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Health Literacy in Preventing and Controlling Dengue Hemorrhagic Fever Among Village Health Volunteer, Pattani Province, Thailand

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ABSTRACT

Background: Dengue Haemorrhagic Fever (DHF) is a mosquito-borne viral infection caused by the dengue virus (DENV). The situation of the DHF prevalence rate was still high in the community. One reason for this high rate involves community members, who had less participated in the prevention and control measures of DHF.

Objectives: This descriptive study aimed to study factors associated with preventing and controlling DHF among village health volunteer, Pattani Province.

Methods: Population consisted of 6,841 village health volunteers registered in Pattani Province, Thailand, in fiscal year 2020, and the sample size was calculated using Daniel formula for 215 cases, and systematic random sampling was carried out for collecting data. Data were collected by questionnaires composed of 3 parts, including characteristics, health literacy factors, and preventing and controlling DHF. In addition to check questionnaire standardization, validity was checked by three experts and try out testing reliability by Cronbach's coefficient alpha about 0.87. Data were analysed using statistical as Pearson product moment correlation coefficient and Stepwise Multiple Regression Analysis.

Results: The analysis found that health literacy factors were associated with preventing and controlling DHF among village health volunteer, Pattani Province such as access skill **(**r=0.310, p-value<0.001**)** communication skill **(**r=0.201, p-value=0.003**)** media literacy skill **(**r=0.386, p-value<0.001**)** decision skill **(**r=0.349, p-value<0.001**)** self-management skill **(**r=0.480, p-value<0.001**)**, respectively. Conversely, cognitive skill had no association **(**r=0.117, p-value=0.086**)**.

Conclusion: The finding showed that health literacy of village health volunteer was associated with the preventing and controlling DHF. Therefore, health workers should encourage the village health volunteers to participate in sustainable prevention and control of DHF.

Keywords: Dengue hemorrhagic fever, Health literacy, Village health volunteer

1. Introduction

Dengue fever is more common in tropical and subtropical climates around the world. It is a viral infection that spreads from mosquitoes to people [1]. The incidence of dengue has grown dramatically around the world. The World Health Organization estimated that approximately 2.5 billion people living in dengue-endemic countries [2].

Thailand is a tropical country where mosquitoes spread several diseases, such as dengue, malaria etc. In Thailand, Dengue haemorrhagic fever (DHF) found the first patient since 1949. After, that in 1958 the first out-break of Dengue outbreaks occurred in Bangkok city it was the largest epidemic [3]. Recently, dengue outbreaks occurred in other countries of Thailand including rural and urban. The number of cases in Thailand increased for 50 years, during 2020-2022 the morbidity rate was 96.76, 80.80 and 129.96 per 100,000 populations. Moreover, the mortality rate was 0.10, 0.12 and 0.13 per 1,000 populations, respectively [4]. Pattani Provine located in the South region of Thailand, the situation of morbidity rate of DHF still similar Thailand. Previous date showed that the numbers of DHF patients still increasing every year, during 2020-2022 the morbidity rate was 203.88, 89.60 and 49.86 per 100,000 populations [5].

Dengue is a major public health issue problem in Thailand. Although the Ministry of Public Health, Thailand was established the strategies for prevention and control for Dengue haemorrhagic fever (DHF), the situation of the DHF prevalence rate was still high in the community. One reason for this high rate involves community members, who had less participated in the prevention and control DHF. Therefore, it is important to identify the factors effecting to preventing and controlling dengue hemorrhagic fever among village health volunteer in Pattani Province. This research aims to study health literacy factors associated with preventing and controlling Dengue hemorrhagic fever among village health volunteer in Pattani Province.

2. Methods

2.1 Study Area

This study was conducted at Pattani Province, Thailand.

2.2 Study Design

Descriptive research was designed with the conceptual framework composed of independent variables including;

characteristic, health literacy factors (cognitive skill, access skill, communication skill, media literacy skill, decision skill, self-management skill) follow the theory as Nutbeam [6]. Dependent variable was preventing and controlling Dengue haemorrhagic fever among village health volunteers.

2.3 Sample size and sampling

Population was carried out 6,841 village health volunteer who lived in Pattani Province, in fiscal year 2020.

Sample size was calculated using Daniel [7] formula, details as following.

$$n=\frac{NP(1-P)\,Z^2_{\alpha/2}}{Z^2_{\alpha/2}P(1-P)\ +(N+1)d^2}$$

Where;

$Z^2_{\alpha/2}$ = 1.96, P=0.5, P=0.05, N=6,841

Then, the calculated sample was 202. After adding 5 percent non-response rate, the final sample size was 215.

Systematic random sampling from this formula; $k = \frac{23}{12}$ = 2; therefore, athletes with numbers 1, 3 (1+2), 5 (3+2), 7 (5+2) and the samples will be randomly drawn systematically until the number is reached.

2.4 Data Collection

Data collecting by questionnaires composed of 3 parts including,

Part 1: Characteristic of village health volunteers were as follow: age, sex, marital status, education completed, occupational, average family income, health insurance, history of family, information.

