Knowledge, Awareness, and Practice Among Students in UTHM Pagoh on Dengue Fever

Shazana Hashim[1]*****, **Nur Izzati Izni Rusli**[1],
Nurul Hidayah Ashmuni[1], **Nur Fatin Nadiah Mohd Rashidi**[1]

[1]Department of Science and Mathematics, Centre for Diploma Studies,
Universiti Tun Hussein Onn Malaysia, Hub Pendidikan Tinggi Pagoh, KM1 Jalan Panchor, 84600 Pagoh, Muar, Johor, MALAYSIA

*Corresponding Author Designation

Abstract: This technical paper is about the level of awareness, knowledge, and practice among Universiti Tun Hussein Onn Malaysia (UTHM) Pagoh students on dengue as the number of cases and death keeps increasing day by day and yet there is still no cure. Moreover, fogging has been done for every semester in Pagoh residential college. The main objective of this study is to measure the level of knowledge, awareness and practices about dengue fever among UTHM Pagoh's students as well as to analyze the relationship between them. In this paper, a cross-sectional survey among 200 diploma and degree students from UTHM Pagoh was conducted using standard questionnaires. Data collected was analyzed using multiple linear regression with the use of statistical software SPSS version 26. The result shows that the students possessed an average knowledge, awareness, and practices on dengue with a positive weak relationship between them by the result of r² which is 0.084. Further research needs to be conducted to find an effective way to increase the level of knowledge, awareness, and practices among UTHM students.

Keywords: Dengue Knowledge, Dengue Awareness, Dengue Preventive Practice, Dengue, Multiple Linear Regression, SPSS

1. Introduction

Dengue fever is a mosquito-borne tropical disease caused by the dengue virus [1]. There are two types of dengue as Hemorrhagic Dengue Fever and Dengue Shock Syndrome. Dengue virus normally spreads by female mosquitoes and comes from species Aedesaegypti mosquito [2]. The number of cases and death involving dengue keeps increasing day by day, but the cure for dengue is still being developed and tested around the world. The only way to fight this disease is to prevent it by taking preventive measures at the household, workplace, and public places [3]. Dengue virus forms are from a complex of genus Flavivirus, family Flaviviridae, and contain four antigenically related but different dengue virus serotypes (DENV-1, DENV-2, DENV-2, DENV-3, and DENV-4) [4]. Dengue viruses are transmitted from one person to another person by the Aedes aegypti mosquito [5]. Temperature is the reason for the gonotrophic cycle length. That is why warm temperature and high moisture can increase

*Corresponding author: hshazana@uthm.edu.my
2021 UTHM Publisher. All right reserved.
penerbit.uthm.edu.my/periodicals/index.php/mari

adult mosquito survival and indoors is the best site for mosquito breeding. Contributing rainfall also In Thailand, a vector control program using a local vector control was organized [7]. The Ministry of education and health joined hands in enhancing the awareness in schools by running programs about dengue prevention, getting rid of mosquito breeding sites, and the provision of immediate medical care [8]. The most effective way to overcome dengue transmission is by the unity and cooperation of every person in this world. Community participation tends to be effective and efficient control of the dengue [9]. Based on the "Thai National Dengue Prevention and Control Plan", the mobilization of the community at the level of family, community, and national level has been found effective in reducing dengue impacts to people. The study shows that the dengue virus can be controlled if community members and Government agencies work together [10].

On 15 November 2020, Malaysia has recorded 84688 total cases of dengue fever [11] while Johor has recorded 10159 cases based on The Star news since 31 October 2020 [12]. There is no dengue cases reported in Universiti Tun Hussein Onn (UTHM) Pagoh. However, the Public Health Department of Muar came every previous semester to do fogging at Pagoh college residential for preventive measures. By looking at the area of control, the college is the most suspected place that contributes to dengue problems and students play an important role to ensure dengue cases did not arise in college. This project is mainly focused on investigating the level of knowledge, awareness, and practices of UTHM Pagoh students about dengue.

