Evaluation of Knowledge, Attitude, and Preventive Practices of Dengue among the Malaysian Population Using a Video-Aided Tool

John Kwong Siew Shia¹, Nur Anis' Yazmin Radzuan², Siti Syairah Mohd Mutalip³, Siti Nooraishah Hussi^{4*}

¹Department of Pharmacy Practice and Clinical Pharmacy, Faculty of Pharmacy, Universiti Teknologi MARA Selangor Branch, Puncak Alam Campus, 42300 Bandar Puncak Alam, Selangor, Malaysia. johnshia@uitm.edu.my
²Faculty of Pharmacy, Universiti Teknologi MARA Selangor Branch, Puncak Alam Campus, 42300 Puncak Alam, Selangor, Malaysia. anisyr14@gmail.com
^{3.4}Department of Pharmacology and Life Sciences, Faculty of Pharmacy, Universiti Teknologi MARA Selangor Branch, Puncak Alam Campus, 42300 Bandar Puncak Alam, Selangor, Malaysia.
^{3.4}Department of Pharmacology and Life Sciences, Faculty of Pharmacy, Universiti Teknologi MARA Selangor Branch, Puncak Alam Campus, 42300 Bandar Puncak Alam, Selangor, Malaysia.
³syairah@uitm.edu.my, ⁴nooraishah0352@uitm.edu.my *Corresponding Author

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Abstract: Dengue, a mosquito-borne viral disease transmitted primarily by Aedes aegypti, continues to be a significant global health threat, including Malaysia. Various programs have been implemented to reduce the population's susceptibility to dengue and curb its spread. This study aims to evaluate the knowledge, attitude, and preventive practices (KAP) related to dengue among the Malaysian population and assess the efficacy of a video-aided tool in disseminating dengue information. A cross-sectional study with random sampling was conducted from March to May 2024 involving 438 respondents. A self-administered questionnaire was distributed using the Google Forms platform. The video was utilised during the interphase of the test to implement the pre-and post-test approach. The scores were assessed based on previous studies using Bloom's cutoff point criteria. SPSS version 28.0 was used to analyse the data. Analysis of the respondents' sociodemographic data revealed that female respondents possess higher knowledge levels than males ($\chi 2 = 11.26, p < 0.001$). Pearson's correlation analysis showed a positive relationship between age and attitude toward dengue prevention (r = 0.298, p < 0.001). There was a significant positive correlation between knowledge and preventive practices (r = 0.354, p < 0.001), knowledge and attitude scores (r = 0.633, p < 0.001), and attitude and preventive practices scores (r = 0.307, p < 0.001). The paired T-test analyses suggested that the video-aided tool significantly enhanced the KAP scores of the respondents (p < 0.05). Hence, this study demonstrated the effective use of video as a knowledge transfer instrument to improve the KAP of the Malaysian population towards dengue.

Keywords: Knowledge, Attitude, Preventive Practices, Dengue, Video

1. INTRODUCTION

Dengue is a mosquito-borne viral disease transmitted through the bites of female Aedes aegypti mosquitoes. Dengue is considered the most prevalent viral disease transmitted by mosquitoes (Mashudi et al., 2022). According to Palmal et al., the number of documented dengue cases reported to the World Health Organisation (WHO) increased sixfold, rising from 505,430 in 2000 to 3,312,040 in 2015 (Palmal et al., 2023). Dengue cases have been comprehensively documented in Malaysia, a Southeast Asian country, since 1902 (Salim et al., 2021). In addition, dengue fever is regarded as the second most significant vector-borne disease in the world, surpassed only by malaria in terms of both incidence and mortality rates (Jing & Wang, 2019).

Depending on the severity of the infection, dengue can range from a moderate febrile illness to a life-threatening condition, or it may have no symptoms at all (Ministry of Health Malaysia, 2015). Based on Chen et al., dengue symptoms, when present, typically include headache, muscle pain, self-limiting fever, and a rash that lasts for five to seven days, accompanied by a decrease in white blood cells and platelets (Chen et al., 2023). However, nearly 300 million of the 390 million cases of DENV infections that occur each year have no apparent symptoms of illness (Selvarajoo et al., 2020). Due to the non-existence of specific medications or antiviral drugs to treat dengue, controlling mosquito populations has become a vital public health concern. The development of

effective treatments and vaccines within a short timeframe poses significant challenges, primarily due to the high costs, prolonged establishment periods, and drawbacks associated with vaccine development (Subramaniam et al., 2021).

