Knowledge, Attitude and Practice on Dengue among Adult Population in Felda Sungai Pancing Timur, Kuantan, Pahang

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ABSTRACT

Background: With increasing number of dengue cases in Malaysia, it's of utmost importance that immediate action be taken to limit the epidemic. Since dengue control is a behavioral problem, the knowledge, attitude and practice in population needs to be studied in order to control the disease. Hence, the aim of this study is to assess knowledge, attitude and practice regarding dengue and its associated factors among adult residents of Felda Sungai Panching Timur (SPT), Kuantan, Pahang, 2014. **Method:** A cross sectional study was carried out involving 265 adult respondents. A face to face interview questionnaire which was divided into 2 parts (Part A: Sociodemoghraphic; Part B: Knowledge, Attitude and Practice) was used. Data was analyzed using descriptive statistics, simple and multiple logistic regression. **Results:** 53.2% of the respondents had good knowledge about dengue and it was found that the main source of information from mass media (76.6%). However, only 43.4% were found to have good attitude towards dengue. Multiple Logistic Regression analysis showed there was no association between sociodemographic characteristics with the level of knowledge and attitude towards dengue. There was also no association found between knowledge of dengue and the attitude of the respondents towards dengue. Descriptive analysis on the practice of dengue showed majority of the respondents who had possible breeding site for *Aedes* mosquitos (water container, drains/gutter roof/flower pots/tires) in their compound practiced good habit in preventing the *Aedes* mosquitoes from breed. **Conclusion:** Although knowledge and practice towards dengue is good, their attitude require improvement.

KEYWORDS: Dengue, Aedes, knowledge, attitude and practice, factors associated.

INTRODUCTION

Dengue is caused by the infection of dengue virus, a Flavivirus coming from the family of Togaviridae. There are four distinct serotypes, DEN-1, 2, 3 and 4. *Aedes aegypti* and *Aedes albopictus* are the two vectors responsible for its widespread transmission. Dengue patients will usually manifest the disease as sudden, high grade fever associated with chills, severe headache, retro-orbital pain, myalgia, arthralgia and rashes. The symptoms may vary in severity and usually persist for several days.[1] It also can dramatically worsen to cause severe shock and death.

Dengue fever is one of the most imperative arthropod-borne viral diseases and has become a major health burden especially in tropical and subtropical countries. World Health Organization Western Pacific Region Organization (WPRO), 2015, stated that, it is estimated more than 70% of people at risk of dengue worldwide come from the Asia Pacific region which accounts for around 1.8 billion people.[2] The number of dengue cases reported to WPRO has also risen steadily since the last 10 years despite the aggressive campaigns and increased healthcare services.[3]

In Malaysia, the number of dengue cases increased overwhelmingly; from 43,346 cases in 2013 to 108,698 cases in 2014, which was 151% increment. In addition, the deaths due to dengue had also risen by a total of 134% within the same period.[4] As of 18 March 2015, it was reported that there were 30,033 cases of dengue, including 95 deaths in which, 42% higher compared with the same reporting period of 2014.[5]

The increasing number of dengue cases was influenced mainly by social and environmental factors such as urbanization. It is the major contributing factor for dengue resurgence in many countries in the world especially in South East Asia.[6, 7] It was found that the immigration of foreigners to

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the city increases the population density of human host. Moreover, majority of the foreigners were from rural poor area in which their migration is for economic purposes, where they received lack of basic health services in the city. [6, 8, 9]

Another important factor is the climate change. Global warming influences the transmission of dengue mosquitos. In higher temperature, the mosquitos may reproduce quickly, bite more frequently and usually transmit the virus when temperature more than 50 degrees *F*. [9, 10]

As the world awaits for the yet developed vaccine for dengue, prevention remains the principal key to curb this problem. It has been highlighted that primary prevention namely health education and community participation is of a paramount strategy in combating dengue.[11] Thus, the community's knowledge, attitude and practice (KAP) on dengue are important in determining their participation in community based programs. Hence, a knowledge, attitude and practice research suits and caters to this need perfectly.