2. Data Collection

This study is a cross-sectional descriptive and analytical study to assess the knowledge, awareness, and practice of dengue fever among respondents. Primary data was collected using a google form questionnaire from 200 respondents which are 100 for each diploma and degree student of UTHM Pagoh. The set of questionnaires consists of three parts which are knowledge, awareness, and practices and each part contains five questions. This questionnaire includes various types of answers such as dichotomous which is yes or no and true or false answers and a Likert scale that was developed based on the study by Isa et al in [13]. The questionnaire is distributed to the students by a social media platform which is WhatsApp.

The results from the questionnaire were analyzed using multiple linear regression tests by using SPSS software. Besides, the correlation between education level and gender were analyzed. If the P-value is less than 0.05, then we reject H0. Rejection of H0 implies that at least one regressed variable makes a statistically significant contribution. The test statistic is:

H01: There is no difference between a degree and diploma students in knowledge towards dengue.

H02: There is no difference between male and female students in knowledge towards dengue.

H03: There is no difference between a degree and diploma students in awareness towards dengue.

H04: There is no difference between male and female students in awareness towards dengue.

H05: There is no difference between a degree and diploma students in practices towards dengue.

H06: There is no difference between male and female students in practices towards dengue.

Figure 1 shows the steps of the sample and data method of this project. There are seven steps in conducting this project starting from collecting primary data which is responses from 200 respondents. The responses then were analyzed to determine the relationship between the variables by using the Correlation method and Multiple Linear Regression. The results were recorded after the data was recalculated.
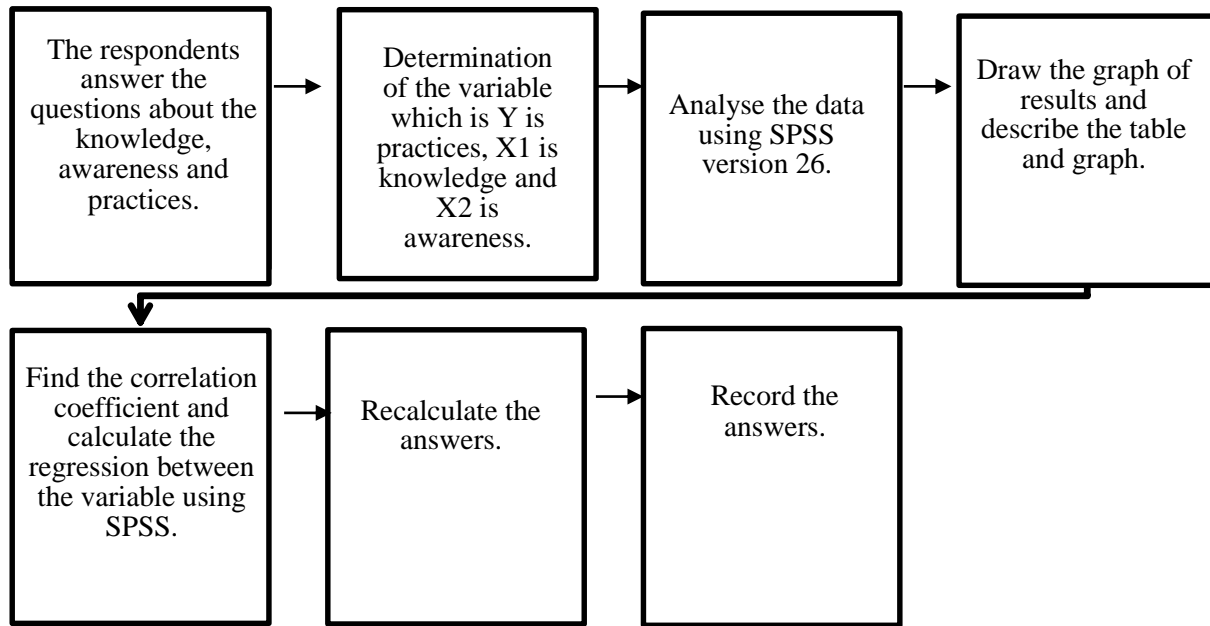
Figure 1: Steps of the sample and data's method

3. Results and Discussion

Below are the results and discussions for this study regarding the knowledge, awareness, and practices among UTHM Pagoh's students according to their gender and education.