Despite numerous initiatives undertaken in Malaysia to eradicate dengue, the prevalence of dengue remains high. The number of dengue cases and fatalities in 2019 surpassed those recorded in 2018 by a substantial margin, despite remarkable efforts by the health sector to manage the outbreak (Jayawickreme et al., 2021). Zaheer et al. stated that major obstacles in the dengue endemic involve the widespread misconception among local people regarding the causes and spread of dengue fever. This leaves a negative perspective of the disease among the public (Zaheer et al., 2022). Additionally, the efficacy and acceptability of conventional health education, such as posters and leaflets, in disseminating information regarding dengue may be insufficiently compelling and influential, hence leading to inadequate knowledge retention. Based on Hasanica et al., students perceive PowerPoint presentations and audio-visual resources as more favourable techniques for acquiring knowledge compared to printed materials and leaflets (Hasanica et al., 2020). Moreover, conventional methods can be costly due to production and distribution, particularly for extensive distribution purposes. According to Usman et al., dengue prevention and management rely on health education efforts (Usman et al., 2019). Nevertheless, increasing Malaysians' knowledge, attitudes, and behaviours around mosquito-borne diseases necessitate inclusive participation and wellstructured educational initiatives (Khairi et al., 2021).

2. PROBLEM STATEMENT

In an era driven by digital advancements, sole reliance on conventional methods such as posters may impose constraints on the extent of dissemination as well as the level of people's involvement. This highlights the importance of visually engaging tools for disseminating accurate information about dengue and encourages the public to adopt preventive measures daily. The incorporation of short videos is favoured for their convenience, popularity, engagement, and flexibility. Additionally, research highlights the potential of videos in enhancing individuals' understanding of health topics, promoting behavioural change, boosting confidence, and providing numerous other benefits.

3. OBJECTIVE

This study aims to explore the use of video as an effective tool in improving knowledge, attitude, and preventive practices (KAP) regarding dengue among the Malaysian population. The pre- and post-scores of the KAP were compared using descriptive and inferential statistical analyses.

4. MATERIALS AND METHODS

This study received approval from the Research Ethics Committee of Universiti Teknologi MARA (UiTM) (REC (PH)/UG/1192024 (MR)) on January 29, 2024. Respondents were required to provide consent electronically via a Google Form before the study commenced. The participation of the respondents was voluntary. The sample size required for this research was calculated using a Raosoft sample size calculator with a 95% confidence level, a 5% margin of error, and a 50% response rate. A total of 438 respondents participated in the study. The study design for this research was a cross-sectional study with random sampling. A pre-and post-test approach was conducted, and respondents were given a questionnaire via a Google Forms link. The random sampling was conducted from March to May 2024. The research was structured to gather information from respondents via bilingual questionnaires in English and Malay.

The questionnaire consisted of four sections, requiring respondents to answer queries both before and after watching an intervention video. Section A comprised seven questions that requested sociodemographic information from the respondents. Section B consisted of five questions that were adapted and self-constructed from Selvarajoo et al. (2020) based on the topic of knowledge about dengue. Section B was evaluated using three options: yes, no, and do not know. One point was awarded for each 'No' answer, and zero points were given for either 'Yes' or 'Do not know' responses. Section B had a maximum score of 5 points. The score of knowledge was graded as follows: good (5), fair (3-4), and poor (0-2) (Aung et al., 2023).

Section C contained five statements associated with attitudes toward dengue (Mustapha et al., 2023). Section D included five statements about dengue preventive practices (Mustapha et al., 2023; Ramli et al., 2022). Sections

C and D were evaluated using a 5-point Likert scale (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree). The rating scales were graded based on Bloom's cut-off point criteria as good (80% to 100%), moderate (60% to 79%), and poor (less than 60%). Prior to statistical analysis, a preliminary test was conducted to confirm the reliability of the data using Cronbach's alpha. The content validation was conducted and reviewed by three experts from the Faculty of Pharmacy, including lecturers.