MATERIALS AND METHODS

This was a cross-sectional survey conducted in Felda Sungai Panching Timur, Kuantan, Pahang. It was carried out from 22nd September – 10th October 2014. The study population was 900 with the total house of 300. The estimated sample size calculated using OpenEpi software. [12] Simple random sampling was used to obtain the participants among adult Felda settlers. Consented adults (>18 year old), lived for at least a year in Felda Sungai Panching Timur and Malaysian were included in the study. While, those with communication barrier were excluded.

One hundred and sixty houses needed to achieve 320 respondents by considering two adults per house. However, only 286 respondents available to participate in this study after two subsequent visits; 160 respondents in the first visit and 105 respondents during the second visit. Among them, 21 respondents refused to participate. Thus, the calculated response rate was:

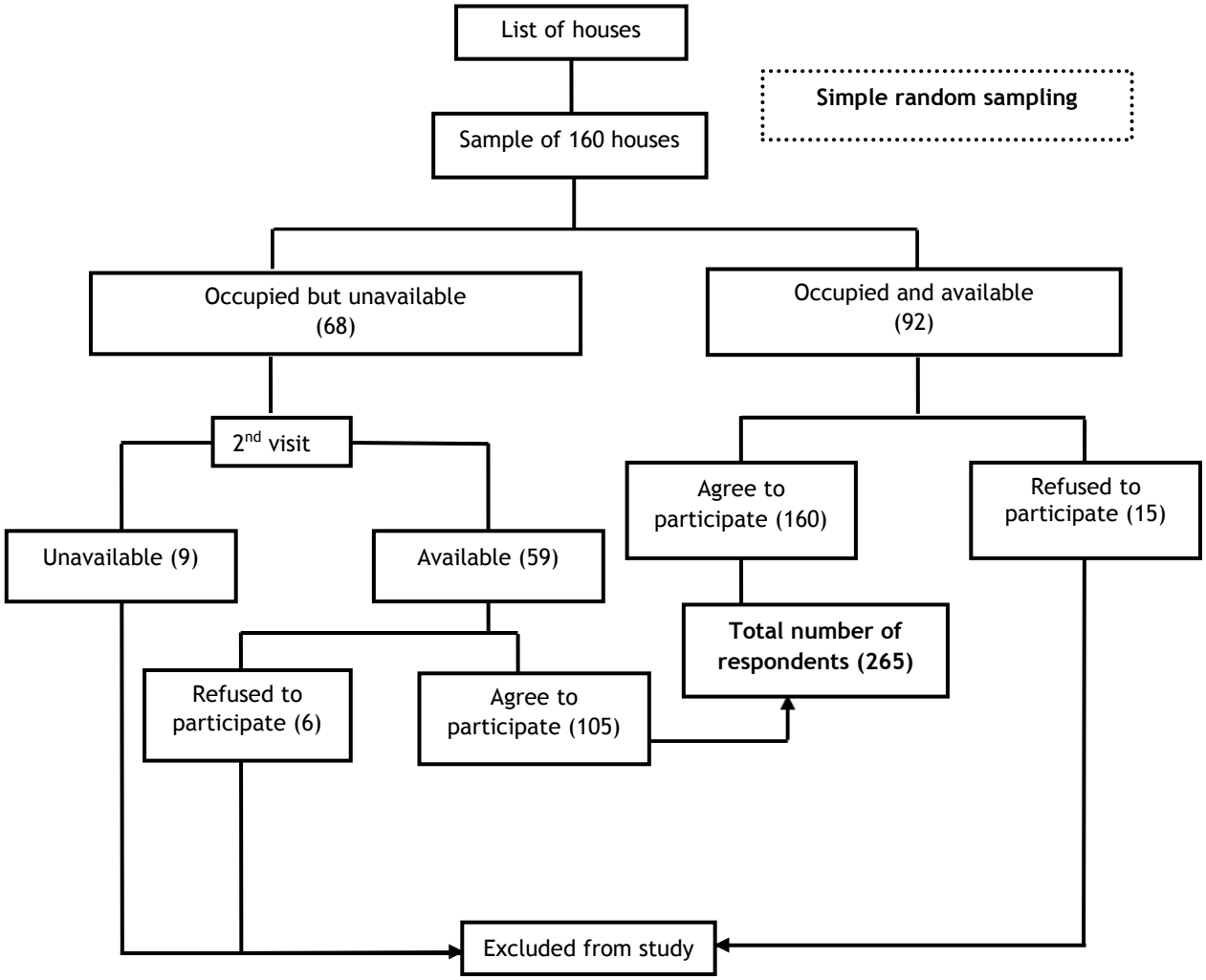

Figure 1: Flow chart of data collection procedure

The data was collected by face to face interview using pretested questionnaire of all the available adults in the house during the data collection. The questionnaire consist of two parts; part 1 concerned with sociodemographic characteristics of the respondents which covered general information of the respondents and the respondents' sources of dengue information, part 2 comprised of knowledge, attitude and practice (KAP). Knowledge domain contained 18 items, attitude 6 items and practice domain 7 items. The medium of interview was in *Bahasa Malaysia* since it is the mother tongue of the respondents.

To ensure correct understanding and consistent manner in conducting the survey, training was conducted among surveyors. After data collection was completed, the questionnaire was checked to ensure all items were filled in so that there was no missing value.

The data was entered and analyzed by using IBM SPSS Statistics, Version 20. Descriptive analysis was used to measure sociodemographic characteristics of the respondents and the proportion of the correct answer for each items for every domain. The level of knowledge (K) and attitude (A) were then classified into "poor" or "good" using their mean as a cut-off point. For the practice component, the items were analyzed descriptively. The relationship between sociodemographic characteristics and KA and inter-relationship between knowledge and attitude were measured using Multiple Logistic Regression.