3.1 Results

In this section, the results for knowledge among the UTHM Pagoh's student is discussed.

Table 1: Knowledge of Dengue Fever

No.	Statements	P-Value			
		Education Level		Gender	
		Degree	Diploma	Male	Female
1	Dengue fever is transmitted to a person by mosquito bites.	> 0.05		> 0.05	
2	The type of mosquito which transmitted dengue fever is Anopheles.	> 0.05		> 0.05	
3	Aedes usually actives to bite at 6 am - 8 am and 7 pm -9 pm.	> 0.05		< 0.05	
4	Aedes mosquito usually breeds in the opened water tank inside the hostel.	< 0.05		>0.05	
5	Aedes mosquitoes usually breed in the garbage around the college area.	> 0.05		> 0.05	

Table 1 shows the correlation of education level and gender regarding their knowledge of dengue. The result in the table above shows that there is no difference in all statements except for statement 4 between degree and diploma students. As shown in **Table 5** in appendix, 90% of diploma students answer correctly than degree students which only 75% for statement 4. This result indicates that diploma students know more about the potential breeding places of dengue which is an open water tank than

degree students. This is because diploma students may still have knowledge that they had learned at school regarding dengue. As we all know, schools organized a lot of dengue campaigns and programs compared to college. For gender, there are also no differences in all statements except for statement 3 between female and male students. **Table 6** in the appendix shows that 97% answer correctly for males and 88% for females in statement 3. It shows that male students know better than females about the active time of dengue. Overall, there is no difference in all statements observed between the degree and diploma students and between male and female students (P-value > 0.05).

Table 2: Awareness of Dengue Fever

No.	Statements	P-Value			
		Education Level		Gender	
		Degree	Diploma	Male	Female
1	One of the signs and symptoms of dengue fever is deep muscle and joints pain.	< 0.05		> 0.05	
2	Place all garbage that can accumulate water into the closed bin is a step to prevent dengue fever transmission during the outbreak.	< 0.05		> 0.05	
3	Let the stagnant water in the drain is another step to prevent dengue fever.	> 0.05		> 0.05	
4	Open hostel windows during the fogging process are the thing you must do during the biological/chemical prevention activities that take place.	> 0.05		< 0.05	
5	Seek immediate medical attention/treatment from the university's health center is what you need to do when you get a fever during the dengue outbreak.	< 0.05		> 0.05	

Table 2 shows the students of UTHM Pagoh's response regarding the level of awareness about dengue according to their education level and gender. Five statements were given in the awareness section and the students are required to determine whether each of the statements is correct or wrong. All of the P-Value is less than 0.05 for education level which means that there is a difference between the degree and diploma students for all statements except for statements 3 and 4. Different from education level, the P-Value of the answers according to gender are greater than 0.05 except for statement four which means that only statement four has a difference of responses between male and female students. Based on **Table 7** in the appendix, the data reveals that in response to all statements except for statement 4, students responded correctly. This result indicates that students possessed an average level of awareness about dengue. The highest correct response according to education level is from statement five which is 100% from diploma students and according to gender is 96.0% which is by a female. The wrong response in statement four shows that 57% of degree students are not aware that stagnant water is a potential breeding place for mosquitoes. This may be caused by the lack of knowledge among degree students. Statistically, there is a difference in all statements except for statements three and four according to education respondents and there is no difference in all statements except for statement four according to gender.

