Proceedings of UNISEL Bestari Research Projects 2016, Ed(s): Setyawan Widyarto, et.al.,
Shah Alam: FIIT-UNISEL Publisher, ISBN: 978-983-3757-29-9

COMMUNITY AWARENESS IN DENGUE PREVENTION AMONG STUDENTS IN UNISEL SHAH ALAM STUDENT HOSTEL

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Abstract

Dengue becomes an important public health concern in Malaysia. Most prevention strategies have been designed to increase public awareness regarding dengue and transfer agent. However, this approach does not significantly increase community engagement in elimination of Aedes breeding places. The purpose of this study is to investigate the efficiency of direct visit approach to improve awareness about dengue prevention. Study design was experimental trials was designed to evaluate the effectiveness of intervention approach. The result shows the public intervention via direct visit approach was shown improves up to 30% were recorded in knowledge and practices.there were also shown a decreased of House Index (HI) and Container Index (CI) after 3 months of the intervention. Behaviour changes were visualized through the voluntarily responses, which experienced by the researcher. This research recommends communication and social mobilization approach in order to increase trend of public awareness and strengthen the acceptable behaviour.

Keywords: Public health, dengue prevention, community-based awareness, intervention, behaviour changes

INTRODUCTION

Dengue fever was caused by a mosquito-borne human viral pathogen. Dengue was transmitted in humans by two species of *Aedes* mosquitoes namely, *Aedes aegypti* (principal vector) and *Aedes albopictus*. Although infection with one dengue serotype confers lifetime immunity against re-infection by the same serotype, there is no evidence of cross immunity. Therefore, it is possible for one to be infected with dengue fever several times during one's lifetime. There are two main forms of dengue disease, dengue fever and the more severe dengue haemorrhagic fever (DHF). Infection with any of the four serotypes can produce a broad range of clinical manifestations including asymptomatic infection, mild flu-like symptoms, and the more severe haemorrhagic fever.

During the last decade, dengue is more frequent and severe epidemics occur a in the world, particularly in Malaysia. In most countries in the region, this disease distributed by different serotypes of virus causing the disease although concurrently. In addition, the main vector, Aedes aegypti, widely found and distributed on the mainland. Dengue has become an important public health concern and problem in Malaysia. It affects tropical and subtropical regions throughout the world, mainly in both urban and semi-urban areas. More importantly, from 1990s, involving the communities to achieve sustainable dengue control program, the measures assess the needs and priorities on the planning and

implementation of action are recognized. However, most strategies designed merely to focus on increasing awareness among people regarding dengue and transfer agent, but does not significantly increase community engagement in the elimination of A. aegypti breeding places. It has been arguing that changes in behaviour can be accomplished in the long term and need communication and social mobilization strategy to promote and strengthen the acceptable behaviour by members of the communities and the next one is competent from the point of view of entomology. Few experiences disease control based on this concept, however, existing are distinguished by their motivational character, holistic and inclusive approach to reality, its emphasis on group work and the development of support networks all to achieve transformative action in the members of the community and achieve greater social commitment.

Main purpose of this study is to assess the efficiency of an integrated community-based approach to control dengue vector corresponding to regular approach. The specific purposes of this study were to evaluate decreasing of House Index (HI) and Container Index (CI) for larvae after intervention by using the percentage of houses and container infested with larvae with one or more habitats for Aedes aegypti or related species and to investigate the efficiency of direct visit approach to improve awareness about dengue prevention.

MATERIALS AND METHODS

The study was conducted from April to December 2015. The areas surveyed included all houses for UNISEL students in Wisma MAIS, Section 3, Shah Alam. Thirty households from hostel at Wisma MAIS were randomly selected for the entomological surveys before and after the community-based direct visit approach. A knowledge-and-behavior survey was also administered to 100 respondents randomly selected from these hostel before and after the intervention approach.

This intervention aimed to detect a 50% decrease in Houses positive for larvae, with a power of 80% and an error of 0.05, assuming a coefficient of variation of 0.25 for the clusters' House Index. Members of the communities can accomplish changes in behaviour in the long term with involving communication and social mobilization approach to promote and reinforce the acceptable behaviour.

Mobilizing existing student's self-help group

In this intervention programme, specific groups of students volunteers were established for Dengue Squad Team (DST). These DST were identified among the environmental health students already actively involved in mobilizing dengue vector control activities in their study. The DST received general training on knowledge about dengue and vectors, and specific training in the use and maintenance of intervention tools, household surveillance of vector breeding habitats, and ascertaining and reporting of vector densities on specific forms. Regarding general criteria, DST need to pass the training mentioned above.