The statistical analysis of the data for this research was conducted using the Statistical Package for Social Sciences (SPSS), version 28.0. The sociodemographic data of the respondents were analysed using descriptive statistics, and the findings were presented in terms of frequency and percentages. Inferential statistical tests, such as the chi-square test, paired t-test, and correlation analyses, were conducted to identify differences and associations between variables. A p-value <0.05 was considered the cut-off level for statistical significance.

5. RESULTS

A total of 438 respondents participated in this study. Table 1 summarises the socio-economic characteristics of the study sample gathered in Malaysia. The demographic profile of the respondents revealed a higher representation of females, comprising more than half of the sample (60.3%), compared to males. The age range of the respondents was between 18 and 69 years, with a mean age of 31 years. Two-fifths of the respondents (40.9%) resided in urban areas, while the remaining were from rural and suburban regions. For income, almost one-fourth of the respondents (23.5%) reported a monthly income ranging from RM1001 to RM3500. The educational background of the respondents varied, with a substantial majority holding bachelor's degrees (71.7%), while a smaller proportion reported secondary education qualifications. A notable percentage earned between RM 1001 and RM 3500 monthly (23.5%), while a smaller fraction reported incomes of more than RM 10,000 per month.

Variable	Description	n (%)
Candan	Female	264 (60.3)
Gender	Male	174 (39.7)
	18-29	255 (58.2)
A an amoun (waana ald)	30-45	99 (22.6)
Age group (years old)	46-60	79(18.0)
	61 and above	5 (1.2)
Highest education level	Secondary Education	18(4.1)
	Certificate or Diploma	74 (16.9)
	Bachelor's degree	314 (71.7)
	Postgraduate degree	32 (7.3)
	Urban	179 (40.9)
Area of living	Sub-urban	138 (31.5)
	Rural	121 (27.6)
	< RM 1000	80 (18.3)
	RM 1001- RM 3500	103 (23.5)
Monthly family income (RM)	RM 3501 - RM5000	75 (17.1)
	RM 5001 – RM 7500	68 (15.5)
	RM 7501 – RM 10000	64 (14.6)
	> RM 10000	48 (11.0)

Table 1: Sociodemographic characteristics of the study population in Malaysia

The distribution of the respondents across 14 states in Malaysia is presented in Fig. 1. Nearly one-fourth (23.3%) of the respondents came from Kelantan. In contrast, the fewest respondents were from Perlis (1%).



Fig 1. Number of study population according to the state of birth

Table 2 illustrates the relationship between gender and knowledge responses on dengue among the respondents. The Chi-square analysis demonstrated statistically significant differences in knowledge between males and females for every statement. Notably, females exhibit greater levels of knowledge than males. Only half of the respondents (55.71%) were able to respond correctly (i.e., answer 'No') to the question about the prevalence of asymptomatic and symptomatic dengue infections. Almost three-fourths (73.52%) of the population were aware of dengue transmission from infected mothers to the baby (p < 0.05). The question regarding the presence of one dengue serotype was answered correctly by most respondents (71.7%), with 31% being males and 40.6% being females (p = 0.015). Moreover, more than half of the respondents reported the absence of specific antiviral medication (with a gender difference of 6.48%). In addition, more than two-thirds (69.2%) were aware that NSAIDs should not be given to dengue patients.

Items	Options	Male n (%)	Female n (%)	Total n (%)	χ²	p-value
The symptomatic dengue infection occurs more frequently than the	Yes / I do not know	60 (13.7)	134(30.6)	194 (44.3)	11.26ª	<0.001***
asymptomatic dengue infection	No	114 (26.0)	130 (29.7)	244 (55.7)		
Dengue cannot be transmitted from the infected mother to the	Yes / I do not know	35 (8.0)	81 (18.5)	116 (26.5)	6.02ª	0.014**
baby	No	139 (31.7)	183 (41.8)	322 (73.5)		
The dengue virus is present in one serotype only (DENV-1)	Yes / I do not know	38 (8.7)	86 (19.6)	124 (28.3)	5.96ª	0.015**
	No	136 (31.0)	178 (40.6)	314 (71.7)		
Nonsteroidal Anti-Inflammatory drugs (NSAIDs) such as aspirin	Yes / I do not know	37 (8.4)	98 (22.4)	135 (30.8)	12.37ª	<0.001***
and ibuprofen can be given to a dengue patient	No	137 (31.3)	166 (37.9)	303 (69.2)		
There is a specific antiviral medication available to treat	Yes / I do not know	33 (7.5)	95 (21.7)	128 (29.2)	14.69ª	<0.001***
dengue	No	141 (32.2)	169 (38.6)	310 (70.8)		