Part 2: Health literacy variables were as follows: cognitive skill, access skill, communication skill, media literacy skill, decision skill, self-management skill [6]. Health literacy variables were measured on five-point Likert scales with response options ranging from strongly disagree, disagree, uncertain, agree, strongly agree. Scale items were composed of both positive and negative statements.

Part 3: Preventing and controlling Dengue hemorrhagic fever among village health volunteers were as follows: physical, biological and chemical [4]. Behaviour was measured on five-point Likert scales with response options ranging from strongly disagree, disagree, uncertain, agree, strongly agree. Scale items were composed of both positive and negative statements.

For interpretation the score part 2 and 3 follow as Best John theory [8] classified as 3

level by mean score such as; high level (score 3.67–5.00), moderate level (score 2.34–3.66) low level (score 1.00–2.33)

The questionnaire was checked for completeness and satisfactory content validity and approved by three experts in health promotion field. The reliability of the Likert scales was tested on 30 village health volunteer and try out testing reliability [9] about 0.87 including health literacy (0.75) and preventing and controlling Dengue hemorrhagic fever (0.91)

2.5 Data Analysis

Data analysed using statistical as Pearson product moment correlation coefficient and Stepwise multiple regression analysis.

2.6 Ethical Clearance

The present study was approved for ethical clearance by the Ethic Committee for Human Research, Pattani Provincial Health Office: RECPTN No.007/65. Informed consent forms were obtained from village health volunteers.

3. Results

The majority of the participants were female (97.21%) and 51.63% were aged between 30 and 50 years (46.73±10.72, range 19-68). Most of the women (76.28%) were married or had a partner. The 61.4% of women had secondary education and 40.93% of women were house working. Average household income less than 5,000 baht (7,759.53±6,464.51, range 0-40,000). For health information reported receiving DHF information in the past, with 99.07%. (Table 1)

Table 1: General characteristics of village health volunteers (n=215)

Characteristics	Number	Percentage (%)
Sex		
Male	6	2.79
Female	209	97.21
Age group (years)		
< 30	20	9.30
30 – 50	111	51.63
> 50	84	39.07
Mean (±SD)	46.73 (±10.72)	
Min: Max	19:68	19:68
Marital Status		
Single	18	8.37
Married	164	76.28
Widowed/Divorced	33	15.35
Education		
Primary school	37	17.21
Secondary school	132	61.40
Diploma	32	14.88

Characteristics	Number	Percentage (%)
Graduated or higher	14	6.51
Occupation		
No work	3	1.40
House working	88	40.93
Government service	2	0.93
Company general employee	26	12.09
Agriculture worker	51	23.72
Merchant/ Business	45	20.93
Average family income (Baht/Month)		
< 5,000	94	43.72
5,000 – 15,000	89	41.40
> 15,000	32	14.88
Mean (±SD)	7,759.53 (±6,464.51)	
Min: Max	0:40,000	
Receiving health information for DHF		
No	2	0.93
Yes	213	99.07

Table 2 presents the percentages of all variables with high, medium and low level. health literacy factors including cognitive skill, access skill, communication skill, self-management skill, media literacy skill, decision skill. Considering, health literacy factors had mean score with high level (2.79±0.415). Preventing and controlling Dengue hemorrhagic fever among village health volunteers including, physical, biological and chemical. Overall health literacy factor had mean score with high level (2.81±0.405), respectively.

Table 2: Level of health literacy factor and preventing and controlling DHF of village health volunteers (n=215)

Variables	Levels (%)			Mean	SD.
	High (Score 3.67-5.00)	Moderate (Score 2.34-3.66)	Low (Score 1.00-2.33)		
Health literacy	**80.00**	**19.53**	**0.47**	**2.79**	**0.415**
Cognitive skill	80.47	19.07	0.47	2.20	0.410
Access skill	94.88	4.65	0.47	2.94	0.250
Communication skill	73.49	26.05	0.47	2.73	0.455
Self-management skill	93.49	6.05	0.47	2.93	0.273
Media literacy skill	85.58	13.49	0.93	2.85	0.386
Decision skill	78.14	21.40	-	2.78	0.428
Preventing and controlling DHF	**81.40**	**18.14**	**0.47**	**2.81**	**0.405**
Physical	90.23	9.30	0.47	2.90	0.319
Biological	65.58	32.56	1.86	2.64	0.519
Chemical	66.98	29.77	3.26	2.64	0.546

Table 3 describes the associations of all factors and preventing and controlling DHF of village health volunteers in Pattani Province. The result showed that health

literacy was associated with preventing and controlling DHF including; access skill (r=0.310, p-value<0.001), communication skill (r=0.201, p-value=0.003), self-management skill (r=0.480, p-value<0.001), media literacy skill (r=0.386, p-value<0.001), decision skill (r=0.349, p-value<0.001), respectively.