Importantly, they need to have positive attitude to work for their communities and to work in a team. These DST was responsible for dengue vector control activities and health education. They should inform householders of general knowledge regarding dengue, vectors and prevention measures. Provision of materials and resources was supported by the public health services and local administration in collaboration with the university research teams. During theirinitial household visits, the DST were mentored by the research teams to perform health communication, vector surveillance and vector control using *direct visit* approach.

Entomological surveys

Entomological surveys were conducted to determined number of houses positive or *House Index (HI)* and containers specifically designed for water storage infested or *Container Index (CI)* for larvae before and after intervention by using the percentage of houses infested with larvae with one or more habitats for Aedes aegypti or related species.

The House index was determined as follows:

$$\frac{\text{Number of houses with larvae}}{\text{Total number of houses inspected}} \times 100$$

The Container index was determined as follows:

$$\frac{\text{Number of container with larvae}}{\text{Total number of container inspected}} \times 100$$

Knowledge-and-behavior surveys

For the knowledge-and-behavior survey, each respondent was asked to complete the questionnaire. The questionnaire had three parts: three items on demographic information, six
questions on dengue-related knowledge and four questions on behavior in handling water-filled containers.

Statistical analysis

Statistical analysis was carried out with SPSS for Windows Release 21 - Rates were analyzed with the x^2 test. A p value of <0.05 was considered to be statistically significant.

RESULTS

There were no significant differences in sex, age, and race of respondents to the questionnaire before and after the program ($p > 0.05$). Table 1 shows the demographic and characteristics among the students in Unisel hostel. Mean of the respondents were in age 19.9 $\pm$ 0.25 (n=160). Most of respondents were female; before (n=102, 63.75%) after (n=104, 65.00%); and others were male; before (n=58, 36.25%) after (n=56, 35.00%). From demographic data collected, majority of respondents race were Malay; before (n=150, 93.75%) after (n=148, 92.50%); and followed by Indian; before (n=10, 6.25%) after (n=12, 7.50%). All of the respondents were in a diploma program (n=160, 100%).

Table 1. Demographic Data of Respondents before and after the direct visit approach.

Factor	Before (n=160)		After (n=160)	
	n	%	n	%
Sex				
Male	58	36.25%	56	35.00%
Female	102	63.75%	104	65.00%
Age (years)	19.91 $\pm$ 0.25		19.93 $\pm$ 0.25	
Races				
Malay	150	93.75%	148	92.50%
Indian	10	6.25%	12	7.50%

The changes in the ovitrap index in the households before, and after 1 month, 2 months and 3 months of the program are shown in Table 2. The house index significantly decreased from 43.33 percent before the program to 16.67 percent one month after the program, and then increased to 26.67 percent two monFths after and decreased back to 6.67 percent three months after the program ($p < 0.05$). The container index significantly decreased, from 19.17 percent before the program, to 10.48 percent one month after the program and then increased to 13.22 percent two months after and decreased back to 5.83 percent three months after the program ($p < 0.05$). The overall both index significantly decreased, from 43.33 percent before the program to 6.67 percent three months after the program for House index and from 19.17 percent before the program to 5.83 percent three months after the program for container index {$p < 0.05$).

Table 2. Variation in the House Index and Container Index for Dengue Vectors in Households Before, and After the Direct visit approarch

Direct visit approach	House Index (HI)			Container Index (CI)		
	n	+ve	%	n	+ve	%
Before	30	13	43.33	120	23	19.17
After						
1 month	30	5	16.67	124	13	10.48
2 months	30	8	26.67	121	16	13.22
3 months	30	2	6.67	120	7	5.83

Table 3. Dengue-Related Knowledge among Survey Respondents before and after the direct visit approach.

Item	Before (n=160)		After (n=160)	
	n	%	n	%
The term "dengue"	136	85	160	100
Mosquitoes transmit dengue	160	100	160	100
Breeding places of the dengue vector				
Contaminated water	72	45	36	23
Clean water	88	55	124	78
Keeping household cleanliness is an effective measure for the prevention of dengue	145	91	160	100

Approximately all of the respondents knew the meaning of dengue. They all know that mosquitoes spread dengue and hygiene and cleanliness home environment is an effective measure to prevent the disease. Before the program, only 55 percent of the respondents knew that dengue vectors breed in clean water; the percentage increased to 78 percent, among those respondents after the program. Anyway, 45 percent of respondents shown before the program that dengue vectors breed in contaminated water, and decreased significantly to 23 percent, after the program ($p < 0.05$) (Table 3).