RESULT

There were a total of 265 respondents in this study. Majority of them were female (55.1%), had household income of less than RM 1000 (57.0%) and only 47.5% were employed. The important characteristics of the respondents are given in Table 1.

Knowledge on Dengue

The main source of information was from mass media (76.6%). This was followed by information getting from friends and family (12.1%), health centre (7.5%), social media (3%), and school (0.8%).

Out of 265 respondents, 53.2% have good knowledge. Majority of the respondents knew that *Aedes* mosquito is the vector that cause dengue fever, where 68.3% gave correct answer. They also had good knowledge on signs and symptoms of dengue fever (high grade fever, severe headache, myalgia, rashes and vomiting), where 63.0% to 81.0% answered correctly. However, majority of them (52.1%) do not know that retro-orbital pain is one of the important symptoms. For the characteristics of the *Aedes* mosquito, almost all of them knew that *Aedes* mosquitos breed in stagnant clear water from old tyres, trash cans and flower pots(96.9%); female mosquitos is the agent (61.5%) and adult mosquitos can be killed by insecticides such as Shiledtox and Ridsect (83.0%).

Table 1: Socio-demoghraphic of the respondents in Felda Sungai Panching Timur, October 2014.

Characteristics	n (%)
Age (Year)	49.56(16.83)#
Gender	
Female	146(55.1)
Employment status	
Employed	50(18.9)
Self-Employed	76(28.7)
Unemployed*	139(52.4)
Monthly Income (RM)	
Less than RM1000	151(57.0)
RM1000 to RM1999	86(32.5)
RM2000 and more	28 (10.5)
Educational Status	
No Education	26(9.8)
Primary Education	99(37.3)
Secondary Education	117(44.2)
Tertiary Education	23(8.7)

*Retired/ Housewife/ unemployed/student
#mean(SD)

Only 43.4 % of the respondents found to have good attitude toward dengue where, majority of the respondents (89.1%) agreed that the only method to control and prevent dengue is to eliminate adult *Aedes* mosquitoes. However, they accepted the fact that everyone has a chance to get dengue fever (88.7%) and plays an important role in preventing dengue (77.7%). The respondents also acknowledged that the importance of to seek immediate treatment if they have signs and symptoms of dengue (92.5%) and all the dengue patients have a chance for a full recovery (69.4%).