Based on the Chi-Square Test

***Statistically significant at p-value < 0.001

**Statistically significant at p-value < 0.05

*Statistically significant at p-value < 0.01

 Table 2: Association between gender and knowledge of the respondents towards dengue statements

The attitudes toward dengue prevention among the Malaysian population were also investigated. The percentage of respondents' answers on pre- and post-scores is illustrated in Figs. 2 and 3.



Fig 2: Pre-score percentages of attitudes toward dengue prevention among target respondents



Fig 3: Post-score percentages of attitudes toward dengue prevention among target respondents

About 20.8% of the respondents strongly agreed that preventing dengue is the government's responsibility. However, the attitude changes after the video intervention, with 52.7% of them strongly disagreeing with the statement. It shows that all, including individuals, should share the responsibility for dengue prevention. Some of the respondents (27%) believed that dengue infection can only occur once in a lifetime. However, a significant increase in the percentage of disagreement with this statement (79.9%) was observed following the video intervention. Indeed, dengue infection can occur in individuals more than once in a lifetime. This highlights the effectiveness of the video in changing the respondents' attitudes.

A one-way analysis of variance (ANOVA) test was conducted to investigate occupational differences in attitude toward dengue prevention. The results indicate a statistically significant difference in attitude toward dengue prevention across occupational categories. This suggests that there are notable differences in attitude scores among individuals in various professions. Post hoc analysis of attitudes toward dengue prevention in students, self-employed individuals, employed individuals, and retired individuals revealed significant results with p < 0.001. Nevertheless, there were no differences in attitude toward dengue prevention between unemployed individuals and housewives, with p-values of 0.589 and 0.074, respectively.

Table 3 presents the frequency distribution of respondents' practices regarding dengue prevention. A total of 420 respondents (95.9%) either agreed or strongly agreed that periodic emptying or proper storage of containers is needed to prevent water accumulation, thus preventing dengue. Approximately only 19% of respondents disagreed or strongly disagreed that keeping the doors or windows open during fogging activities can help eliminate mosquitoes. Most of the respondents were aware of the use of temephos to eliminate mosquito larvae. The respondents were also informed about the importance of regularly cleaning the refrigerator and following reliable information sources to prevent and effectively eliminate dengue.

			n (%)		
Practices	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Periodic emptying or proper storage of containers to prevent water accumulation.	353 (80.6)	67 (15.3)	14 (3.2)	0 (0)	4 (0.9)
Keeping the doors or windows open during fogging activities can help reduce the number of mosquitoes.	318 (72.6)	71 (16.2)	28 (6.4)	9 (2.1)	12 (2.7)
The use of temephos (e.g., Abate®) could eliminate mosquito larvae.	320 (73.1)	81 (18.5)	31 (7.1)	3 (0.7)	3 (0.7)
Cleaning the refrigerator tray at least once a week can be effective in reducing breeding sites of mosquitoes.	333 (76.0)	75 (17.1)	21 (4.8)	5 (1.1)	4 (0.9)
Follow trusted sources of information such as the World Health Organisation (WHO) or local health authorities to obtain updates on dengue.	345 (78.8)	72 (16.4)	15 (3.4)	2 (0.5)	4 (0.9)

 Table 3: Post-evaluation frequency of respondents' practices toward dengue prevention

Furthermore, Pearson's correlation analysis revealed a significant difference between KAP, as shown in Table 4 (p < 0.001). The moderate correlation between knowledge and attitudes (r = 0.633) implies a moderate relationship between the knowledge levels of the participants and their attitudes toward dengue prevention. Conversely, there was only a weak correlation between knowledge and preventive practices, as well as between attitudes and preventive practices.

