ISSN: 1343-4292
Volume 140, Issue 01, April, 2022

KNOWLEDGE, BEHAVIOR, AND ATTITUDES ON DENGUE FEVER: A SYSTEMATIC REVIEW

Artha Budi Susila Duarsa[1*], Aris Widiyanto[2], Asruria Sani Fajriah[3], Santy Irene Putri[4], Ayu Anulus[5], Joko Tri Atmojo[6], Domingos Soares[7], Aureo Frutalegio da Costa Freitas[8]

Faculty of Medicine, Al-Azhar Islamic University, Indonesia[1,5]
Nursing Study Program, School of Health Sciences Mamba ul Ulum Surakarta, Indonesia[2,6]
Faculty of Nursing and Midwifery, Strada Indonesia Institute of Health Sciences, Indonesia[3]
Midwifery Study Program, Tribhuwana Tunggadewi University Malang, Indonesia[4]
Faculty of Science of Health, Instituto Nacional de Saude and Instituto Superior Cristal, Timor Leste[7]
Faculty of Science of Health, Instituto Superior Cristal, Timor Leste[8]

Corresponding Author: 1*

ABSTRACT— Dengue fever is a viral disease transmitted by mosquitoes and the fastest spreading in the world. However, there is still a lack of information about knowledge, behavior and attitudes regarding the disease. The purpose of this study was to determine the relationship between knowledge, behavior and attitudes in dengue fever. This study is a systematic review and meta-analysis by searching for articles published by the online database PubMed in 2010 to 2021. The dependent variable in this study is the incidence of dengue fever. The independent variables in this study were knowledge, behavior and attitudes. A total of 25 articles met the inclusion criteria and were processed in a qualitative synthesis. Three articles explained that there was a relationship between knowledge about dengue fever and behavior in preventing and handling dengue fever, while there was 1 article explaining otherwise. Ten articles explained that there was a relationship between knowledge about dengue fever and attitudes towards preventing and handling dengue fever, while 4 articles explained otherwise. Two articles that explain that good knowledge is related to bad attitude. Four articles explain that good behavior regarding dengue fever prevention is associated with positive attitudes towards dengue fever. Two articles that explain that between 3 variables, namely knowledge. Knowledge, behavior, and attitudes about dengue fever have varied relationships, but the majority of articles explain that the 3 variables have a positive relationship that affects each other.

KEYWORDS: Knowledge, attitude, practice, and dengue fever

1. INTRODUCTION

Dengue fever is one of the mosquito-borne diseases that has the most significant impact in the world, where this disease increases the threat to humanity due to climate change and globalization [31], [40], [20], [17]. Dengue virus is a type of virus from the Aedes aegypti mosquito with the fastest transmission spread in the world. This virus causes about 390 million cases annually and puts 3.9 billion people at risk in 128 countries [37].

In tropical and subtropical countries, dengue fever is prone to endemic, especially during the rainy season, which is the breeding season for the Aedes mosquito. According to WHO, the incidence ratio of dengue seems to be decreasing due to a lack of global reporting [38]. Although many health programs have been established by the government to control and deal with the spread of dengue infection, the incidence of dengue infection continues to increase. This is because of the strong relationship between the epidemiology

and ecology of dengue fever and human behavior [41]. Factors that cause the spread of dengue disease are uncontrolled urbanization programs, population growth, and lack of prevention efforts in endemic areas [11].

Until now there is no cure for dengue fever. In 2015, the dengue vaccine Dengvaxia (Sanofi-Pasteur) was launched in the community, although it only has an efficacy rate of 60% and has a low level of protection against the DENV-2 virus. It may take several years for vaccines to be procured in low-income countries, therefore efforts to prevent the spread and control of vectors are needed [36].

Knowledge, behavior, and attitudes of the general population are very important factors in preventing dengue virus infection [4], [7]. A study in Malaysia explains that lack of knowledge on methods of preventing dengue virus transmission can increase the spread of infection [39]. The study by Rozita et al. shows the importance of increasing knowledge about the prevention of dengue virus infection to control the presence of endemic [5]. In addition, it is necessary to investigate the attitude of dengue fever patients in seeking health services [9]. Prevention and control of dengue can be achieved through appropriate preventive behaviors, such as the use of mosquito nets, mosquito repellent sprays, mosquito coils, elimination of stagnant water, and good waste management to prevent the breeding of mosquito vectors. Awareness in the community regarding the seriousness of efforts to prevent dengue is needed.