Practice of dengue control

The respondents can be considered as not actively participated in health campaign where only 28.7% of the respondents had participated in any of the dengue campaign in their residential area while 16.6% never heard about that. However, in terms of practice, they showed good habit in eliminating the mosquitoes breeding site. Majority of the respondents had water tank in their house (99.2%). Among them, 97.7% took action to eliminate the mosquito's larvae from the water tank if they found

it. For the water container, 95.1% had it in their house where, 83.8% close the water container immediately after use it while the remaining not. Among 71.0% of the respondents who had the gutter roofs for their houses, majority of them (69.8%) cleaned the drains or gutter roofs every time after raining. For the flower pots, about half of the respondents do not have flower pots in their houses. Those who have (43.7%), more than 80.0% showed good practice in preventing the occurrence of dengue (change water in flower pot).

Table 2: Factors associated with the level of knowledge and attitude of dengue

	Knowledge			Attitude		
	aOR*	**95% CI**	**p-value**	**aOR***	**95% CI**	**p-value**
Age (yrs)						
> 40	1.00					
≤ 40	0.759	0.382, 1.507	0.430	1.407	0.709, 2.791	0.329
Gender						
Male	1.000					
Female	1.341	0.653, 2.753	0.424	1.458	0.723, 2.940	0.292
Employment Status						
Unemployed	1.000		0.878			0.396
Employed	0.983	0.409, 2.363	0.970	0.561	0.240, 1.312	0.182
Self-Employed	0.816	0.357, 1.868	0.631	0.717	0.317, 1.618	0.422
Monthly Income (RM)						
<1000	1.000		0.651			0.521
1000-1999	1.388	0.684, 2.817	0.364	1.484	0.741, 2.970	0.265
≥2000	1.148	0.391, 3.369	0.801	1.491	0.534, 4.162	0.446
Educational Status						
No Education	1.000		0.272	1.00		0.292
Secondary	1.633	0.627, 4.250	0.315	2.00	0.771, 5.191	0.154
Primary	2.340	0.786, 6.972	0.127	2.49	0.974, 6.375	0.057
Tertiary	4.583	0.971, 21.641	0.055	2.09	0.631, 6,905	0.228
Knowledge						
Poor				1.000		
Good				1.108	0.649, 1.894	0.707

*Multiple Logistic Regression
p-value <0.05

DISCUSSION

In our study, we found that the main source of information on dengue was the mass media. This is consistent with findings from the studies done in Malaysia,[13,14] Thailand[15] and Pakistan.[16] This showed that the mass media is very important in disseminating health information to the community. With increasing number of television channel in government or private television channel provider, increasing number of health information either in national language or non-national language and increasing number of television view ship, these may be the reason why it has become the main source of information for the majority of the respondents.

The knowledge on dengue was adequate where 53.2% of the respondents have good knowledge. Majority of the respondents (68.3%) of the respondents knew that *Aedes* mosquito is the vector that cause dengue fever. This finding similar to other studies conducted in other countries.[17-19] The respondents also found to have good knowledge on

signs and symptoms of dengue (high grade fever, severe headache, myalgia, rashes and vomiting) where 63.0% to 81.0% answered it correctly. This finding also supported by other studies.[20,21] This could indicate that they can always able to distinguish between dengue infections from other disease. More importantly, their ability to recognize the signs and symptoms of dengue fever will aggravate them to seek early treatment.

Their knowledge on the characteristics of the mosquitos was also good where majority of them knew that *Aedes* mosquitos breed in stagnant clear water from old tyres, trash cans and flower pots (96.9%); female mosquitos is the agent (61.5%) and adult mosquitos can be killed by insecticides such as Shiledtox and Ridsect (83.0%). These can be relate with their good practice in eliminating the mosquitos breeding site. However, our findings is not consistent with other studies where they found that those who have good knowledge in dengue fever, does not necessarily exhibit good practice in eliminating dengue mosquitos.[13,20-22] Inconsistency between our study and other studies finding might be due to cleanliness competition programs that has been practice in Felda residential area. Felda Village Cleanliness Award which covers provision of landscaping, sanitation programs, community activities, waste management, implementation edible garden and many more programs is one of the activities that promote good cleanliness practice habit. Other programs such as Cheerful Village Improvement Program and Cheerful Enhancement Program also encourage the Felda community to keep their housing and village environment always cheerful and clean.[23]