Table 3: Association between health literacy factor and preventing and controlling DHF of village health volunteers

Variables	Preventing and controlling DHF	
	Correlation (r)	P-value
Health literacy	**0.433**	**<0.001***
Cognitive skill	0.117	0.086
Access skill	0.310	<0.001*
Communication skill	0.201	0.003*
Self-management skill	0.480	<0.001*
Media literacy skill	0.386	<0.001*
Decision skill	0.349	<0.001*

Note: *P-value <0.05

Table 4 the prediction model analysed reported four selected factors can be predicting the preventing and controlling Dengue hemorrhagic fever of village health volunteers in Pattani Province including; self-management skill (P-value<0.001), media literacy skill (P-value<0.001), communication skill (P-value=0.017) access skill (P-value=0.018), respectively. Overall selected factors accounted for 32.6% (R^2 =0.326) of the variance the preventing and controlling DHF of village health volunteers in Pattani Province. The prediction model follows as:

Y = 0.269+ [0.442* self-management skill] + [0.340* media literacy skill] + [0.149* communication skill] + [0.246* access skill].

Table 4: Factors predicting preventing and controlling DHF of village health volunteers

Predicting factors	B	S.E.	Beta	t	P-value	95%CI
1. Self-management skill	0.442	0.065	0.468	6.767	<0.001	0.388-0.758
2. Media literacy skill	0.340	0.096	0.229	3.545	<0.001	0.121-0.336
3. Communication skill	0.149	0.062	0.168	2.413	0.017	0.586-0.675
4. Access skill	0.245	0.103	0.151	3.376	0.018	0.083-0.320
Constant	0.269	0.314	-	0.858	<0.001	0.647-1.451
Constant = 0.269, F =25.387, P-value<0.001, R = 0.571, R^2 = 0.326						

4. Discussion

Village health volunteers was represented peoples who lived in the community and responsible to primary care service in their community., Especially, village health volunteers were still collaborate working with health workers for preventing and controlling the DHF disease [10].

Thailand is a tropical country where mosquitoes can spread a number of diseases,

for example DHF. Moreover, dengue cannot be prevented with a vaccine or medicine, therefore, peoples should reduce their risk of illness by preventing mosquitoes' bites [11]. Thus, Ministry of Public Health by Communicable Disease Control Division to establish the policy for preventing and controlling DHF disease including 1) house cleaning and keep 2) waste management around house areas especially 3) prevent the mosquitoes bite by sleep under the bed net or stay and sleep in screened rooms [12]. Similarly, the results from this research reported that preventing and controlling DHF among village health volunteers lived in Pattani Province had the practicing average score in high level (81.40%) composed of 1) Physical 2) Biological and 3) Chemical.

Health literacy was association with factors and preventing and controlling DHF. Health literacy refers to the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions [6]. In this research, health literacy factors composed of 6 components including cognitive skill, access skill, communication skill, media literacy skill, decision skill, self-management skill. The finding from research found that 80% of village health volunteers in Pattani Province had average score of health literacy in high level. Similarly, the previous research found that the people have health literacy behaviour disease mosquitoes-borne disease prevention in high level 47.59% [13]. Conversely, from the other research in Prachin Buri Province found that the level of health literacy for village health volunteers classify in low level (53.80) [14], it is not enough to change the behaviour for prevention of DHF [15].

The prediction model analysed reported four factors have predicted preventing and controlling DHF among village health volunteers lived in Pattani Province, Thailand. According to health literacy factors including self-management skill, media literacy skill, communication skill, access skill, respectively. Overall factors selecting were detected as a good predictor accounted for 32.6% (R^2 =0.326). Self-management skill was associated with preventing and controlling DHF. The finding in this study indicated that village health volunteers had the self-management skill having mean score with high level (93.49%), and self-management skill of village health volunteers was significant predictor of preventing and controlling DHF. Self-management skill is

the ability to make decision for practicing or cancel to make something, depend on the reason or benefit from practice [16]. Media literacy skill was associated with preventing and controlling DHF. For the reason from research, village health volunteers are ability to access the media information, the media information is one most important for prevention and controlling DHF. Village health volunteers need accurate and real time information for making decision and adjusting plans implemented to make sure that the goals will be successful achievements [14]. Communication skill was revealed the association with preventing and controlling DHF. Because communication skill is how to thoughts, messages or information are exchanged through speech, signals writing or behaviour. Communication skills are reading with understanding, conveying ideas in writing, speaking so others can understand, listening actively, and observing critically [16]. Access skill was associated with preventing and controlling DHF (P-value<0.001). For the reasons, the core of health literacy model shows the competencies related to the process of accessing understanding, appraising and applying health-related information. According to the access skill refers to the ability to seek, find and obtain health information [16]. Similarly, the research resulted found that the ability to access information on prevention and control DHF issues, to understand DHF information, to interpret and evaluate DHF information, and to make DHF information decisions on prevention and controlling [14].

5. Conclusion

As a result, 4 factors were found to be affecting the prevention and control of DHF. Thus, the health workers should set the activities to develop the performance for village health volunteers. Moreover, every year health workers should establish the campaign program to promote all people in community to participate in the prevention and control of DHF.

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