Therefore, an understanding of the knowledge, behavior and attitudes of local residents is needed to design suitable strategies in efforts to prevent and control dengue disease [19]. At this time, systematic reviews of the relationship between knowledge, behavior and attitudes towards dengue fever are still rarely carried out. Based on the description of the problem, it is necessary to conduct research to determine the relationship between knowledge, behavior, and attitudes towards the prevention and treatment of dengue fever.

2. Methods

1. Study Design

The design of this study was a systematic review.

2. Inclusion Criteria

Search articles using the PubMed online database. The articles used in this review are articles published in 2010 to 2021. In the article search process, researchers used the keywords "Knowledge, attitude, practice and dengue fever". The inclusion criteria of this study are: 1) articles that explain the relationship of knowledge, behavior and practice on the prevention of dengue fever incidence, the respective relationship between knowledge and behavior, knowledge and practice, or behavior and practice in efforts to prevent and control the incidence of dengue fever, and other determinants of knowledge, behavior, and practice in efforts to prevent and control the incidence of dengue fever; 2) original research papers. The exclusion criteria of this study are: 1) articles in languages other than English and Indonesian; 2) review papers; 3) research data is incomplete or not available.

3. Study Variables

The dependent variable in this study was the incidence of dengue fever. The independent variables in this study were knowledge, behavior and attitudes.

4. Operational Definition

Dengue fever is a disease caused by dengue virus infection through the bite of the Aedes Aegypti or Aedes Albopicutus mosquito. Knowledge is information related to dengue fever that is known to the general

ISSN: 1343-4292
Volume 140, Issue 01, April, 2022

public. Behavior is an action taken by the community in preventing and tackling dengue fever. Attitude is the opinion or assessment of people or respondents on the prevention and control of dengue fever.