Even though majority of our respondents had good knowledge and exhibit good practice, only 43.4% of the respondents found to have good attitude toward dengue. However, our finding showed that there was no relationship between knowledge on dengue and attitude toward dengue (p=0.707). Few studies found that good knowledge associated with bad attitude. This might be due to apprehension towards unfamiliar symptoms of dengue fever prompting the individual to seek immediate treatment. [21,22,24,25,26-28]

Our study found that there were no association found between knowledge and attitude of dengue and sociodemographic characteristics of the respondents. In term of age, other studies found that the older age has higher knowledge score compared to younger age.[13,22] However, they became less aware of dengue as time passed by, as dengue prevention and control programs were only introduced in Malaysian schools in 1993.[13] For gender, some studies found that both male and female showed similar knowledge regarding dengue fever.[24,25] This is most probably because of both male and female are similarly exposed to mass media which is the most important source of information regarding dengue. However, there were studies that found females were more knowledgeable than male regarding dengue [22, 26] and women have very good attitude towards dengue fever prevention compared to men. This may be due to the customs of the community whereby women are mostly involved in house cleaning and maintenance.[25] Besides that, it is the culture in Felda area to share household responsibility among male and female. Also, the aspect of *gotong royong* (practice), which encourages the combined effort of both male and female.

In term of employment status, studies conducted in Malaysia[14,26] and Jamaica[27] found similar findings. This similarity might be due to similar target population which were semi-urban and rural communities where majority of them had low socioeconomic status. Nonetheless, another study found that the unemployed and housewives were more knowledgeable regarding *Aedes* mosquitoes and dengue symptoms, and exhibit good attitude. They presumed that, this might be due to the fact that housewives are the ones who join dengue campaigns most of the time.[28] However, this study was conducted in urban area where dengue prevalence was high and prevention programs were actively conducted either by government or non-government agencies. [29]

CONCLUSION

Even though our findings showed majority of the adults in Felda Sg. Paching Timur had good knowledge and practice, but more than half of them had poor attitude. Thus, the relevant agencies should boost up their efforts in providing adequate and correct information about dengue via mass media effectively; be it television, radio or newspapers. Nevertheless, the health care personnel should continue promoting health campaigns regarding dengue as to ensure that the public have the correct understanding and therefore will inculcate the correct attitude regarding dengue control. Even though most of our respondents had good knowledge, the health education program should always target all population in the community regardless of their educational background so they can improve their knowledge. The unique traditional *gotong-royong* frequently practiced in Malaysia should be continued with joint cooperation from all the parties; be it the government and also community members because through such participation, the community will believe that it is everyone's responsibility to eliminate the dengue epidemics.