Table 3: Practices of Dengue Fever

No	Statements	P-Value			
		Education Level		**Gender**	
		Degree	Diploma	Male	Female
1	I changed the water in plant pot trays every week.	> 0.05		> 0.05	
2	I always covered tightly all water containers inside and outside the hostel.	> 0.05		> 0.05	
3	I allowed the health authority to fog and inspect my hostel at any time.	> 0.05		> 0.05	
4	I clean the drain from blockage weekly.	> 0.05		> 0.05	
5	I convinced my fellow friends to always put all garbage into the closed bin.	> 0.05		> 0.05	
6	I convinced my neighbors to do a weekly search and destroy any potential Aedes breeding sites outside the hostel.	> 0.05		> 0.05	

Table 3 shows the Practice of UTHM Pagoh's students to prevent dengue based on their level of education and gender. The data presented in **Table 3** is the P-Value for every sentence based on the data collected in **Table 6** and **Table 7** in the appendix section. This P-Value can determine the difference between the level of practice for education level which is the degree and diploma students and gender which are male and female students. From the result, all P-Values are more than 0.05, which means that the level of practice between education level and gender are equal. Statistically, there is no difference in all statements observed between the degree and diploma students and between male and female students (P-value > 0.05).

Table 4: Table of Correlations for Gender, Education, Knowledge, Awareness, and Practices

		Total marks (x1) (Knowledge)	Total marks (x2) (Awareness)	Total marks (y) (Practice)	Education	Gender
Total marks (x1) (Knowledge)	Pearson Correlation	1	.186**	.091	-.026	-.129
	Sig. (2-tailed)		.008	.198	.717	.069
	Sum of Squares and Cross-products	120.480	22.800	56.960	-2.000	-10.000
	Covariance	.605	.115	.286	-.010	-.050
	N	200	200	200	200	200
Total marks (x2) (Awareness)	Pearson Correlation	.186**	1	.143*	.285**	-.070
	Sig. (2-tailed)	.008		.043	.000	.327
	Sum of Squares and Cross-products	22.800	124.875	90.850	22.500	-5.500
	Covariance	.115	.628	.457	.113	-.028
	N	200	200	200	200	200
	Pearson Correlation	.091	.143*	1	.067	.162*

Total marks (y) (Practice)	Sig. (2-tailed)	.198	.043		.344	.022
	Sum of Squares and Cross-products	56.960	90.850	3225.420	27.000	65.000
	Covariance	.286	.457	16.208	.136	.327
	N	200	200	200	200	200
Education	Pearson Correlation	-.026	.285**	.067	1	.000
	Sig. (2-tailed)	.717	.000	.344		1.000
	Sum of Squares and Cross-products	-2.000	22.500	27.000	50.000	.000
	Covariance	-.010	.113	.136	.251	.000
	N	200	200	200	200	200
Gender	Pearson Correlation	-.129	-.070	.162*	.000	1
	Sig. (2-tailed)	.069	.327	.022	1.000	
	Sum of Squares and Cross-products	-10.000	-5.500	65.000	.000	50.000
	Covariance	-.050	-.028	.327	.000	.251
	N	200	200	200	200	200

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level with the awareness but it is a weak positive (2-tailed).

Based on **Table 4**, the knowledge correlated with awareness with a weak positive correlation. The P-Value is 0.008 which is less than 0.05 and the Pearson correlation is 0.186 which is in the range of 0.20 to 0.39 which indicates a weak positive correlation. The relationship between knowledge and practices have a very weak positive correlation because the significance is 0.091 in the range of 0.00 to 0.19. It means all of the students have knowledge and awareness about dengue but they did not implement the practices to prevent dengue. The awareness of dengue has a strong correlation with education level which is in the range of 0.20 to 0.39 with 0.285 and its P-Value is zero, less than 0.05 that can be concluded as a weak positive relationship.

3.2   Discussions

In short, there was a weak positive correlation between knowledge and awareness towards practices. The students might have the knowledge and awareness but they least to practice it as they become a university's student and busy with their studies. Hence, it may limit their preventive practices. Moreover, there are not many dengue-related programs organized at college compared to in school. Most of them may also think that the questions given needed to be answered according to their practices at college whereas it is a general statement that includes their practices outside of the UTHM.

