

## ORIGINAL ARTICLE

# KNOWLEDGE, ATTITUDE AND PRACTICE OF DENGUE FEVER AND HEALTH EDUCATION PROGRAMME AMONG STUDENTS OF ALAM SHAH SCIENCE SCHOOL, CHERAS, MALAYSIA

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## ABSTRACT

Dengue Fever is a major public health issue in Malaysia. This study aimed to assess knowledge, attitude and practice regarding dengue fever and effectiveness of health education programme among 204 students of Alam Shah Science School, Cheras/Kuala Lumpur. Study design was a cross sectional study followed by an interventional (pre-post) Study. The self-administered questionnaire included questions on sociodemographic factors, knowledge, attitude and practice regarding dengue fever. Majority of respondents were Malays (96.6%), monthly family income more than RM 3000 (64.6%) and lives in urban area (64.6%). There was no significant association between knowledge status and socio-demographic factors ( $p$ -value $>0.05$ ). Most of the respondents had good knowledge (63.2%) good attitudes (79.9%) regarding dengue fever. However, practices to prevent dengue was poor (74.0%). Only about one-fifth of the respondents (18.2%) believed that dengue fever is a flu-like illness. Knowledge score was significantly increased after health education programme ( $p$  value  $<0.001$ ). There is a need to increase health education activities through campaigns and mass media to increase knowledge regarding dengue fever. This would help to inculcate positive attitudes and cultivate better preventive practices among the public to eliminate dengue fever in the country.

**Key words:** Dengue fever, knowledge, attitude, and practice, students, Kuala Lumpur.

## INTRODUCTION

Dengue fever is a mosquito-borne viral infection found in most tropical and subtropical areas of the world. It is a major public health problem in Malaysia. The reported number of dengue cases in Malaysia rose each year, from 7103 cases in 2000 to 49335 in 2008, an increase of nearly seven times<sup>[1]</sup>. Wan Rozita *et al.*<sup>[2]</sup> conducted a knowledge, attitude and practices (KAP) study in an urbanized residential area of Kuala Lumpur and concluded that there is a need to strengthen health promotion activities to increase the knowledge that forms the basis for preventive practices as part of the strategy to control dengue outbreaks. Other study has shown that good knowledge does not necessarily leads to good practice. This is most likely due to certain practices like water storage for domestic use, which is deeply ingrained in the community<sup>[3]</sup>.

Dengue vector control requires effective participation of the local community. Although education campaigns have increased people's awareness of dengue, it remains unclear to what extent this knowledge is put into practice, and to what extent this practice actually reduces mosquito populations<sup>[4]</sup>. This study aims to assess the knowledge, attitude, and practice of school students regarding dengue fever, as well as to

assess the effectiveness of a health education programme to improve students' knowledge.

## MATERIALS & METHODS

### Study Design and Population

The study was conducted in two phases at Alam Shah Science School. It is an upper secondary residential school established on 16 June 2003 and located at Bandar Tun Razak, Cheras/Kuala Lumpur. The first phase was a cross sectional study while the second was an interventional (pre-post) study design. Study population was students of the above-mentioned school (form 4). Their age ranged from 16-17 years old. A total sample of 204 students was selected using non-probability convenient sampling. Inclusion criteria were student from Alam Shah School, form 4, willing to participate, and who attended both days of the assessment (i.e. Pre and post). Response rate was 100%.

### Study Instruments and Data Collection

A self-administered questionnaire (in English with Malay translation) was distributed to the students who signed the consent form to participate in this programme. The validity and reliability of the questionnaire were checked. The pre-questionnaires were distributed to the students after briefing session about the whole programme.

The questionnaire consists of 4 parts: socio-demographic and personal information of the participants, knowledge of dengue fever, attitudes towards dengue fever prevention and practice regarding dengue fever prevention. Questions on knowledge, attitudes, and practices were summed, and the total score of each part was obtained. For each knowledge item, a correct answer was coded '1' and wrong answer was coded '0'. Therefore, the total knowledge scores ranged from 0 to 15. A score of 12 and above is considered good knowledge. For attitude items, a positive attitude was coded '1' and the negative attitude was coded '0'. Thus, the total scores ranged from 0 to 10. A score of 8 and above is considered good attitude. Practice items was coded '1' for 'yes' and '0' was for 'no'. The total scores ranged from 0 to 11. A score of 6 and above is considered good practice.

