ORIGINAL ARTICLE

Knowledge, Attitude and Practice on Dengue Fever Prevention Among Communities in Mutiara Ville, Cyberjaya

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ABSTRACT

Introduction: Since Malaysia is still in the dengue endemic state, it is important that the relevant health authority to take immediate action to control any outbreak. Dengue disease is a habitual problem, so, the purpose of this study is to assess dengue fever preventive insight, point of view, and action in the population of Mutiara Ville, Cyberjaya, Selangor. **Methods:** A cross-sectional study (N=231) with convenience sampling was done in the public community of Mutiara Ville, Cyberjaya, using a questionnaire that cover sociodemographic characteristics, knowledge, attitude, and practice of dengue prevention. Factors that associate with practice on dengue fever prevention were determine using multiple logistic regression, with the p-value less than 0.05 considering it is significant statistically, and findings were presented using adjusted odds ratio. All the analyses were achieved using licensed SPSS version 26. **Results:** A total of 96.8%, 97.0% and 74.5% of the interviewee shows good knowledge, attitude as well as practice on dengue respectively. After adjustment for demographic factors and other variables, the chances of having good practice was higher among age group of ≥40 (OR= 3.91; CI: 1.10,13.90) than the age group of <40. However, it was found that people with good knowledge of dengue were unlikely to have good practice about dengue fever prevention (OR = 0.035; CI: 0.003,0.43). **Conclusion:** Although knowledge and attitude on dengue were good, the practice of dengue prevention can be improved. Age and knowledge status were significantly related with the practice of dengue prevention.

Keywords: Knowledge, Attitude, Practice, Dengue prevention, Cyberjaya

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INTRODUCTION

Dengue fever is spread to human by female mosquitoes either Aedes albopictus or Aedes aegypti that have been infested with the dengue virus (1). These type of mosquitoes are observed to have a feeding period in the daytime where occasionally a single mosquito will bite multiple victims. According to a study conducted in Thailand's rural areas, up to 81 percent of dengue's bites occurred during the rainy season and mostly among people who are living in the same household (2). Dengue fever is a disease that manifested by symptoms of fever associated with muscle ache, joint ache, rash, nausea, vomiting, and headache (1).

Globally, dengue fever is the biggest contributor to the number of deaths recorded among arbovirus diseases. It is noted that over a third of the world's population have been somewhat affected by dengue fever (3). Dengue fever continues to be a major health problem in Asia, with Southeast Asia, the tropical and warmer region of the continent, reporting greater yearly dengue cases, mortality and morbidity rates. (4). Around 50-100 million dengue cases reported per year are predicted worldwide from 1990 to 2013 (5). Dengue fever is a disease that poses a greater economic threat to Southeast Asia than typical upper respiratory tract illnesses or Japanese encephalitis (6).

In Malaysia, dengue fever is claimed as one of the most significant infectious diseases, exceeding HIV/AIDS and TB in terms of prevalence. (6). Selangor, out of all Malaysian states, has the largest number of dengue cases each year, accounting for about half

of all dengue cases in the country, with 62,867 and 51,652 instances in 2015 and 2016, respectively (7). In 2017, it is noted that there were about 83,374 dengue cases recorded in Malaysia and more than half (n = 45,026, 54%) number of cases had occurred in Selangor (8) . The state of Selangor has the greatest population density in Malaysia, and it is thought that people's behaviour is regarded to have a substantial impact on dengue spread, as mosquito control in each individual house is critical to prevent the disease (9). In Sepang district where Cyberjaya is located, the monthly dengue cases reached a peak of 201 in October 2013 (10).

Knowledge , attitude and practice study is useful in determining the level of understanding and reaction of the community in a given area to a disease, as well as helping analysts in identifying the elements that contribute to the disease's spread (11). It was necessary to examine community health behaviour in order to comprehend dengue virus infection and its vectors' knowledge, attitude, and practice (KAP) because the number of illnesses is growing on a yearly basis. In Malaysia, from 2000 to 2014, dengue cases increased from 7,103 to 108,698 (12). Nonetheless, knowledge, attitudes, and behaviours against Aedes mosquito-borne illnesses can be improved via inclusive involvement and adequate design and execution of educational interventions among Malaysian community members (13).