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REFERENCES

1. Nimmannitya S. Clinical Management of Dengue Fever/Dengue Haemorrhagic Fever/Dengue Shock Syndrome. Dengue Bulletin, 1996; 20.
2. World Health Organization. Health Topic: Dengue. 2015 [cited 2015 1st April]; Available from: http://www.wpro.who.int/topics/dengue/en/.
3. World Health Organization. Emerging disease surveillance and response. Dengue in the Western Pacific Region 2015 [cited 2015 1st April]; Available from: http://www.wpro.who.int/emerging_diseases/Dengue/en/.
4. Ministry of Health Malaysia. Kenyataan Akhbar Ketua Pengarah Kesihatan: Situasi Semasa Demam Denggi di Malaysia. 2015; Available from: http://www.moh.gov.my/.
5. World Health Organization. Dengue Situation Update 461. Update on Dengue Situation in Western Pacific Region 2015 24 March 2015 [cited 2015 1st April]; Available from: http://www.wpro.who.int/.
6. Wilcox BA, Gubler DJ, Pizer H, and Mayer K. Urbanization and the social ecology of emerging infectious diseases. The social ecology of infectious diseases, 2008:113-37.
7. Cummings DA, Irizarry RA, Huang NE, et al. Travelling waves in the occurrence of dengue haemorrhagic fever in Thailand. Nature, 2004; 427:344-7.
8. Ooi E-E and Gubler DJ. Dengue in Southeast Asia: epidemiological characteristics and strategic challenges in disease prevention. Cadernos de Saúde Pública, 2009; 25:S115-S24.
9. The Health and Environment Linkages Initiatives. Better environmental management for control of dengue. 2015 [cited 2015 1 April]; Available from: http://www.who.int/heli/risks/vectors/dengue control/en/.
10. Epstein PR. Is global warming harmful to health? Scientific American, 2000; 283:50-7.
11. GUIDE AS-B-S. Planning social mobilization and communication for dengue fever prevention and control. 2004.
12. Dean AG, Sullivan KM, and Soe MM, OpenEpi: Open Sorce Epidemiologic Statistics for Public Health. 2014.
13. Naing C, Ren WY, Man CY, et al. Awareness of dengue and practice of dengue control among the semi-urban community: a cross sectional survey. Journal of community health, 2011; 36:1044-9.
14. Al-Dubai S, Ganasegeran K, Mohanad Rahman A, Alshagga MA, and Saif-Ali R. Factors affecting dengue fever knowledge, attitudes and practices among selected urban, semi-urban and rural communities in Malaysia. Southeast Asian J Trop Med Public Health, 2013; 44:37-49.
15. Kyu HH, Thu M, and Van der Putten M. Myanmar migrant woman caretakers on prevention of dengue fever: A study on knowledge, attitude and practices in Tak Province, Thailand. Au J T, 2005; 27:9(2): 99-105.
16. Itrat A, Khan A, Javaid S, et al. Knowledge, awareness and practices regarding dengue fever among the adult population of dengue hit cosmopolitan. PloS one, 2008; 3:e2620.
17. Degallier N, Vilarinhos PdTR, de Carvalho ML, Knox MB, and Caetano Jr J. People's knowledge and practice about dengue, its vectors, and control means in Brasilia (DF), Brazil: its relevance with entomological factors. Journal of the American Mosquito Control Association, 2000; 16:114-23.
18. Acharya A, Goswami K, Srinath S, and Goswami A. Awareness about dengue syndrome and related preventive practices amongst residents of an urban resettlement colony of south Delhi. Journal of vector borne diseases, 2005; 42:122.
19. Pérez-Guerra CL, Seda H, García-Rivera EJ, and Clark GG. Knowledge and attitudes in Puerto Rico concerning dengue prevention. Revista Panamericana de Salud Pública, 2005; 17:243-53.
20. Hairi F, Ong C-H, Suhaimi A, et al. A knowledge, attitude and practices (KAP) study on dengue among selected rural communities in the Kuala Kangsar district. Asia-Pacific Journal of Public Health, 2003; 15:37-43.
21. Mayxay M, Cui W, Thammavong S, et al. Dengue in peri-urban Pak-Ngum district, Vientiane capital of Laos: a community survey on knowledge, attitudes and practices. BMC public health, 2013; 13:434.
22. Koenraadt CJ, Tuiten W, Sithiprasasna R, et al. Dengue knowledge and practices and their impact on Aedes aegypti populations in Kamphaeng Phet, Thailand. The American journal of tropical medicine and hygiene, 2006; 74:692-700.
23. Felda. 2015; Available from: http://www.felda.net.my.
24. Takahashi R, Wilunda C, Magutah K, et al. Knowledge, Attitude, and Practices Related to Dengue among Caretakers of Elementary School Children in Chanthaburi Province, Thailand. 2014.
25. Abdullah MN, Azib WNHW, Burhanuddin MA, and Harun MFM. The Effect Of Gender And Source Of Information Towards Knowledge, Attitude And Practice On Dengue Fever Prevention. Age, 2013; 32:14.2.
26. Leong TK. Knowledge, Attitude and Practice on Dengue among Rural Communities in Rembau and Bukit Pelanduk, Negeri Sembilan, Malaysia. 2014.
27. Stoler J, Brodine SK, Bromfield S, Weeks JR, and Scarlett H. Exploring the relationships between dengue fever knowledge and Aedes aegypti breeding in St. Catherine Parish, Jamaica: a pilot of enhanced low-cost surveillance. Res Rep Trop Med, 2011; 2:93-103.
28. Mohamad M, Selamat MI, and Ismail Z. Factors Associated with Larval Control Practices in a

Dengue Outbreak Prone Area. Journal of environmental and public health, 2014; 2014.
29. Cheah W, Ng K, Marzilawati A, and Lum L. A review of dengue research in malaysia. The Medical journal of Malaysia, 2014; 69:59-67.