After answering the pre-intervention questionnaires, the participants were given a lecture by head of community medicine unit to explain dengue fever, and its microscope examination. A flex, posters, and video exhibition were used throughout the health education programme. After one month, the participants were given the post-questionnaires.

**Statistical analysis**

The data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS) Programme version 20.0. Descriptive statistics was conducted to obtain frequencies and percentages. The results were considered statistically significant at  $p < 0.05$ . Simple logistic regression was used to study the association between knowledge status and sociodemographic factors and paired t test was used to study the difference in mean knowledge score between pre and post health education programme.

**Table 2 The association between socio-demographic factors and pre-intervention knowledge status in simple logistic regression (n=204)**

Variable	Good knowledge n (%) 129 (63.2)	Poor knowledge n (%) 75 (36.8)	Crude OR (95% CI)	P-value
<b>Race</b>				
• Malay	125 (63.5)	72 (36.5)	1	0.73
• Indian	4 (57.1)	3 (42.9)	0.77 (0.17-3.53)	
<b>Living area</b>				
• Rural	45 (70.3)	19 (29.7)	1	0.16
• Urban	84 (60.0)	56 (40.0)	0.63 (0.34-1.19)	
<b>Monthly family income</b>				
• RM ≤ 3000	37 (57.8)	27 (42.2)	1	0.28
• RM > 3000	92 (65.7)	48 (34.3)	1.40 (0.76-2.57)	

**Ethical consideration**

The research and ethical committee of the Management and Science University (MSU), Shah Alam, Malaysia had approved the study (ref. No. SG-251-1114-IMS). A written consent was obtained from the students who agreed to participate in the study.

**RESULTS**

**Socio-demographic**

Majority of the participants were Malays (96.6%) and the rest were Indians (3.4%). For sociodemographic variables, 68.6% of the participants come from high socioeconomic background whereby the family monthly income are more than RM 3000. The remaining 31.4% had an income of less than RM 3000. Regarding living area, 68.6% of the participants live in an urban area whereas 31.4% of them live in rural area.

**Table 1: Knowledge, Attitude and Practice of Dengue Fever among Form 4 Students of Alam Shah Science School, Kuala Lumpur (n=204)**

VARIABLES	GOOD n (%)	POOR n (%)
Knowledge	129 (63.2)	75 (36.8)
Attitude	163 (79.9)	41(20.1)
Practice	53 (26.0)	151 (74.0)

**Factors affecting knowledge**

Simple logistic regression was performed in the bivariable analysis and was demonstrated by OR (95% CI) and  $p$  value. The association of race, living area and family monthly income with knowledge status was not statistically significant as shown in Table 2.

**Effect of the educational programme**  
 Paired t test was conducted to study knowledge score difference between pre and post health

education programme and it was significant (p < 0.001) as shown in Table 3.

**Table 3 Knowledge score difference between pre and post health education programme (n=204)**

Variables	Pre-HEP knowledge score Mean (SD)	Post-HEP knowledge score Mean (SD)	Mean score difference (95% CI)	t-statistic (df)	P value <sup>1</sup>
Knowledge	11.95 (1.43)	12.61 (1.26)	- 0.66 (-0.87,0.54)	-6.2 (203)	<0.001

<sup>1</sup> paired t test

**DISCUSSION**

**Knowledge**

The study showed that 63.2% of students have a good level of knowledge about dengue fever while 36.8% of students have moderate to poor level of knowledge. In this study, it was reported that 93.6% of students have good knowledge on the

mode of the transmission (A vector borne disease by the mosquito, *Aedes aegypti*). Our result was similar to other research from Malaysia which was conducted by Al-Dubai *et al.*<sup>[1]</sup>, and the data revealed that 97.7% of respondents mentioned mosquito *Aedes aegypti* as a cause of dengue and similar results were found in other study<sup>[5]</sup>.