The survey consists of three sections of evaluation which are knowledge, attitude, and practice, where each section is divided and evaluated individually before the overall mark is recorded. Knowledge measures the overall understanding of this disease. This gives a general summary of a given population's level of understanding about the disease. Attitude evaluates how the people react towards the disease. It tells about their view of the disease, and how they would respond if the disease affected them or anyone around them. Practice determines the participants' daily routines for disease prevention. By carrying out studies relating to an infectious disease, the assessment of the 3 factors helps to provide an estimate of the magnitude of the actual situation among the larger population as well as to test some hypotheses of how knowledge, attitude and practice of a community is contributed towards the spread of infectious disease.

Studies done by Mohammad have suggest that to some extent the degree of humans involvement is significantly linked to the prevention and the spreading of dengue (11). A dengue outbreak is an area where two or more dengue cases occur within a 200-meter radius of the index case within 14 days of the index case notification date (14).A dengue hotspot is defined as when a dengue outbreak has occurred in greater than 30 days, while an invalid hotspot region is defined as one where there has been no dengue epidemic for more than 30 days (14). Hotspot analysis shows that the dengue cases in the year 2016-2019 were clustered and concentrated at the main urban area of the study site. If rapid population growth and continued urbanization continue as predicted, the rate, frequency, geographical distribution, and severity of dengue epidemics will increase gradually in the future (15). With Cyberjaya being considered as an urban area on top of one of Selangor's hotspot regions, comparing the knowledge, attitude and practice in Mutiara Ville, Cyberjaya is the major objective of our study.

MATERIALS AND METHODS

This is a cross-sectional study. This research was conducted within 1 year duration from 5th February 2020 to 5th January 2021. The sample population were residents of Mutiara Ville Condominium Cyberjaya, Sepang, Selangor, aged 18 years old and above while for exclusion criteria were mentally restriction, handicapped, hearing-impaired, or speaking disability residents. The non- respondent was residents who were unable to give consent after 3 approaches.

The sample frame was all households in Mutiara Ville and the sampling unit was individuals who fulfilled all the inclusion and exclusion criteria from the sampling frame of Mutiara Ville and voluntarily to be involved in the survey. The overall sample size needed to meet the objectives of our research was 216 (the number of sample size needed in this study has been calculated using the Cochran formula) at a 95% confidence interval, inflated by 10% to account for nonrespondents and incomplete responses. To obtain our sample size, we had used prevalence of good knowledge from previous studies with 53.2% (16). The convenience sampling method was used.

The written consent was obtained. The respondents were assured on the anonymity and confidentiality of the collected information. All the respondents have the choice whether or not they want to take part in this study.

Data included were sociodemographic characteristics such as age, gender, ethnicity, marital status, educational level, employment status, and monthly income. Other data included were dengue history, knowledge, attitude, and practice in preventing dengue. In reference to knowledge, 18 items were measured including the signs and symptoms, transmission, treatment, and prevention of dengue. The right answer was given 1 point and the incorrect answer was 0. The maximum score was 18 and the minimum was 0. The total score then converted to

dichotomous, good and poor based on the mean score as the cut-off point (16)(17). Whoever scored the same or higher point compared to the cut-off point will be considered as having good knowledge while lower than the cut-off point will be considered as poor knowledge. For the attitude component, this questionnaire contained 6 items of yes/no with the "Not sure" classification in every inquiry. Satisfactory good attitude feedback by respondents were awarded by 1 point and negative feedback as 0 point, giving the maximum score of 6 and the minimum of 0. The same mean score was used as the cut-off point for good and poor attitude. For practice domain, each feedback that participants perform to eliminate larvae and avoid mosquitoes counted as 1 point, giving the maximum score of 6 points. There were 6 questions for practice and the mean score of the population was used as the cut-off point for good and poor practice.

Frequency and percentage were used to describe categorical data. Chi-square as in Table V was conducted to determine bivariate association between independent and dependent variables. Independent variables included age, race, gender, educational level, marital status, socioeconomic status, employment status, history of dengue, knowledge and attitude of dengue prevention, meanwhile the dependent variable was practice. Some variables were re-categorized for easier interpretation, namely age (<40 vs ≥40); education level (no education, primary and secondary education vs tertiary education); socioeconomic status (<RM1000 vs RM1000-RM2999 vs >RM3000); and employment status (student vs employed vs unemployed). Variables with statistically significant association (p value< 0.25) in bivariate analysis were subsequently chosen to be included in the final analysis. Factors associated with practice were described using multivariable logistic regression, with the p value < 0.05 considered statistically significant. The findings were presented using adjusted odds ratio.