4. Conclusion

In conclusion, students of UTHM Pagoh possessed an average knowledge and awareness but a low level of practices regarding dengue. The relationship between knowledge and awareness towards practices of dengue fever among students is a positive weak correlation with 0.084 r² that can be referred in **Table 8** in appendix. It means that the students have a moderate knowledge and awareness but they do not implement it. Further actions need to be taken to find effective ways to increase the level of knowledge, awareness, and practices among UTHM students about dengue fever such as providing campaigns or training regarding dengue fever.

Acknowledgment

Appendix A

Table 5: Knowledge of Dengue Fever among UTHM Pagoh's Student According to Education Level

No.	Statements	Education Level				P-Value
		Degree (%)		Diploma (%)		
		Correct Response	Wrong Response	Correct Response	Wrong Response	
1	Dengue fever is transmitted to a person by mosquito bites.	99.0	1.0	98.0	2.0	> 0.05
2	The type of mosquito which transmitted dengue fever is Anopheles.	31.0	69.0	41.0	59.0	> 0.05
3	Aedes usually actives to bite at 6 am - 8 am and 7 pm -9 pm.	92.0	8.0	93.0	7.0	> 0.05
4	Aedes mosquito usually breeds in the opened water tank inside the hostel.	75.0	25.0	90.0	10.0	< 0.05
5	Aedes mosquito usually breeds in the garbage around the college area.	92.0	8.0	85.0	15.0	> 0.05

Table 6: Knowledge of Dengue Fever among UTHMPagoh's Student According to Gender

No.	Statements	Gender				P-Value
		Male (%)		Female (%)		
		Correct Response	Wrong Response	Correct Response	Wrong Response	
1	Dengue fever is transmitted to a person by mosquito bites.	99.0	1.0	98.0	2.0	> 0.05
2	The type of mosquito which transmitted dengue fever is Anopheles.	30.0	70.0	42.0	58.0	> 0.05
3	Aedes usually actives to bite at 6 am - 8 am and 7 pm -9 pm.	97.0	3.0	88.0	12.0	< 0.05
4	Aedes mosquito usually breeds in the opened water tank inside the hostel.	79.0	21.0	86.0	14.0	>0.05
5	Aedes mosquito usually breeds in the garbage around the college area.	92.0	8.0	85.0	15.0	> 0.05

Table 7: Awareness of Dengue Fever among UTHM Pagoh's Student According to Education Level

No.	Statements	Education Level				P-Value
		Degree (%)		Diploma (%)		
		Yes	No	Yes	No	
1	One of the signs and symptoms of dengue fever is deep muscle and joints pain.	82.0	18.0	92.0	8.0	< 0.05
2	Place all garbage that can accumulate water into the closed bin is a step to prevent dengue fever transmission during the outbreak.	85.0	15.0	94.0	6.0	< 0.05
3	Let the stagnant water in the drain is another step to prevent dengue fever.	43.0	57.0	54.0	46.0	> 0.05
4	Open hostel windows during the fogging process are the thing you must do during the biological / chemical prevention activities that take place.	84.0	16.0	86.0	14.0	> 0.05
5	Seek immediate medical attention/treatment from the university's health center is what you need to do when you get a fever during the dengue outbreak.	85.0	15.0	100.0	0.0	<0.05

Table 8: ANOVA table for the level of knowledge, awareness, and practice.

ANOVA

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	80.109	2	40.054	2.509	.084[b]
	Residual	3145.311	197	15.966		
	Total	**3225.420**	**199**			

a. Dependent Variable: Total marks (y) (Practice)

b. Predictors: (Constant), Total marks (x2) (Awareness), Total marks (x1) (Knowledge)

References

[1] E. S. Paixão, M. G. Teixeira, and L. C. Rodrigues, "Zika, chikungunya and dengue: The causes and threats of new and reemerging arboviral diseases," BMJ Glob. Heal., vol. 3, 2018, doi: 10.1136/bmjgh-2017-000530.