3. Results

3.1 Characteristics of Research Subjects

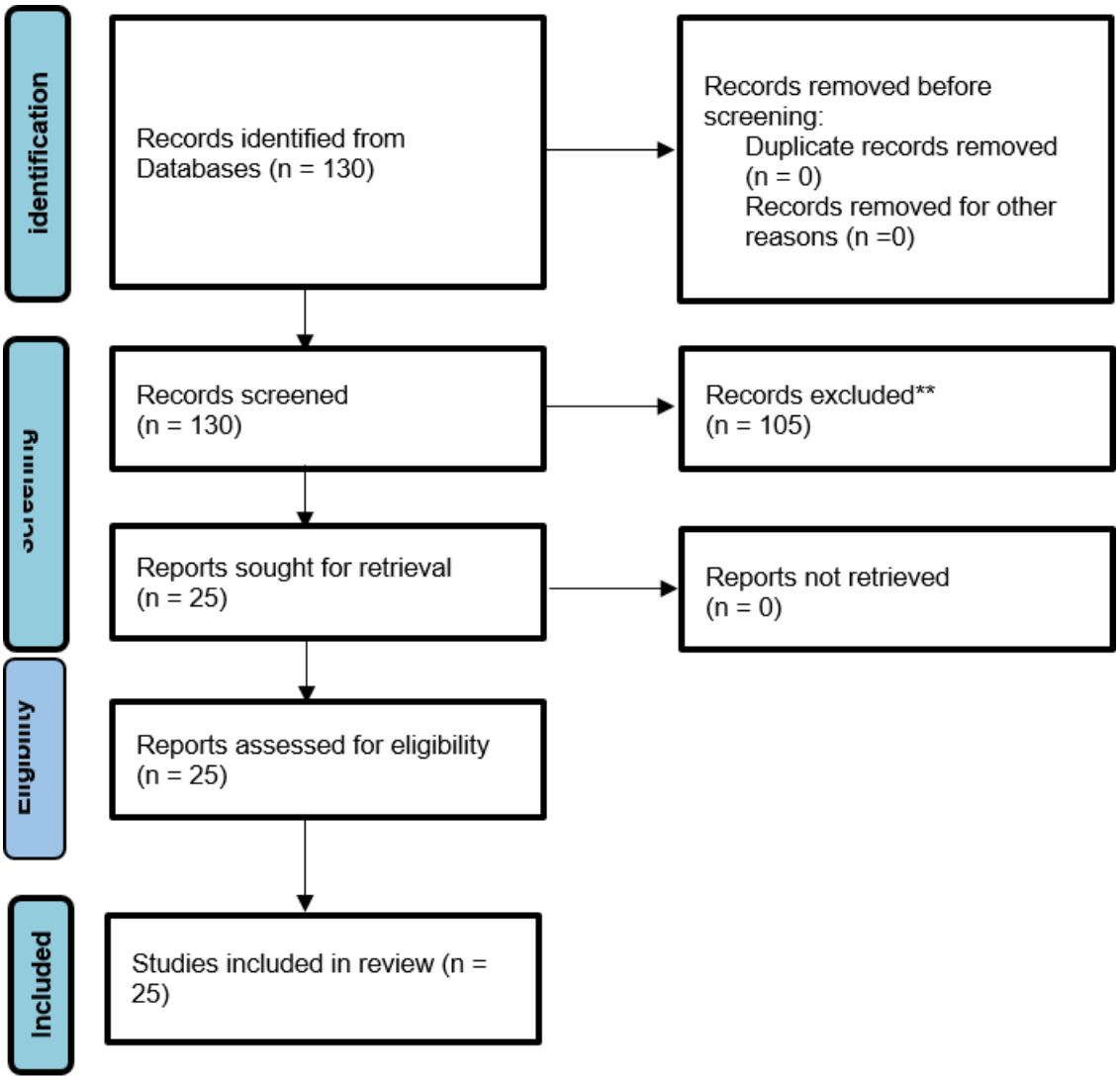

Chart 1. Prism Diagram

There are a total of 130 articles searched from the PubMed online database using the keywords "Knowledge, attitude, practice and dengue fever". by choosing the year of publication between 2016-2021. There were a total of 25 articles that met the inclusion criteria and were processed in a qualitative synthesis. The process of searching and filtering articles using a Prism diagram (chart 1). Articles included in this study must meet the inclusion criteria and have been reviewed using a critical appraisal in accordance with the research design of each article.

The number of samples of respondents varied and consisted of adults and children. Of the 25 articles, uniquely the author did not find articles originating from countries in the European continent. The majority of articles come from the Asian continent. Almost all of the articles used a cross-sectional method with a

questionnaire as an instrument. The number of references and journal sources can be seen in table 1. The characteristics of each article included in the qualitative synthesis are described in more detail in table 2.

3.2 Relationship between Knowledge, Behavior, and Attitude in Dengue Fever Prevention and Management

The results of this study indicate that from a total of 25 articles that have been studied, the relationship between the three variables, namely knowledge, behavior, and attitudes, is varied. There is 1 article which explains that there is no relationship between knowledge about dengue fever and the behavior of preventing and handling dengue fever, while there are 3 articles which explain otherwise.

There are 10 articles which explain that there is a relationship between knowledge about dengue fever and the attitude of preventing and handling dengue fever, while 4 articles explain otherwise. However, there are 2 articles that explain that good knowledge is related to bad attitude.

Four articles explain that good behavior regarding dengue fever prevention is associated with positive attitudes towards dengue fever. There are 2 articles that explain that between 3 variables, namely knowledge, behavior and attitudes, influence each other.

Knowledge of dengue fever includes signs and symptoms of the disease [2], as well as ways to prevent dengue fever (prevention of vector breeding, mosquito bites, and waste management) [6]. Knowledge has a significant relationship with education and socioeconomic status [32]. Prevention and attitudes about dengue fever, namely the frequency of fogging activities, plant management at home, composting, waste management and maintenance of a clean environment [6].

Table 1. Characteristics of Journal Articles

No	Journal	Amount
1.	PLoS neglected tropical diseases	3
2.	BMC infectious diseases	3
3.	The West Indian medical journal	1
4.	International journal of environmental research and public health	2
5.	PLOS one	2
6.	The Journal of the Pakistan Medical Association	2
7.	International health	1
8.	Annals of global health	1
9.	Journal of infection and public health	2
10.	BMC public health	1
11.	Journal of environmental and public health	1
12.	The American journal of tropical medicine and hygiene	2
13.	Journal of community health	2
14.	Asia-Pacific journal of public health	1
15	Transactions of the Royal Society of Tropical Medicine and Hygiene	1

Table 2. Characteristics of Journal Articles

uthor ear)	**Title**	**Country**	**Study Design**	**Sample**	**Outcome**
4]	Knowledge, Attitude, and Practices Regarding Dengue Fever among Pediatric and Adult In-Patients in	Manila, Philippines	case-control	Confirmed patients (children = 233; adults = 17) and controls	Knowledge and attitudes c correlate with practice against fever.