ETHICAL REFERENCE

This survey was approved by Research Ethics Committee, Faculty of Medicine University Of Cyberjaya , Manuscript ID MJMHS-2021-0429

RESULTS

Sociodemographic characteristics of Mutiara Ville residents

There was a total of 231 respondents in this study. As shown in Table I, majority of them were male (55.8%), in the age group of 19-29 (69.7%), Malay (54.5%), single (76.2%), having tertiary education level (84.0%), and were students (56.7%). 50.6% of the respondents had a monthly income of less than RM1000 followed by RM1000 to RM2999 at 21.6%. With regards to dengue history, 72.7% of respondents never had dengue before.

Table I : Sociodemographic characteristics of Mutiara Ville residents

Age group	≤18	8 (3.4)
	19-29	161 (69.7)
	30-39	24 (10.4)
	40-49	21 (9.1)
	50-59	15 (6.5)
	≥60	2 (0.9)
Gender	Male	129 (55.8)
	Female	102 (44.2)
Ethnicity	Malay	126 (54.5)
	Chinese	59 (25.5)
	Indian	46 (19.9)
Marital status	Single	176 (76.2)
	Married	39 (16.9)
	Divorcee/Widow	16 (6.9)
Educational status	No education	4 (1.7)
	Primary Education	8 (3.5)
	Secondary Education	25 (10.8)
	Tertiary Education	194 (84.0)
Employment status	Employed	57 (24.7)
	Self-employed	24 (10.4)
	Unemployed	19 (8.2)
	Student	131 (56.7)
Monthly income (RM)	<RM1000	117 (50.6)
	RM1000- RM2999	50 (21.6)
	RM3000-RM4999	26 (11.3)
	RM5000-RM6999	28 (12.1)
	≥ RM7000	10 (4.3)
Dengue history	Had dengue before	63 (27.3)
	Never had dengue before	168 (72.7)
Total		231 (100)

Table II : Knowledge on dengue and dengue prevention among Mutiara Ville residents

Knowledge Items	Yes, n (%)	No, n (%)	Not Sure, n (%)	Total, n (%)
Dengue fever is a viral disease spread by the bite of the mosquito Aedes aegypti or Aedes Albopictus.	211 (91.7)	8 (3.5)	11 (4.8)	230 (100)
A person can be infected with dengue fever more than once.	192 (83.1)	11 (4.8)	28 (12.1)	231 (100)
Dengue fever is a severe flu-like illness, which affects infants, children and adults.	191 (82.7)	27 (11.7)	13 (5.6)	231 (100)
The rainy season is the only season outbreak of dengue infection.	80 (34.8)	126 (54.8)	24 (10.4)	230 (100)
High fever is a symptom of dengue.	221 (95.7)	3 (1.3)	7 (3)	231 (100)
Cough is a symptom of dengue.	109 (47.2)	85 (36.8)	37 (16)	231 (100)
Sore bones, muscles and joints are symptoms of dengue.	211 (92.1)	2 (0.9)	16 (7)	229 (100)
Pain in the back of the eye is a symptom of dengue.	177 (77)	11 (4.8)	42 (18.2)	230 (100)
Vomit is a symptom of dengue.	171 (74.4)	24 (10.4)	35 (15.2)	230 (100)
Less appetite is a symptom of dengue.	175 (76.0)	19 (8.3)	36 (15.7)	230 (100)
Rash is a symptom of dengue.	180 (77.9)	21 (9.1)	30 (13)	231 (100)
Aedes breed in stagnant clear water from old tires, trash cans and flower pots.	216 (93.5)	2 (0.9)	13 (5.6)	231 (100)
Dengue viruses transmitted to humans by the bite of female Aedes mosquitoes that have been infected.	204 (89.1)	6 (2.6)	19 (8.3)	229 (100)
The only method of controlling dengue virus infection is to combat the vector mosquitoes (Aedes).	180 (77.9)	29 (12.6)	22 (9.5)	231 (100)
Killer larvae can be beneficial in killing mosquito larvae.	189 (82.5)	8 (3.5)	32 (14)	229 (100)
Container or drinking water tank without lid should be cleaned every seven (7) days.	200 (87)	7 (3)	23 (10)	230 (100)
Insecticides such as (Shieldtox, Ridsect, etc) can kill adult mosquitoes.	197 (85.7)	5 (2.1)	28 (12.2)	230 (100)