[2] N. N. Binti Azman and S. A. Bin Abdul Karim, "Assessing Climate Factors on Dengue Spreading in State of Perak," J. Phys. Conf. Ser., vol. 1123, no. 1, p. 012026, Nov. 2018, doi: 10.1088/1742-6596/1123/1/012026.

[3] B. C. Yboa and L. J. Labrague, "Dengue Knowledge and Preventive Practices among Rural Residents in Samar Province, Philippines," Am. J. Public Heal. Res., vol. 1, no. 2, pp. 47–52, 2013, doi: 10.12691/ajphr-1-2-2.

[4] M. Jafarian, M. R. Abdollahi, and G. J. Nathan, "Preliminary evaluation of a novel solar bubble receiver for heating a gas," Sol. Energy, vol. 182, no. 1, pp. 264–277, Apr. 2019, doi: 10.1016/j.solener.2019.02.027.

[5] D. Mairiang Dumrong Zhang, Huamei Sodja, Ann Murali, Thilakam Suriyaphol, Prapat Malasit, Prida Limjindaporn, Thawornchai Finley, Russell L. ., , "Identification of New Protein Interactions between Dengue Fever Virus and Its Hosts, Human and Mosquito," PLoS One, vol. 8, no. 1, p. e53535, Jan. 2013, doi: 10.1371/journal.pone.0053535.

[6] S. B. Halstead, "Dengue Virus–Mosquito Interactions," Annu. Rev. Entomol., vol. 53, no. 1, pp. 273–291, Jan. 2008, doi: 10.1146/annurev.ento.53.103106.093326.

[7] P. Kittayapong, S. Yoksan, U. Chansang, C. Chansang, and A. Bhumiratana, "Suppression of dengue transmission by application of integrated vector control strategies at sero-positive GIS-based foci," Am. J. Trop. Med. Hyg., vol. 78, no. 1, pp. 70–76, 2008, doi: 10.4269/ajtmh.2008.78.70.

[8] S. Boonchutima, K. Kachentawa, M. Limpavithayakul, and A. Prachansri, "Longitudinal study of Thai people media exposure, knowledge, and behavior on dengue fever prevention and control," J. Infect. Public Health, vol. 10, no. 6, pp. 836–841, 2017, doi: 10.1016/j.jiph.2017.01.016.

[9]   I. A. Rather, "Prevention and control strategies to counter dengue virus infection," Front. Cell. Infect. Microbiol., vol. 7, no. JUL, pp. 1–8, 2017, doi: 10.3389/fcimb.2017.00336.

[10] A. Zahir, "Community Participation, Dengue Fever Prevention and Practices for Control in Swat, Pakistan," Int. J. MCH AIDS, vol. 5, no. 1, pp. 39–45, 2016, doi: 10.21106/ijma.

[11] "Dengue worldwide overview," *European Centre for Disease Prevention and Control*, 21-Dec-2020. [Online]. Available: https://www.ecdc.europa.eu/en/dengue-monthly. [Accessed: 03-Feb-2021].

[12] Y. X. Yun, "Johor records 10,159 dengue cases so far this year," The Star Online, 30-Oct-2020. [Online]. Available: https://www.thestar.com.my/metro/metro-news/2020/10/31/johor-records-10159-dengue-cases-so-far-this-year. [Accessed: 03-Feb-2021].

[13] A. Isa, Y. K. Loke, J. R. Smith, A. Papageorgiou, and P. R. Hunter, "Mediational Effects of Self-Efficacy Dimensions in the Relationship between Knowledge of Dengue and Dengue Preventive Behaviour with Respect to Control of Dengue Outbreaks: A Structural Equation Model of a Cross-Sectional Survey," PLoS Negl. Trop. Dis., vol. 7, no. 9, 2013, doi: 10.1371/journal.pntd.0002401.