, Sp.S, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
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20. Drh. Tri Wulandari K, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
21. Dr. dr. Wiwik Kusumawati, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
22. Sabtanti Harimurti, S.Si., M.Sc., Ph.D., Apt. (Universitas Muhammadiyah Yogyakarta, Indonesia)

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**SPEAKER OF
INTERNATIONAL CONFERENCE**

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ICMHS-O-1-4

Correlation between Larvae Free Number with the Incidence of Dengue Hemorrhagic Fever in Sleman, Yogyakarta, Indonesia

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Abstract

Larvae free number (LFN) is a measure to evaluate the prevention of dengue hemorrhagic fever (DHF) through environmental management. It was assumed that the greater the LFN, the smaller the potential for transmission and vice versa. This study aims to prove whether LFN associated with incidence of DHF. This was an observational study using retrospective method. The study was conducted in 17 villages of 4 sub-districts in Sleman, Yogyakarta with different levels of endemicity. Larvae free number and the incidence of DHF from year 2009 to 2013 used as independent and dependent variable respectively. Data of LFN and incidence of DHF obtained from District Health Office. There were 1,461 DHF cases in 4 sub-districts in year 2009-2013. The average of LFN was 80.70 (68.4-95). The relationship between the LFN and DHF were analyzed by Pearson Correlation. This correlation test showed that the LFN was not associated with the incidence of DHF ($p = 0.312$). It is concluded that the value of LFN is not correlated with the incidence of DHF in Sleman, Yogyakarta.

Keywords: Dengue Hemorrhagic Fever, larva free number, correlation, environment management prevention

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INTRODUCTION

DHF is a viral disease that is spreading fast and widespread, especially in the tropics. Dengue is transmitted by the bite of Aedes mosquito. Globally, in 2012 the WHO classifies dengue as 'the most important mosquito-borne viral disease' due to the widespread deployment of endemic areas to non-endemic areas.¹ Even dengue has spread in most subtropical countries, namely Europe and the US since 2010.²

Indonesia is a country with the second largest number of patients after Brazil.³ Temporally, the dengue incidence fluctuates with the rising trend since first reported in 1968. The spread of dengue in Indonesia until the year 2009 was reported in almost all districts of the city in 32 of 33 provinces (96.7%).⁴

Dengue is transmitted through the bite of Aedes mosquito. Aedes mosquitoes became the main target of efforts to eradicate the disease because until now there has been no anti-viral drugs, as well as an established vaccine. Vector control in Indonesia has been conducted since 1992, with an integrated approach. Integrated vector control is to control the amount vector by integrating ways of controlling potentially taking into account economic and ecological aspects.⁵ In the implementation, application of integrated vector control in Indonesia conducted by the term 3M (close, drain, buried) plus all other prevention activities. 3M plus method aims to reduce the population of mosquitoes without using chemical insecticide ingredients. The use of chemical insecticides, although a mainstay to prevent outbreaks, but its use should be limited. Restrictions on the use of chemical insecticides to prevent adverse effects such as environmental pollution and mosquito resistance to insecticides.

Chemical insecticide application is done by fogging to adultisida and abatisasi for larvicide. Fogging is only carried out if the results of EI (epidemiological investigation) showed patients with unexplained fever and larva-free number (LFN) <95% around the patient (within 200 m).⁶ In addition as a condition of doing fogging, LFN also an indicator of the success of the environmental management programs in order to prevent dengue. According to the Ditjen P2 & PL, Depkes RI (2010),⁴ environmental management program is successful if the value LFN > 95% and is not expected to occur in the area of transmission.

Preliminary studies showed that the LFN recorded was made at the epidemiological investigation (EI). Epidemiological investigation carried out following a case, aim to determine whether the fogging will be done or not. This study aims to prove whether LFN associated with incidence of dengue ABJ where data obtained from epidemiological examination. It is assumed that in the area of low incidence, LFN is high and conversely, areas of high incidence, the LFN low. The results of this study may provide information on the correlation between the LFN and dengue.