Table III : Attitude items on dengue and dengue prevention among Mutiara Ville residents

Attitude items	Yes n (%)	No n (%)	Not sure n (%)	Total n (%)
The only method of controlling or preventing dengue is to eliminate Aedes mosquitoes.	169 (73.5)	46 (20)	15 (6.5)	230 (100)
Everyone has a chance to dengue virus.	213 (93)	8 (3.5)	8 (3.5)	229 (100)
If I experience signs and symptoms of dengue fever, I would immediately see a doctor	211 (91.3)	13 (5.6)	7 (3)	231 (100)
I feel scared when infected with dengue fever.	192 (83.1)	28 (12.1)	11 (4.8)	231 (100)
You are the key individuals in preventing dengue.	212 (92.2)	14 (6.1)	4 (1.7)	230 (100)
All dengue patients have a chance for a full recovery.	208 (90)	10 (4.3)	13 (5.6)	231 (100)

Knowledge on dengue and dengue fever prevention

Out of 218 respondents, 96.8% had good knowledge on dengue and dengue fever prevention. In Table II, most respondents knew that mosquito aedes aegypti or aedes albopictus bites give rise to the viral disease called dengue fever where 91.7% gave the correct answer. 83.1% of the respondents agreed that dengue fever can infect the same person more than one time. Most of them answer correctly (82.7%) for the statement that a severe-flu-like disease that infects adults, children and even infants is called dengue fever. Nevertheless, the majority of them (54.8%) think that the outbreak of dengue infection only occurs during the rainy season. The respondents have good knowledge on dengue symptoms (high fever, sore bones, muscle and joints, back of the eye pain, vomiting, loss of appetite , skin rashes and headache) where 77.0% to 95.7% responded with the right answer. Yet, 47.2% of respondents think that cough is a symptom of dengue. For dengue breeding ground, majority of the respondents gave the correct answer (93.5 %) that is stagnant and clear water from flower pots,trash cans and old tyres. For the transmission of dengue virus, 89.1% gave the right answer, where people can get it from the bite of a female aedes mosquito that has been infected. The best way to avoid dengue virus infection is to kill the vector mosquitoes (77.9%); eliminate larvae is beneficial in destroying mosquito larvae (82.5%); containers or cisterns without closure must be washed every seven (7) days (87%); pesticides such as (Shieldtox, Ridsect, etc) will terminate adult mosquitoes (85.7 percent).

Attitude on dengue and dengue prevention

97.0% of respondents had a good attitude on dengue and dengue prevention. Majority of the respondents (93%) agreed that everyone has a chance to get dengue virus and would immediately see a doctor if they experience signs and symptoms of dengue fever (91.3%). 73.5 % of respondents agree the only effective way to contain or prevent the outbreak of dengue fever is by eradicating the aedes mosquito. 83.1% of the respondents feel scared when infected with dengue fever. The respondents acknowledged that they are the key individuals in preventing dengue. For chances of full recovery among all dengue patients, 90% of respondents agree with this statement. (Table III)

Practice on dengue and dengue prevention

Only 74.5% respondents found to have good practice on dengue fever prevention whereas 25.5% found to have poor practice. After utilising the water container, the majority of responders (78.3%) promptly close it. Also, if aedes mosquito larvae are present in the water container ,77.9% of the respondents will do something to get rid of it. 60.2% of respondents change the water plant containers every week. 65.8% of the respondents will check whether their waste or garbage can block the flow of water around their house. However, only 48.9% of the respondents who had taken part in a dengue-infection programme while 45% did not join and 6.1% are not sure of it. Also during rainy season, only 58% of the respondents will check and clean the drains or gutters roof (Table IV).

Table IV : Practice items on dengue and dengue prevention among Mutiara Ville residents

Practice items	Yes n (%)	No n (%)	Not sure n (%)	Total n (%)
Do you immediately close the water container after using it?	181	42	8	231
	(78.3)	(18.2)	(3.5)	(100)
If there are Aedes mosquito larvae in the water tank, have you done anything to get rid of it ?	180	41	10	231
	(77.9)	(17.6)	(4.3)	(100)
Do you change the water plant containers in the house every week?	139	74	18	231
	(60.2)	(32.0)	(7.8)	(100)
Did you check the waste/garbage can block the flow of water around your home?	152	67	12	231
	(65.8)	(29.0)	(5.2)	(100)
Do you participate in any of the dengue infection campaign in your area?	113	104	14	231
	(48.9)	(45)	(6.1)	(100)
Did yo check and clean the drain/gutters roofs of the rainy season?	134	78	19	231
	(58.0)	(33.8)	(8.2)	(100)