	Metro Manila, Philippines			(children = 233; adults = 17).	
]	Knowledge, Attitude and Practice Regarding Dengue Fever among the Healthy Population of Highland and Lowland Communities in Central Nepal	Central Nepal	Cross-sectional	589 respondents	There is a significant correlation between knowledge, and practice.
ope et al., 018)	Knowledge, attitude, and practice regarding dengue virus infection among inhabitants of Aceh, Indonesia: a cross-sectional study	Aceh, Indonesia	Cross-sectional	609 respondents	There is a significant correlation between knowledg attitude, knowledge and practi attitude and practice.
6]	Knowledge, Attitude and Practice about Dengue Fever among Patients Experiencing the 2017 Outbreak in Vietnam	Vietnamese	Cross-sectional	330 respondents	Knowledge and attitudes re practice.
0]	Knowledge, attitude and preventive practices regarding dengue fever in rural areas of Yemen	Yemen	Cross-sectional	804 respondents	Poor knowledge about dengue fe low level of education are signi associated with poor pre practices.
]	Knowledge, Attitude, and Practices Regarding Vector-borne Diseases in Western Jamaica	Jamaica	Cross-sectional	361 respondents	Knowledge and attitudes are sig predictors of practice.
5]	Knowledge, attitudes, and practices relating to Dengue fever among females in Jeddah high schools	Saudi Arabia	Cross-sectional	2693 students, 356 teachers and 115 supervisors	Practice is related to knowledge.
9]	Dengue knowledge, attitudes and practices and their impact on community-based vector control in rural Cambodia	Cambodia	Cross-sectional	600 households from 30 villages in Kampong Cham	There is no relationship b practice and knowledge
2]	Dengue in peri-urban Pak-Ngum district, Vientiane capital of Laos: a community survey on knowledge, attitudes and practices	Vientiane, Laos	Cross-sectional	231 households	There is a relationship betwee knowledge and better practice, b knowledge is associated with attitudes.
3]	Factors Associated with Larval Control Practices in a Dengue Outbreak Prone Area	Malaysia	Cross-sectional	322 respondents	The level of good behavior preventive measures and f attendance of health campaig significantly associated with goo control practices.
0]	Knowledge, Attitudes, and Preventive Practices Regarding Dengue in Maracay, Venezuela	Maracay, Venezuela	Cross-sectional	105 households	Preventive practices relate to knowledge of the symptoms of fever.
1]	Cross-Sectional Survey on the Dengue Knowledge, Attitudes and Preventive Practices Among Students and Staff of a Public University in Malaysia	Malaysia	Cross-sectional	372 respondents	Knowledge and attitudes about fever were significantly po related to the practice of pre dengue fever.
5]	Awareness of dengue and practice of dengue control among the semi-urban community: a cross sectional survey	Malaysia	Cross-sectional	-	Knowledge of dengue fe significantly and positively relate practice of controlling dengue fe
]	The Relationship between Economic Status, Knowledge on Dengue, Risk Perceptions and Practices	Havana, Cuba	Cross-sectional	780 households	Knowledge has a positive rela with practice.
]	Practices of Dengue Fever	Malaysia	Cross-	505 respondents	Knowledge is a significant

	Prevention and the Associated Factors among the Orang Asli in Peninsular Malaysia		sectional		influencing the practice of pre dengue fever.
2]	A knowledge, attitude and practices (KAP) study on dengue among selected rural communities in the Kuala Kangsar district	Kuala Kangsar	Cross-sectional	200 respondents	There is a significant rela between knowledge about dengu and attitudes towards controllin mosquitoes. However, it was als that good knowledge does not lead to good practice.
9]	Climate change and dengue fever knowledge, attitudes and practices in Bangladesh: a social media-based cross-sectional survey	Bangladesh	Cross-sectional	500 respondents	Good knowledge, attitude and p experience are significantly ass with good dengue prevention pra
5]	Socio-economic, Knowledge Attitude Practices (KAP), household related and demographic based appearance of non-dengue infected individuals in high dengue risk areas of Kandy District, Sri Lanka	Sri Lanka	Cross-sectional	1000 households	Knowledge and attitudes rela dengue-free status in the population.
]	A household-based survey of knowledge, attitudes and practices towards dengue fever among local urban communities in Taiz Governorate, Yemen	Yenen	Cross-sectional	383 households	Poor knowledge of the sig symptoms of dengue and its vec significant factor associated wi prevention practices.
8]	Dengue knowledge and practices and their impact on Aedes aegypti populations in Kamphaeng Phet, Thailand	Kamphaeng Phet, Thailand	Cross-sectional	-	There is no relationship b knowledge about dengue fever a mosquito reduction practices.
9]	Community knowledge, health beliefs, practices and experiences related to dengue fever and its association with IgG seropositivity	Malaysia	Cross-sectional	1,400 respondents	A weak correlation was found b independent practice to prevent fever and the dengue seropositive the community.
2]	Knowledge, attitudes and preventive behaviors related to dengue vector breeding control measures among adults in communities of Vientiane, capital of the Lao PDR	Vientiane, Laos	Cross-sectional	207 respondents	Preventive behavior is signi related to the level of knowledge
4]	Knowledge, attitudes and practices regarding dengue fever among adults of high and low socioeconomic groups	Karachi, Pakistan	Cross-sectional	440 respondents	Good knowledge about dengue associated with better pre attitude.
7]	Dengue fever in Southern of Vietnam: A survey of reported knowledge, attitudes, and practices	Southern of Vietnam	Cross-sectional	1,906 respondents	Participants with good knowledg approximately 1.7 times more l have good attitudes and 5.0 time likely to have good practice tha without.
3]	Knowledge, attitudes and practices regarding dengue infection in Westmoreland, Jamaica	Jamaica	Cross-sectional	192 respondents	There is no relationship b knowledge about dengue feve prevention practices.