**Table 4 Knowledge of dengue fever; number and percentage of respondents who answered the items correctly (N=204)**

No.	Statement	Responses	n (%)	Correct answer n (%)
B1	Dengue fever is caused by the mosquito; <i>Aedes aegypti</i>	Yes*	191 (93.6)	191 (93.6)
		No	13 (6.4)	
B2	Life cycle of the Aedes mosquito is one week	Yes*	172 (84.3)	172 (84.3)
		No	32 (15.7)	
B3	Stagnant water is the main source for mosquito breeding	Yes*	201 (98.5)	201 (98.5)
		No	3 (1.5)	
B4	Dengue fever affects all age groups	Yes*	200 (98.0)	200 (98.0)
		No	4 (2.0)	
B5	Dengue epidemics start during hot weather	Yes	53 (26.0)	151 (74.0)
		No*	151 (74.0)	
B6	Dengue is a flu-like illness	Yes*	38 (18.6)	38 (18.6)
		No	166 (81.4)	
B7	Chills and high fever, intense headache, muscle and joint pains are the most common presentation of dengue fever	Yes*	196 (96.1)	196 (96.1)
		No	8 (3.9)	
B8	Dengue fever can be transmitted by direct blood contact	Yes	69 (33.8)	135 (66.2)
		No*	135 (66.2)	
B9	Transmission cycle is “Man-Mosquito-Man”	Yes*	106 (52.0)	106 (52.0)
		No	98 (48.0)	
B10	Mosquitoes transmitting dengue only bites in the early morning	Yes	23 (11.3)	181 (88.7)
		No*	181 (88.7)	
B11	Control of dengue is by combating the breeding of mosquitoes	Yes*	200 (98.0)	200 (98.0)
		No	4 (2.0)	
B12	‘Abate’ can be beneficial in killing mosquitoes larvae	Yes*	195 (95.6)	195 (95.6)
		No	9 (4.4)	
B13	There is a vaccine for dengue fever	Yes	73 (35.8)	131 (64.2)
		No*	131 (64.2)	
B14	Paracetamol (Panadol®) is the drug of choice for dengue treatment	Yes	20 (9.8)	184 (90.2)
		No*	184 (90.2)	
B15	Do I have to worry if one of my family members was diagnosed to have dengue fever a year ago?	Yes	47 (23.0)	157 (77.0)
		No*	157 (77.0)	

\*Correct response

When the knowledge scores were analyzed, it was observed that 98.0% of students answered correctly that by combating the breeding of

mosquitoes could control dengue fever. This result is similar with a study by Al-Dubai *et al* <sup>[1]</sup>, which showed that 89.3% of respondents believed so.

However, 81.4% of students did not realize that dengue is a flu-like illness. This is found to be inconsistent with the study findings from Sami *et al*, 2013 which showed that 70% of respondents agreed that dengue is a flu-like illness. Even

though 89.3% of the respondents agreed that eliminating the mosquito breeding sites would control the outbreak of dengue, only third of them believed that combating larvae is a waste of time.

**Table 5 Attitude of dengue fever; number and percentage of respondents who answered the items correctly (N=204)**

No.	Statement	Responses n (%)		Correct answer n (%)
		Agree	Disagree	
C1	I am afraid of dengue fever	186 (91.2)*	18 (8.8)	186 (91.2)
C2	Dengue is a serious illness	197 (96.6)*	7 (3.4)	197 (96.6)
C3	Dengue fever cannot be prevented	12 (5.6)	192 (94.1)*	192 (94.1)
C4	I am at risk of getting dengue	116 (56.9)*	88 (43.1)	116 (56.9)
C5	It is not necessary to seek immediate treatment for dengue fever as there is no cure for it	11 (5.4)	193 (94.6)*	193 (94.6)
C6	The public has the most important role in dengue control	192 (94.1)*	12 (5.9)	192 (94.1)
C7	It is not the responsibility of the public health staff and local government in the prevention of dengue	163 (79.9)	41 (20.1)*	41 (20.1)
C8	Fogging is not essential enough for prevention of dengue	170 (83.3)*	34 (16.7)	170 (83.3)
C9	Elimination of larvae breeding is a complete waste of time	4 (2.0)	200 (98.0)*	200 (98.0)
C10	There is a high chance for dengue to spread in the future	180 (88.2)*	24 (11.8)	180 (88.2)