Table 4. Dengue-Related Behavior among Survey Respondents before and after the direct visit approach.

Item	Before (n=160)		After (n=160)	
	Number	%	Number	%
Keeping water-filled containers in the indoor and outdoor environments empty	112	70	145	91
Dlscarding unused containers	97	61	156	98
Putting temporary unused containers upside-down	89	56	129	81
Cleaning water-filled containers regularly	107	67	143	89

Huge change was additionally found in conduct identified with the end of dengue vector habitats: clearing water-filled compartments in the indoor and outdoor environments (85.3 percent before, 93.2 percent after), putting temporary unused containers upside-down (59.7 percent before, 71.1 percent after), cleaning water-filled containers regularly (60.0 percent before, 89.3 percent after) and discarding unused containers (61.4 percent before, 67.4 percent after) ($p > 0.05$) (Table 4).

DISCUSSION

The aim of this study was to examine the possibility of using community-based education program to control dengue vector. We hope that our study will provide a basis or model for local, state and national organizations dealing with emergency actions to control dengue fever and also the mosquitoes as a vector for this disease. The use of volunteers during an emergency can help support interaction with the public, to ensure that the public informed about how to reduce risk of this disease. This community-based study was also conducted to describe the knowledge, attitudes and preventive behaviours related to dengue vector control measures among community among UNISEL Shah Alam students and to identify the determinants of preventive behaviour.

Educational use direct visit, we can see a reduction of 30.43% in the former habitat in the community after the intervention compared with before the intervention. Our results are consistent with several other studies that have demonstrated stable or declining Container index after the index compared to community-based program prior to before community-based programs. Despite the reduction in the index are not usually associated with a reduction in vector-borne diseases such as dengue, the goal of this study is to not reduce the risk of transmission, but to examine some measures to estimate the reduction of behaviour in communities. Since public education messages we are to reduce the habitat of containers, we feel that the survey of container is a more reliable estimate of the behaviour of source reduction, given that education does not necessarily lead to an immediate reduction in the population of adult mosquitoes.

This community-based study was conducted to describe the knowledge, attitudes and preventive behaviours related to dengue vector control measures among students in UNISEL Shah Alam hostel and to identify the determinants of preventive behaviour. Regarding knowledge about dengue vector breeding control measures, 85% of the students were knowledgeable. This finding is consistent with those of many studies that have been performed in general population, such as those in Pakistan (Itrat A et al, 2008), Thailand (Koenraadt C, 2006), (van Benthem et al, 2002). Malaysia (Naing C et al, 2011) and Maldives (Nahida A et al, 2008). Higher proportions of students provided correct answers about the cause of dengue being from the bites of Aedes aegypti mosquitos and the breeding sites of dengue vectors.

It could be inferred from this study that the level of knowledge about dengue and preventive practices among the study population is rather high after the intervention programme. Knowledge of dengue, the vectors and transmission of disease should be incorporated into the school curriculum especially in areas where dengue is highly prevalent. The study has its sets of limitations mainly the possibility of interviewer bias and the drawbacks of convenience sampling. The above observations may be true only for the study population and cannot be generalized to other populations. Also, patients (among the respondents) interviewed could be expected to have better knowledge because of their multiple encounters with different health care providers or fellow patients in the waiting areas of outpatient units. Based on the study findings, we suggest that future programs should involve more aggressive health education through active involvement of health workers and community representatives as well. Mass media can also be used as a tool for community awareness. Health education programs should not only focus on providing knowledge and creating awareness but also ensure that this knowledge gets translated into practice as well.

CONCLUSION

In conclusion, closing the gaps between knowledge and preventive behaviour will remain an important challenge for the implementation of dengue control measures across people with different lifestyles and environment factors, such as housing and domestic water resources (World Health Organization, 2011). This study suggests that

proactive health education via appropriated mass media and community clean-up campaigns should strengthen and encourage community participation and specifically address mosquito larvae in overlooked places, such as flower vases and ant traps, in people's own homes.

Project managers, health planners, policy makers and local government need to apply greater effort to implementing dengue fever control measures in communities to ensure those measures are proactive and effective.

ACKNOWLEDGMENTS

We would like to thank the enthusiastic participation of the UNISEL students and the support of the UNISEL Hostel management, who facilitated the cooperation of the students of the study area. Also to the group of students of Diploma in Environmental Health who collaborated with the field work.

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