4. DISCUSSION

The results of this systematic review show that there are varied relationships between knowledge, behavior, and attitudes about dengue fever. Knowledge of the signs and symptoms of dengue fever is related to the behavior of preventing dengue fever. Things explained by [35], that knowledge and awareness about dengue fever, (prevention of vector breeding, mosquito bites, symptoms of disease and waste management) and community attitudes (towards home gardening, composting, waste management and maintaining a clean and dengue-free environment) are related to dengue-free status in the study population.

But different according to [14], [33] which states that knowledge and attitudes are not related to the practice of preventing or treating dengue fever.

According to [1], [3]. Knowledge and behavior related to dengue fever are influenced by the level of education of an individual. This is also confirmed by [34], [32] which states that preventive behavior is significantly related to the level of knowledge and knowledge has a significant relationship with education and socioeconomic status. High socioeconomic groups show better prevention practices.

According to [7], knowledge, perception of barriers to preventing dengue fever, frequency of fogging, and perception of susceptibility to dengue fever are significant factors in the practice of preventing dengue fever. People with low dengue knowledge scores tend not to do dengue fever prevention. However, people who score low perceived barriers to preventing dengue are more likely to practice dengue prevention. Participants with a low perceived susceptibility to contracting dengue fever were less likely to practice dengue prevention measures. But according to [12], good knowledge does not always lead to good practice.

5. CONCLUSION

The conclusion of this study is that knowledge, behavior, and attitudes about dengue fever have varied relationships, but the majority of articles explain that the 3 variables have a positive relationship that affects each other.

ACKNOWLEDGMENTS:
The author is thankful for online database provider for their generous available source of article journal.

CONFLICTS OF INTEREST:
The author declares that they have no conflict of interest

6. REFERENCES

[1] Al-Dubai, SAR, Ganasegeran, K., Mohanad Rahman, A., Alshagga, MA, & Saif-Ali, R. (2013). Factors affecting dengue fever knowledge, attitudes and practices among selected urban, semi-urban and rural communities in Malaysia. The Southeast Asian Journal of Tropical Medicine and Public Health, 44(1), 37–49.

[2] Alobuia, WM, Missikpode, C., Aung, M., & Jolly, PE (2015). Knowledge, Attitude, and Practices Regarding Vector-borne Diseases in Western Jamaica. Annals of Global Health, 81(5), 654–663. https://doi.org/10.1016/j.aogh.2015.08.013

[3] Alves, AC, Fabbro, ALD, Passos, ADC, Carneiro, AFTM, Jorge, TM, & Martinez, EZ (2016). Knowledge and practices related to dengue and its vector: a community-based study from Southeast Brazil. Revista Da Sociedade Brasileira de Medicina Tropical, 49(2), 222–226. https://doi.org/10.1590/0037-8682-0240-2015

[4] Alyousefi, TAA, Abdul-Ghani, R., Mahdy, MAK, Al-Eryani, SMA, Al-Mekhlafi, AM, Raja, YA, Shah, SA, & Beier, JC (2016). A household-based survey of knowledge, attitudes and practices towards dengue fever among local urban communities in Taiz Governorate, Yemen. BMC Infectious Diseases, 16(1), 543. https://doi.org/10.1186/s12879-016-1895-2

[5] Al-Zurfi, BMN, Fuad, MDF, Abdelqader, MA, Baobaid, MF, Elnajeh, M., Ghazi, HF, Ibrahim, MH, & Abdullah, MR (2015). Knowledge, attitude and practice of dengue fever and heath education program among students of Alam Shah science school, Cheras, Malaysia. Malaysian Journal of Public Health Medicine, 15(2), 69–74.