\*Correct response

**Attitude**

Although, the study showed that around 80% of the participants had good general attitude towards dengue, only half of them answered the question that they are at risk of getting dengue fever

correctly and around 20.0% of them answered the question “It is not the responsibility of the public health staff and local government in the prevention of dengue” correctly.

**Table 6: Practice dengue fever; number and percentage of respondents who answered the items correctly (N=204)**

No.	Statement	Responses n (%)		correct answer n (%)
		Yes	No	
D1	Do you practice covering water jars at home?	174 (85.3)	30 (14.7)	174 (85.3)
D2	Do you cover water tanks at home?	191 (93.6)	13	191 (93.6)
D3	Do you regularly inspect refrigerator tray?	102 (50.0)	102 (50.0)	102 (50)
D4	Do you examine mosquito larvae both indoors and outdoors?	106 (52.0)	98 (48.0)	106 (52)
D5	Do you practice draining water from flower pot?	139 (68.1)	65 (31.9)	139 (68.1)
D6	Do you examine any discarded material that may hold water? Eg: car tyres, empty bottles	128 (62.7)	76 (37.3)	128 (62.7)
D7	Do you use mosquito net or mosquito coil at home?	96 (47.1)	108 (52.9)	96 (47.1)
D8	Do you use mosquito repellent?	178 (87.3)	26 (12.7)	178 (87.3)
D9	Do you participate in community cleaning activities?	151 (74.0)	53 (26.0)	151 (74)
D10	Do you participate in community fogging in your area?	70 (34.3)	134 (65.7)	70 (34.3)
D11	Do you use temephos, eg: Abate® to eliminate of mosquito larvae?	93 (45.6)	111 (54.4)	93 (45.6)

### Practice

Even though the study showed that a total of 74.0% of students have poor practices towards dengue fever, the majority of the students (93.6%) cover water tanks at home. This is a good sign that they do take actions to reduce the mosquitoes breeding sites. Only 34.3% of the students are involved in the community fogging in their housing area. Half of the respondents practice inspection of the refrigerator tray regularly as well as 50.0% inspect mosquito larvae indoors and outdoors. Less than half of them used mosquito net or coil at home and use abate to eliminate mosquito larvae.

### Association between knowledge and race

The study showed that there was no significant association between knowledge status and race ( $p$ -value 0.73). This result can be explained by the fact that 97.0% of our respondents were Malays so our sample does not represent all the races.

### Association between knowledge and socioeconomic status

This study showed that there was no significant association between knowledge status and socioeconomic status ( $p$ -value 0.16). This is in contrary to a study conducted previously which reported that there was a significant correlation between knowledge and socioeconomic status ( $p=0.02$ )<sup>[6]</sup>.

### Association between knowledge and living area

Localities of students were not affecting their knowledge status as the relationship between localities and knowledge status was not significant ( $p=0.156$ ). This finding was inconsistent with a study conducted in India that showed 70.4% of respondents in urban area had sufficient knowledge on dengue fever when compared to only 29.6% in the rural area<sup>[7]</sup>.

### The effect of the health education programme on knowledge of dengue fever

There was a significant increase in the mean score of knowledge after the conduction of the health education programme ( $p$  value < 0.001).

### CONCLUSION

This study has shown that the students were aware about dengue fever (more than 60.0%). However, there was a lack of concern about the importance of dengue control and the impact of dengue outbreak in the community. It is shown by their poor practice on dengue prevention. More practical health education programmes should be organized. It will give more benefits and exposure about the effect of good practice towards dengue fever prevention.

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