Variables	Pearson's correlation, r	p-value
Knowledge & Preventive Practices	0.354	<0.001*
Knowledge & Attitude	0.633	<0.001*
Attitude & Preventive Practices	0.307	< 0.001*

Based on Pearson's Correlation

*Statistically significant at p-value <0.001

 Table 4: Association between Dengue Knowledge, Attitude, and Preventive Practices

The paired t-test results analysis indicated significant improvements in the mean scores of knowledge, attitude, and preventive practices following the video intervention (p<0.001) (Table 5). Notably, the mean knowledge scores increased substantially from 1.06 to 3.41, signifying that most respondents had inadequate knowledge regarding dengue (0-2 range) prior to the video intervention. In addition, the video intervention exposure contributed to a significant increase in the mean knowledge score to 3.41, which is classified as fair knowledge (3-4 range).

A total of five statements were used to evaluate the respondents' attitudes. The total maximum score for attitude is 25. The mean attitude score for all respondents was 14.72 ± 4.47 in the pre-test evaluation (poor attitude). In contrast, the mean score improved to 20.11 ± 5.86 (indicating a good attitude) after the video intervention in the post-test evaluation. In addition, the mean practice score of post-evaluation was 23.29 ± 2.93 out of a maximum score of 25. The results indicate a notable improvement in practice among the respondents following the video intervention.

Criteria	Mean	4		
	Before intervention	After intervention	- t	p-value
Knowledge	1.06 ± 1.33	3.41 ± 1.88	-22.65	< 0.001*
Attitude	14.72 ± 4.47	20.11 ± 5.86	-13.75	<0.001*
Preventive Practices	20.64 ± 3.41	23.29 ± 2.93	-13.86	< 0.001*

Based on the Paired T-Test

*Statistically significant at p-value <0.001

6. **DISCUSSION**

Considering the rising number of dengue cases, educational initiatives such as the utilisation of video-aided tools are essential to educate individuals with the necessary knowledge on dengue-related information, enabling them to implement preventive measures effectively. This finding aligns with a study conducted by Dede et al. in 2023, which demonstrated an improvement in students' knowledge scores following the utilisation of a visualisation approach in health education (Dede et al., 2023). Our findings found that females were more knowledgeable about dengue treatment, transmission, and prevalence than males. In accordance with our findings, another study also concluded that females possess greater knowledge of dengue symptoms and prevention compared to males (Elson et al., 2020). The findings showed that most female respondents exhibited a strong correlation with a higher level of dengue understanding compared to males. Generally, the differences in social roles or health information-seeking behaviours influence the knowledge level of the individual. To support this, a 2018 study by Kumaran et al. revealed that 63% of women are more likely to be able to identify three or more dengue symptoms compared to males. This suggests that women's role as caregivers equips them with a higher level of knowledge about dengue (Kumaran et al., 2018).

In general, many of the respondents were aware of the vertical transmission of dengue from pregnant mothers to their babies. Individuals can reduce the risk of congenital infections by preventing mother-to-child transmission through a thorough understanding of the vertical transmission of dengue. Selvarajoo et al. (2020) emphasised the importance of raising awareness about the dangers of dengue infection during pregnancy among parents and future parents (Selvarajoo et al., 2020). The study revealed that half of the respondents were aware of the possibilities of dengue vertical transmission. Coinciding with other studies, most of the respondents acknowledged the contraindications of NSAIDs during dengue infection. The finding is consistent with current treatment guidelines that recommend avoiding these drugs due to the risk of bleeding complications in dengue infection (Koonisetty et al., 2021; Soni et al., 2023). According to the WHO, in 2024, the treatment of dengue infection mainly focuses on treating pain symptoms (Dengue & Severe Dengue, 2023). This aligns with the findings obtained, highlighting the public's acknowledgement of the absence of antiviral medication for dengue treatment. Hence, the knowledge possessed by respondents highlights the importance of preventive measures in avoiding the risk of dengue transmission. This can be overcome by raising community awareness via educational programs. As mentioned by Ahbirami & Zuharah in 2020, dengue health education has been proven to assist student in enhancing their practice level towards dengue prevention by 21% (Ahbirami & Zuharah, 2020).