[6] Castro, M., Sánchez, L., Pérez, D., Sebrango, C., Shkedy, Z., & Van der Stuyft, P. (2013). The relationship between economic status, knowledge on dengue, risk perceptions and practices. PloS One, 8(12), e81875–e81875. https://doi.org/10.1371/journal.pone.0081875

[7] Chandren, JR, Wong, LP, & AbuBakar, S. (2015). Practices of Dengue Fever Prevention and the Associated Factors among the Orang Asli in Peninsular Malaysia. PLoS Neglected Tropical Diseases, 9(8), e0003954. https://doi.org/10.1371/journal.pntd.0003954

[8] Dhimal, M., Aryal, KK, Dhimal, ML, Gautam, I., Singh, SP, Bhusal, CL, & Kuch, U. (2014). Knowledge, attitude and practice regarding dengue fever among the healthy population of highland and lowland communities in central Nepal. PloS One, 9(7), e102028–e102028. https://doi.org/10.1371/journal.pone.0102028

[9] Elsinga, J., Lizarazo, EF, Vincenti, MF, Schmidt, M., Velasco-Salas, ZI, Arias, L., Bailey, A., & Tami, A. (2015). Health Seeking Behavior and Treatment Intentions of Dengue and Fever: A Household Survey of Children and Adults in Venezuela. PLoS Neglected Tropical Diseases, 9(12), e0004237. https://doi.org/10.1371/journal.pntd.0004237

[10] Elsinga, J., Schmidt, M., Lizarazo, EF, Vincenti-Gonzalez, MF, Velasco-Salas, ZI, Arias, L., Burgerhof, JGM, & Tami, A. (2018). Knowledge, Attitudes, and Preventive Practices Regarding Dengue in Maracay, Venezuela. The American Journal of Tropical Medicine and Hygiene, 99(1), 195–203. https://doi.org/10.4269/ajtmh.17-0528

[11] Gubler, DJ (1998). Dengue and dengue hemorrhagic fever. Clinical Microbiology Reviews, 11(3), 480–496.

[12] Hairi, F., Ong, C.-HS, Suhaimi, A., Tsung, T.-W., bin Anis Ahmad, MA, Sundaraj, C., & Soe, MM (2003). A knowledge, attitude and practices (KAP) study on dengue among selected rural communities in the Kuala Kangsar district. Asia-Pacific Journal of Public Health, 15(1), 37–43. https://doi.org/10.1177/101053950301500107

[13] Harapan, H., Rajamoorthy, Y., Anwar, S., Bustamam, A., Radiansyah, A., Angraini, P., Fasli, R., Salwiyadi, S., Bastian, RA, Oktiviyari, A., Akmal , I., Iqbalamine, M., Adil, J., Henrizal, F., Darmayanti, D., Pratama, R., Setiawan, AM, Mudatsir, M., Hadisoemarto, PF, … Müller, R. (2018) . Knowledge, attitude, and practice regarding dengue virus infection among inhabitants of Aceh, Indonesia: a cross-sectional study. BMC Infectious Diseases, 18(1), 96. https://doi.org/10.1186/s12879-018-3006-z

[14] Herbuela, VRDM, de Guzman, FS, Sobrepeña, GD, Claudio, ABF, Tomas, AC V, Arriola-Delos Reyes, CM, Regalado, RA, Teodoro, MM, & Watanabe, K. (2019). Knowledge, Attitude, and Practices Regarding Dengue Fever among Pediatric and Adult In-Patients in Metro Manila, Philippines. International Journal of Environmental Research and Public Health, 16(23), 4705. https://doi.org/10.3390/ijerph16234705

[15] Ibrahim, NKR, Al-Bar, A., Kordey, M., & Al-Fakeeh, A. (2009). Knowledge, attitudes, and practices relating to Dengue fever among females in Jeddah high schools. Journal of Infection and Public Health, 2(1), 30–40. https://doi.org/10.1016/j.jiph.2009.01.004

[16] JG, L., & EE, O. (nd). Dengue--old disease, new challenges in an aging population. PG - 373-5 FAU - Low, Jenny GH (Issues 0304-4602 (Print)).

[17] KL, E., & Nealon, J. (nd). Dengue in a changing climate. PG - 115-123 LID - S0013-9351(16)30312-7 [pii] LID - 10.1016/j.envres.2016.07.026 [doi] (Issues 1096-0953 (Electronic)).

[18] Koenraadt, CJM, Tuiten, W., Sithiprasasna, R., Kijchalao, U., Jones, JW, & Scott, TW (2006). Dengue knowledge and practices and their impact on Aedes aegypti populations in Kamphaeng Phet, Thailand. The American Journal of Tropical Medicine and Hygiene, 74(4), 692–700.