Table V : Factors associated with dengue practice using chi square table

Variable	Poor practice n (%)	Good practice n (%)	Total	X^2 (df)	P value
Age					
<40	47(24.0)	149(76.0)	196	1.659	0.210
≥40	12(34.3)	23(65.7)	35		
Race					
Malay	28(22.2)	98(77.8)	126	1.641	0.440
Chinese	17(28.2)	42(71.2)	59		
Indian	14(30.4)	32(69.9)	46		
Gender					
Male	33(25.6)	96(74.4)	129	0.000	0.987
Female	26(25.5)	76(74.5)	102		
Educational level					
No education, primary & secondary education	11(29.7)	26(70.3)	37	0.406	0.524
Tertiary education	48(24.7)	146(74.5)	194		
Marital status					
Single	44(25.0)	132(75.0)	176	0.976	0.614
Married	12(30.8)	27(69.2)	39		
Divorced	3(18.8)	13(81.3)	16		
Socioeconomic status					
<RM1000	27(23.1)	90(76.9)	117	0.931	0.628
RM1000-RM2999	15(30.0)	35(20.3)	50		
≥3000	17(26.6)	47(73.4)	64		
Employment status					
Student	36(27.5)	95(72.5)	131	7.124	0.028
Employed	23(28.4)	58(71.6)	81		
Unemployed	0(0)	19(100)	19		
History of dengue					
Yes	20(31.7)	43(68.3)	63	1.754	0.185
No	39(23.2)	129(76.8)	168		
Knowledge					
Good	6(85.7)	1(14.3)	7	13.651	<0.001
Poor	50(23.7)	161(76.3)	218		
Attitude					
Good	4(57.1)	3(42.9)	7	3.681	0.055
Poor	55(24.9)	169(74.1)	221		

Table VI : Factor associated with practice on dengue prevention using multiple logistic regression

Variables	B	S.E	Wald	df	Sig	Adjusted OR	95% C.I. for EXP(B)	
							Lower	Upper
Age								
Less than 40						1.00		
More than 40	1.365	0.647	4.454	1	0.035	3.914	1.102	13.902
Employment status								
Student			1.963	2	0.375	1.00		
Employed	-21.066	8994.150	0.000	1	0.998	0.000	0.000	
Unemployment	-20.121	8994.150	0.000	1	0.998	0.000	0.000	
History of dengue								
Had dengue						1.00		
Never had dengue	-0.453	0.363	1.561	1	0.212	0.636	0.312	1.294
Knowledge								
Poor knowledge						1.00		
Good knowledge	-3.358	1.286	6.822	1	0.009	0.035	0.003	0.433
Attitude								
Poor attitude						1.00		
Good attitude	-0.402	1.295	0.096	1	0.756	0.669	0.053	8.467

Factor associated with practice on dengue prevention
Multiple logistic regression analysis showed age and knowledge were associated with practice on dengue fever prevention. Furthermore, the likelihood of having good practice was higher among the age group of ≥40 (OR= 3.91) than the age group of <40. However, it is found that people that have good dengue knowledge were unlikely to have good dengue prevention practice (OR = 0.035) (Table VI).

DISCUSSION

For more than a decade, reported dengue cases have shown an increasing trend. From 2000 to 2010, the number of dengue cases and number of deaths have increased, on average, by 14% and 8% per year respectively (18). Studies done by World Health Organization Western Pacific Region (WRPO) shows there is about 59,866 cases with 165 deaths were identified during the first half of 2015 (19). Malaysia, along with many other countries that share the same climate, is currently plagued by the dengue fever. Dengue should be taken seriously as there is no cure for it, only conservative management. It is believed that human touch play a significant part in sustaining the dengue vector and virus transmission, as Aedis aegypti, the main dengue vector, relies on humans to supply an adequate atmosphere and meal (5). So, we had organized a study to evaluate the degree of knowledge, attitude and practice on dengue fever prevention in one of the dengue hotspots, which is Mutiara Ville, Cyberjaya, Selangor.