The study suggested misconceptions about the recurrence of dengue infection. Many mistakenly believed that dengue can occur only once. This is in contrast to a 2024 study that demonstrates awareness of the possibility of dengue infection more than once (Soo et al., 2024). As stated by Khairun et al. in 2024, the presence of four dengue serotypes can make an individual susceptible to dengue up to four times (Khairun et al., 2023). Moreover, there was a lack of understanding of the behavioural patterns and host-seeking activities of the mosquitoes. The video-aided tool effectively improved its role in disseminating accurate information to the respondents.

The majority of the respondents were well-informed about the use of temephos (Abate) as a larvicide. Temephos demonstrated efficacy in controlling mosquito larvae, leading to a significant reduction in larval populations in the treated areas (Sivabalakrishnan et al., 2023). However, the refusal of respondents to use temephos as a dengue preventive practice is due to ignorance of its correct use or a presumption that temephos is a hazardous substance (Wan Rosli et al., 2019). This issue can be addressed by conducting a campaign specifically designed to provide precise information on the safety of temephos when used as directed. As suggested by Satriawan et al. in 2019, the recommended method for applying temephos is to use 1 gram of temephos per 10 litres of water in a container every month. The study also found the residual larvicidal impact of temephos may last for over a month, depending on water turnover rate and salinity, making this treatment beneficial (Satriawan et al., 2019). Practices

related to opening the window and door during fogging demonstrate a notable increase among respondents. This is consistent with the recommendation given by the WHO to keep windows and doors open when the fogging machine is present in their vicinity to eradicate mosquitoes that are present inside the house.

Attitude and employment position were found to be positively correlated in several studies conducted in Saudi Arabia and Malaysia (Selvarajoo et al., 2020; Hamed, 2024). Consistent with this research, we found a significant difference in dengue attitude scores across different occupational categories. This implies that exposure to dengue information varies across different occupations. Those who are working have more opportunities to learn about dengue through their jobs or social networks, which helps them comprehend the disease and possess a more positive attitude. This finding aligns with Selvarajoo et al. (2020), who assert that working individuals have higher levels of involvement in health programs and educational activities (Selvarajoo et al., 2020). The findings found that self-employed, employed, and retired individuals tend to acquire more positive attitudes than students, housewives, and unemployed individuals. Education level is identified as a contributing factor to high knowledge and attitude among respondents. Individuals with higher education levels tend to possess more knowledge and a more positive attitude. This can be supported by Haniff et al. (2023), who revealed that highly educated parents possess a favourable attitude toward dengue prevention (Haniff et al., 2023). Thus, this underscores the role of educational approaches and campaigns in improving dengue awareness, specifically among low-educated groups.

Research findings revealed a correlation between KAP of dengue, which is consistent with a previous finding from 2023 that identified the correlation between all three KAP domains (Elia-Amira et al., 2023). In this study, the moderate positive correlation between knowledge and attitude highlights the significance of education in determining an individual's attitudes toward dengue prevention. According to Wan Rosli et al. (2018), positive attitudes and cautious preventive behaviour are promoted by possessing sufficient knowledge about dengue (Wan Rosli et al., 2019). This result aligns with several recent studies that have focused on the strong relationship between knowledge and attitude (Mustapha et al., 2023; Ramli et al., 2022; Ahbirami & Zuharah, 2020). Meanwhile, the minimal correlation between knowledge-preventive practices was consistent with the findings of other publications

(Mustapha et al., 2023; Ahbirami & Zuharah, 2020). This implies that a high level of knowledge is not always translated into effective preventive behaviour. However, prior studies have also reported no significant correlation between knowledge-preventive practice and knowledge-attitude (Ramli et al., 2022; Zamri et al., 2020). Additionally, the insignificant correlation between preventive practices and attitude suggests that improvements in preventive behaviour are not a direct result of a positive attitude. Nonetheless, promoting positive attitudes is essential for the effective implementation of preventive behaviours. Aligning with the Health Belief Model, it proposes that individuals tend to engage in health-promoting behaviours if they perceive the threat of the disease and believe in the effectiveness of preventive measures (Mustapha et al., 2023; Ahbirami & Zuharah, 2020; Elia-Amira et al., 2023). In contrast, no significant correlation was observed between attitude and preventive practices in other studies (Ahbirami & Zuharah, 2020; Khairun et al., 2023; Wan Rosli et al., 2019; Zamri et al., 2020).