[19] Kumaran, E., Doum, D., Keo, V., Sokha, L., Sam, B., Chan, V., Alexander, N., Bradley, J., Liverani, M., Prasetyo, DB, Rachmat , A., Lopes, S., Hii, J., Rithea, L., Shafique, M., & Hustedt, J. (2018). Dengue knowledge, attitudes and practices and their impact on community-based vector control in rural Cambodia. PLoS Neglected Tropical Diseases, 12(2), e0006268–e0006268. https://doi.org/10.1371/journal.pntd.0006268

[20] Liu-Helmersson, J., Quam, M., Wilder-Smith, A., Stenlund, H., Ebi, K., Massad, E., & Rocklöv, J. (2016). Climate Change and Aedes Vectors: 21st Century Projections for Dengue Transmission in Europe. EBioMedicine, 7, 267–277. https://doi.org/10.1016/j.ebom.2016.03.046

[21] Lugova, H., & Wallis, S. (2017). Cross-Sectional Survey on the Dengue Knowledge, Attitudes and Preventive Practices Among Students and Staff of a Public University in Malaysia. Journal of Community Health, 42(2), 413–420. https://doi.org/10.1007/s10900-016-0270-y

[22] Mayxay, M., Cui, W., Thammavong, S., Khensakhou, K., Vongxay, V., Inthasoum, L., Sychareun, V., & Armstrong, G. (2013). Dengue in peri-urban Pak-Ngum district, Vientiane capital of Laos: a community survey on knowledge, attitudes and practices. BMC Public Health, 13, 434. https://doi.org/10.1186/1471-2458-13-434

[23] Mohamad, M., Selamat, MI, & Ismail, Z. (2014). Factors associated with larval control practices in a dengue outbreak prone area. Journal of Environmental and Public Health, 2014, 459173. https://doi.org/10.1155/2014/459173

[24] MR, C., NH, T., SR, H., HI, I., Chotpitayasunondh, T., MN, C., CQ, L., Rusmil, K., DN, W., Nallusamy, R., Pitisuttithum, P., Thisyakorn, U., IK, Y., D, van der V., Langevin, E., Laot, T., Hutagalung, Y., Frago, C., Boaz, M., … Bouckenooghe, A. (nd). Clinical efficacy and safety of a novel tetravalent dengue vaccine in healthy children in Asia: a phase 3, randomized, observer-masked, placebo-controlled

trial. PG - 1358-65 LID - S0140-6736(14)61060-6 [pii] LID - 10.1016/S0140-6736(14)61060-6 [doi] (Issues 1474-547X (Electronic)).

[25] Naing, C., Ren, WY, Man, CY, Fern, KP, Qiqi, C., Ning, CN, & Ee, CWS (2011). Awareness of dengue and practice of dengue control among the semi-urban community: a cross sectional survey. Journal of Community Health, 36(6), 1044–1049. https://doi.org/10.1007/s10900-011-9407-1

[26] Nguyen, H. Van, Than, PQT, Nguyen, TH, Vu, GT, Hoang, CL, Tran, TT, Truong, NT, Nguyen, SH, Do, HP, Ha, GH, Nguyen, HLT, Dang, AK, Do, CD, Tran, TH, Tran, BX, Latkin, CA, Ho, CSH, & Ho, RCM (2019). Knowledge, Attitude and Practice about Dengue Fever among Patients Experiencing the 2017 Outbreak in Vietnam. International Journal of Environmental Research and Public Health, 16(6), 976. https://doi.org/10.3390/ijerph16060976

[27] Nguyen, P. Van, Vo, TQ, Nguyen, TD, Chung Phan, TT, & Ho Phan, N. Van. (2019). Dengue fever in Southern of Vietnam: A survey of reported knowledge, attitudes, and practices. JPMA. The Journal of the Pakistan Medical Association, 69(Suppl 2(6), S118–S130.

[28] OJ, B., Geting PW FAU - Bhatt, S., Bhatt S FAU - Messina, JP, Messina JP FAU - Brownstein, JS, Brownstein JS FAU - Hoen, AG, Hoen AG FAU - Moyes, CL, Moyes CL FAU - Farlow, AW, Farlow AW FAU - Scott, TW, Scott TW FAU - Hay, SI, & SI, H. (nd). Refining the global spatial limits of dengue virus transmission by evidence-based consensus. PG - e1760 LID - 10.1371/journal.pntd.0001760 [doi] LID - e1760 (Issues 1935-2735 (Electronic)).