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MATERIALS AND METHODS

This study was an observational study with cross sectional design. The study was conducted in five districts in Sleman and villages as a research unit. Incidence of dengue as the dependent variable and the average of LFN as the independent variable. Both data of dengue incidence and LFN year 2009-2013 obtained from records in Sleman District Health Office. The validity of the data is done by cross-checking with the data in Primary Health Care (Puskesmas). The diagnosis of dengue is determined when the patient shows the symptoms of fever for 2-7 consecutive days and followed by symptoms of hemorrhagic and or thrombocytopenia ($< 100,000/\text{mL}$) and increased hematocrit more than 20%,⁷ and or pleural effusion, and or ascites, or hypoproteinemia/ (albuminemia) and or the results of serological tests in suspected dengue showed positive or elevated (positive) IgG alone or IgM and IgG by dengue rapid test (diagnostic laboratories).⁶ Diagnosis is done by hospitals, health centers or clinics where patients are treated. The unit area study is village, so the number of dengue cases recorded from 2009-2013 each village is calculated to obtain the number of dengue cases. Larva free number is obtained by calculating the average LFN of all cases of dengue in the village in the period 2009-2013. Pearson correlation test was used to determine the relationship between the incidence of dengue and LFN.

RESULTS

Study area. Sleman district is in Java Island, Yogyakarta Special Region of Indonesia. It was lies between $110^{\circ} 33' 00''$ and $110^{\circ} 13' 00''$ E, $7^{\circ} 34' 51''$ and $7^{\circ} 47' 03''$ LS. Sleman district has an area of 57,482 ha or about 18% of the area of Yogyakarta. Sleman consists of 17 sub-districts, 86 villages and 1,212 hamlets. There are eight districts were included in the category of endemic dengue in Sleman, with different fluctuations. Of the eight districts, four districts serve as the location of the study, each district represents the fluctuation pattern, namely District Gamping, Godean, Depok and Sleman.

Based on data from the District Health Office during 2008-2013, there were 1,150 cases of dengue fever in four districts. There is a difference in the trend of dengue cases in the four districts. Limestone is highly endemic predisposed relatively stable. Godean has a rising trend of moderate. Depok has declined from a high trend. Sleman is moderately endemic area which has a stable trend. All of the study area showed that dengue cases increased significantly in 2013, except for Sleman (Figure 1).

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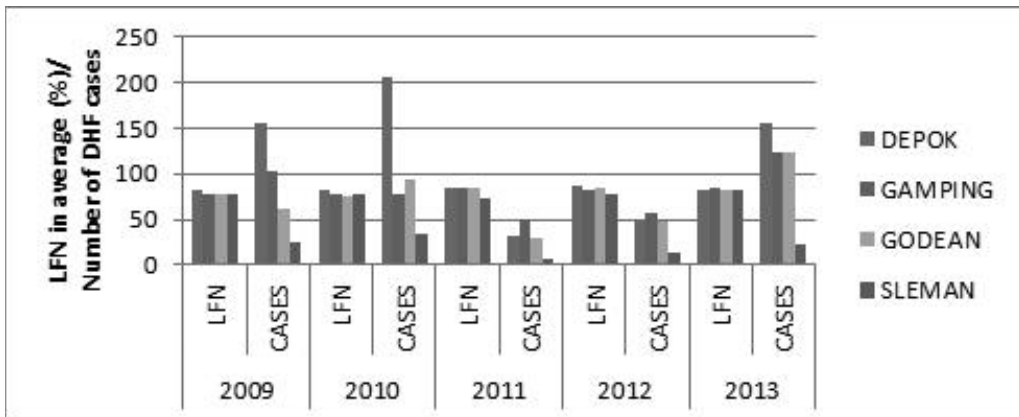


Figure 1. The Average of Larva Free Number (LFN) and Dengue Cases in Sleman, Yogyakarta year 2009-2013

Figure 1. shows that the average LFN relatively stable and almost the same in all regions. It looks different with dengue that show fluctuating. A high number of dengue cases in 2009 and 2010 and then declined in 2011 and 2012, but increased again in 2013. Figure 1 shows that dengue is not influenced by LFN. Larvae free numbers do not seem relationship with the incidence of dengue confirmed by Pearson correlation test results which showed that no significant relationship between the LFN and incidence of DHF (p 0.312; R^2 0.013) (Table 2)

Table 2. Statistic analysis of Pearson Correlation

		Correlations	
		ABJ	DBD
ABJ	Pearson Correlation	1	.115
	Sig. (2-tailed)		.312
	N	80	80
DBD	Pearson Correlation	.115	1
	Sig. (2-tailed)	.312	
	N	80	80

ABJ= LFN; DBD=DHF

DISCUSSION

The absence of vaccines and antiviral drugs are established, making vector control programs be the main activity in controlling this disease. vector control was performed chemically or through environmental management.^{4,8} Environmental management aims to reduce vector populations formulated in terms of activities 3 M plus (close the container, burying unused stuffs and drain the stagnant water). Plus

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means activities other than 3M to reduce the mosquito population.⁶