Video-aided technologies have proven to be effective methods for educating the public on various health issues. This finding is supported by Ghozali (2023), who reported significant improvement results for respondents in the intervention group, suggesting that the video has potential as an effective tool for encouraging patients to reflect on their health issues and self-management abilities (Ghozali, 2023). The research findings suggest that the use of video can significantly enhance the knowledge, attitudes, and preventive practices related to dengue among the Malaysian population. The increase in mean scores of knowledge, attitude, and preventive practices following the video intervention can support this. Specifically, knowledge is categorised as poor, fair, and reasonable, with scores of 0-2, 3-4, and 5, respectively. Respondents demonstrated improvements in knowledge categories, transitioning from poor to fair knowledge. Hence, emphasises the effectiveness of video in disseminating vital information regarding dengue. The well-organised and engaging structure of the video enhances comprehension and retention of the content. Based on Hebert et al., the addition of visual elements, such as infographics or animations, to illustrate the concept being conveyed enables video to become an effective knowledge transfer tool (Hébert et al., 2020). In addition, the efficacy of the intervention in reaching a broad audience is enhanced by the accessibility and simplicity of disseminating videos, which contributes to the consistency of the educational initiative. This finding is substantiated by research conducted in 2022, which highlights the efficacy

of video in enhancing respondents' understanding compared to pamphlets (Md Iderus et al., 2023). Similarly, in comparison to digital alternatives, the dissemination of written guidelines is relatively ineffective in enhancing the performance of health professionals (Dagenais et al., 2021). Meanwhile, a 2023 study by Deshpande et al. emphasises the important role of video in educational initiatives (Deshpande et al., 2023). Therefore, videos can influence attitudes and practices by illustrating real-world consequences and encouraging proactive behaviour, which the text-based approach failed to achieve effectively.

7. LIMITATIONS OF THE STUDY

Despite its benefits, this study has several limitations. A bias towards females, students, and individuals from Kelantan is evident in the sample, which may potentially impact the generalizability of the results. Furthermore, participants experience hesitation and suspicion regarding data privacy due to the use of Google Forms for data collection, which could potentially affect the authenticity of their responses. Additionally, elderly individuals, who were over 61 years old, were often unfamiliar with Google Forms. They were underrepresented, resulting in a minimal response from this critical demographic, which could offer valuable insights into the KAP on dengue. Lastly, to ensure a more thorough assessment of KAP, it is recommended for future research to include participants from diverse racial backgrounds.

8. CONCLUSION

An evaluation of KAP on dengue among the Malaysian population revealed a significant knowledge difference between males and females. The utilisation of a video-aided tool successfully enhanced Malaysian KAP, demonstrating its effectiveness as one of the most effective educational approaches. This study also provides the current association between all KAP domains. Particularly, older people presented with a better attitude toward dengue prevention. Therefore, the need for early education of dengue-related information is critically important to minimise the transmission of dengue. Targeted education

should be more focused on the younger generation, as well as males, to equip them with good KAP. For instance, community-based programs such as seminars and interactive sessions designed explicitly for the targeted population should be organised frequently. This can contribute to a reduction in dengue occurrences. Hence, this study recommends the implementation of video as an educational approach to disseminate and enhance dengue awareness and practices nationwide.

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11. AUTHORS' CONTRIBUTION

Siti Nooraishah designed and organised the studies. Nur Anis' Yazmin conducted the survey and prepared the data. John Shia contributed to the analysis of the results. Siti Syairah assisted with the writing of the manuscript. All authors offered valuable feedback and contributed to shaping the research, analysis, and manuscript.

12. CONFLICT OF INTEREST DECLARATION

We certify that the article is the Authors' original work. The article has not received prior publication and is not under consideration for publication elsewhere. This research/manuscript has not been submitted for publication, nor has it been published in whole or in part elsewhere. We testify to the fact that all Authors have contributed significantly to the work, validity and legitimacy of the data and its interpretation for submission to IJELHE.

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