[29] Rahman, MS, Karamehic-Muratovic, A., Baghbanzadeh, M., Amrin, M., Zafar, S., Rahman, NN, Shirina, SU, & Haque, U. (2021). Climate change and dengue fever knowledge, attitudes and practices in Bangladesh: a social media-based cross-sectional survey. Transactions of the Royal Society of Tropical Medicine and Hygiene, 115(1), 85–93. https://doi.org/10.1093/trstmh/traa093

[30] Saied, KG, Al-Taiar, A., Altaire, A., Alqadsi, A., Alariqi, EF, & Hassaan, M. (2015). Knowledge, attitude and preventive practices regarding dengue fever in rural areas of Yemen. International Health, 7(6), 420–425. https://doi.org/10.1093/inthealth/ihv021

[31] Saker, L; Lee, K; Cannito, B; Gilmore, A; CampbellD, L. (2004). Globalization and Infectious Diseases: A Review of the Linkages. World Health Organization.

[32] Sayavong, C., Chompikul, J., Wongsawass, S., & Rattanapan, C. (2015). Knowledge, attitudes and preventive behaviors related to dengue vector breeding control measures among adults in communities of Vientiane, capital of the Lao PDR. Journal of Infection and Public Health, 8(5), 466–473. https://doi.org/10.1016/j.jiph.2015.03.005

[33] Shuaib, F., Todd, D., Campbell-Stennett, D., Ehiri, J., & Jolly, PE (2010). Knowledge, attitudes and practices regarding dengue infection in Westmoreland, Jamaica. The West Indian Medical Journal, 59(2), 139–146.

[34] Syed, M., Saleem, T., Syeda, U.-R., Habib, M., Zahid, R., Bashir, A., Rabbani, M., Khalid, M., Iqbal, A., Rao, EZ, Shujja-ur-Rehman, & Saleem, S. (2010). Knowledge, attitudes and practices regarding dengue fever among adults of high and low socioeconomic groups. JPMA. The Journal of the Pakistan Medical

Association, 60(3), 243–247.

[35] Udayanga, L., Gunathilaka, N., Iqbal, MCM, Pahalagedara, K., Amarasinghe, US, & Abeyewickreme, W. (2018). Socio-economic, Knowledge Attitude Practices (KAP), household related and demographic based appearance of non-dengue infected individuals in high dengue risk areas of Kandy District, Sri Lanka. BMC Infectious Diseases, 18(1), 88. https://doi.org/10.1186/s12879-018-2995-y

[36] Villar, L., Dayan GH FAU - Arredondo-García, JL, Arredondo-García JL FAU - Rivera, DM, Rivera DM FAU - Cunha, R., Cunha R FAU - Deseda, C., Deseda C FAU - Reynales, H ., Reynales H FAU - Costa, MS, Costa MS FAU - Morales-Ramírez, JO, Morales-Ramírez JO FAU - Carrasquilla, G., Carrasquilla G FAU - Rey, LC, Rey LC FAU - Dietze, R., Dietze R FAU - Luz, K., Luz K FAU - Rivas, E., Rivas E FAU - Miranda Montoya, MC, Miranda Montoya MC FAU - Cortés Supelano, M., Cortés Supelano M FAU - Zambrano, B., Zambrano B FAU - Langevin, E., Langevin E FAU - Boaz, M., Boaz M FAU - Tornieporth, N., … Group, NFCN-CS (nd). Efficacy of a tetravalent dengue vaccine in children in Latin America. PG - 113-23 LID - 10.1056/NEJMoa1411037 [doi] (Issues 1533-4406 (Electronic)).

[37] WHO. (2011). Comprehensive guidelines for prevention and control of dengue and dengue haemorrhagic fever. In WHO Regional Publication SEARO (Issue 1).

[38] WHO. (2020). Dengue and severe dengue.

[39] Wong, LP, Abu Bakr, S., & Chinna, K. (2014). Community knowledge, health beliefs, practices and experiences related to dengue fever and its association with IgG seropositivity. PLoS Neglected Tropical Diseases, 8(5), e2789. https://doi.org/10.1371/journal.pntd.0002789

[40] Wu, X., Lu, Y., Zhou, S., Chen, L., & Xu, B. (2016). Impact of climate change on human infectious diseases: Empirical evidence and human adaptation. Environment International, 86, 14–23. https://doi.org/10.1016/j.envint.2015.09.007

[41] Yboa, BC, & Larague, LJ (2013). Dengue Knowledge and Preventive Practices among Rural Residents in Samar Province, Philippines. American Journal of Public Health Research, 1(2), 47–52. https://doi.org/10.12691/ajphr-1-2-2