First, communities in Mutiara Ville have a really great knowledge on dengue where 96.8% of the people have a good knowledge and know that dengue fever is transmitted through the vector Aedes mosquito. This result was comparable to previous research done in South America, 60.8% cited mosquito bite as a source of infection (20). The respondents also disclosed that they had strong knowledge of dengue fever symptoms (high grade fever, extreme headache, muscle pain, rash and vomiting), where 74.3% to 95.7% responded correctly. Another study showed most participants (80.9%) could comprehend fever as a dengue symptom and a significant proportion of the participants acknowledged headache (45.8%) and myalgia (31.1%) (21). This may suggest that dengue infections can often be differentiated from other diseases. More importantly, their ability to identify dengue fever symptoms would help them seek care from medical professionals.

The majority of the participants had a good understanding of mosquito characteristics, with 93.5 percent knows that Aedes mosquitos breed in stagnant clear water from old tyres, trash cans, and flower pots; female mosquitos are the causative agent

(89.1%); and adult mosquitos can be eradicated by insecticides (85.7 %). However, majority of the residents in Mutiara Ville did not apply the knowledge in their living environment to eliminate dengue as the findings showed only 77.9% of respondents would do something to get rid of mosquito larvae if there were to be found in the water tank. Also, those with good knowledge are not likely to practice good dengue prevention (OR=0.035,CI:0.003,0.433). This is consistent with a study done by WHO in Western Pacific Region (WRPO) in which they found that those with good dengue fever knowledge do not necessarily exhibit good practise in eliminating dengue mosquitoes (22). Also this is supported by (23) saying that it was less likely that those who are educated about dengue will practise dengue prevention. However, a study done by Affendi (24) suggest that is a person have a high awareness towards the threat posed by dengue fever, they are more likely to practice preventive measurements towards dengue. This indicates that providing awareness and influencing the self-awareness of individuals can help promote effective prevention of dengue, leading to less behaviour risk, environmental risk, as well as reducing dengue outbreaks (24).

Our research revealed no association among having good attitude with having good practice in preventing dengue fever prevention among communities in Mutiara Ville (OR=0.669,CI:0.053,8.467) and it can be correlated with study by Farizah (25) demonstrated that there was no strong evidence suggesting attitude and practice connection.

Results from this research shows that there were no association between sociodemographic factors of the respondents and practice of dengue, except for the age. Respondents with an age group more than 40 were more probably to have good practice in contrast to those less than 40 years old with p-value of 0.035 by 4 fold. Also, another study from Malaysia conducted in a semi-urban Town among the semi-urban community shows that, relative to a younger generation, the older age had good practice on preventing dengue fever (26).

Other Malaysian studies have shown that income, status of employment (27), marital status (28) and race, mainly Malay (29) have been correlated with good dengue prevention behaviour. However, our results have shown that only respondents with monthly income RM 1000-RM 2999 are likely to achieve good practice in contrast to respondents that have monthly income of less than RM1000 by 150%. This shows that only specific socio-economic status provides better access to dengue knowledge. But in Aceh, various areas have stated that socio-economic status is correlated with good practise (30).

In terms of ethnicity, Chinese and Indians were twice more favourable to achieve good practice in contrast to Malays. Nonetheless, a study conducted has shown Malays are linked with good dengue prevention practices due to majority of the respondents in this study were Malays. (29).

Our studies had shown that females in contrast to males were more expected to possess good dengue prevention practices by 130%. Comparison between previous studies and this research showed that women have very good experience relative to men in the prevention of dengue fever. This may be due to the primary role of women in house cleaning and maintenance (31).

This study also showed that those who never had dengue before were 36% less likely to have good practice for dengue fever prevention. This is in parallel to a previous study (32) reported that respondents who were affected by dengue fever displayed better practice. Generally, it is found that people are more alert and conscious if a dengue epidemic occurs in their area and would be more willing to contribute to increase their dengue vector control practice (33).

This cross sectional study done amongst the residents of Mutiara Ville was able to determine some measurements including the associations of multiple exposures and outcomes. By using cross sectional study also can get the prevalence of a disease and also the risk factor of it. However, the limitation of this study is, were using an online survey because this research was conducted during the early pandemic Covid-19 days where everyone has to stay at home. Also, Because of the short deadline for completing the study, convenience sampling is used and therefore the study may not be sufficiently representative of the entire population. However, we are minimizing the bias by gathering more sample size and verifying with more data sources and review the findings with peers and supervisor.

CONCLUSION

The overall knowledge, attitude and practice of dengue fever prevention among communities of Mutiara Ville were considered good while knowledge and age were noted to have been associated with dengue prevention practices.

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