The success of vector control was assessed by means of entomological surveillance. Entomology surveillance aims to measure the density of the vector. There are several indices that can be used to measure the density of mosquitoes in an area including the numbers free larva (LFN),⁹ the index of house (HI, the percentage of positive home larvae), the index breteau (BI, the number of containers positive per 100 houses), index containers (CI, the number of positive containers),¹⁰ and the maya index.¹¹ Unit examination for house index and the LFN is the same, are the house regardless of the number of containers. House index informs the percentage of homes that are larvae, while LFN informs that there are no larvae. Thus the result is the opposite of the house index. An evaluation showed that house index is less sensitive than other methods, such as ovitrap, mosquitrap, adutrap and BG-sentinel.¹² However, Indonesia is still using LFN as surveillace index to measure the success of environmental management program. According to the Ditjen P2PL, Depkes RI (2010),⁴ LFN safe rate for dengue transmission is > 95%. Data LFN in Sleman district health offices is the result of the examination of dengue cases in PE activities (epidemiological investigations). Epidemiological investigations aims to determine whether the fogging will be done or not to prevent the outbreak.¹³ Fogging applications should regulated for the use of insecticides that are not controlled will hurt humans. Losses arising from the use of uncontrolled chemical insecticides is environmental pollution and possible resistance to insecticide mosquito vectors.¹⁴

The results showed that the average ABJ in dengue endemic area in Sleman year 2009-2013 amounted to 80.70% (68.4% -95%). This shows that based on aspects of entomology, there is a risk of dengue transmission in Sleman. This figure is almost the same as the data Ditjen PP&PL, Depkes RI, (2010),⁴ that the LFN in several cities in Indonesia in 1994-2009 is still below target (71.1% - 84.31%). The larva free number are still lower than the safe (95%), meaning that dengue fever prevention program through environmental management have not been successful.

According to some researchers, vector control through environmental management have not been successful due to several factors such as the lack of coordination across programs and sectors, there are still plenty of slum neighborhood and solid waste disposal, people are less engaged or bored in regular activities while no cases in the long term, there is no strong strategy and no effective research and development,^{6,15} and the problem of mosquito resistance to insecticides.¹⁶ Factors which might be pursued for the success of the dengue eradication program by Sungkar (2007),¹⁶ is the behavior of the population, health workers, early warning system by the government and the allocation of funds.

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The success of environmental management is highly dependent on the participation of the community,^{6,15,16} so it is necessary to have an early warning system (EWS). Early warning system is expected to provide information that the next few months may be a rise in cases of dengue in areas at risk. By knowing the risk area and time increase in cases, the environmental management activities can be more focused on risk areas, at certain times. Thus, people who are bored in environmental management as a routine can be avoided. In constructing EWS, required variables are correlated with the incidence of dengue fever is strong enough that it can be used as predictors. In theory, the LFN is one of the variables that must be assumed to correlate quite strongly with the incidence of dengue fever since LFN is an indicator of the density of mosquito vectors. High vector densities will increase the possibility of transmission of the disease and will further increase the incidence of dengue fever.¹⁷

The results of analysis of this study showed no correlation between the LFN with dengue ($p = 0.312$). Larva free number and dengue are not correlated, probably caused by the data acquisition LFN derived from epidemiological investigations. Epidemiological investigations carried out following dengue cases. Thus ABJ reflect the current state of transmission in the patient environment. If LFN measured when transmission occurs will tend to show a low number, but does not reflect LFN conditions throughout the year across the region. Correlation in this study conducted by the research unit grouping based on the degree of endemicity, but the results are not correlated. This indicates that LFN not affect the incidence of dengue fever, both in low endemicity areas or areas of high endemicity. On average LFN far below the safe shows that in terms of vectors, Sleman area is still not safe from the spread of dengue.

The results of research on the relationship between the LFN with dengue in most other regions showed no association with dengue. Research in the city of Medan in 2012 also showed no significant relationship between the LFN with dengue, also the frequency of mosquito eradication with dengue.¹⁸ But studies in Surabaya showed that there is a significant relationship between the LFN with dengue.¹⁹ In the study in Surabaya, the LFN data obtained from the local health office, but did not explain whether the data is periodically or following the case, as happened in Sleman.

It can be suggested that the need of providing data LFN regular basis without having to wait no cases of dengue fever. Data supplied periodically LFN monthly can describe the actual conditions throughout the year and can be analyzed to obtain information LFN effects on the incidence of dengue in the region. Furthermore, the data is periodically LFN can be used as input data into an early warning system.

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CONCLUSION

It was concluded that the LFN data in Sleman not correlate with the incidence of dengue, so it can not be used as a predictor of the development of early warning system.

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