KNOWLEDGE, ATTITUDES AND PRACTICES REGARDING TO MALARIA AND HOME ENVIRONMENT PREVENTION AMONG POPULATION IN PALAW TOWNSHIP, TANINTHARYI REGION OF MYANMAR

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ABSTRACT:

Background: Malaria is still a priority public health problem in Myanmar. Socio-cultural, economic factors, housing conditions, knowledge, attitude, and practices of the community play an essential role in transmission and preventing malaria infection. Therefore, this study assessed association between knowledge, attitudes and practices levels among population in Palaw Township, Tanintharyi Region of Myanmar.

Methods: A cross-sectional study method was conducted during June-July, 2016 to identify knowledge, attitude and practice regarding to malaria prevention among population in Palaw Township, Tanintharyi Region of Myanmar. Four hundred and thirty participants aged 18-64 years were participated in this study. A structure questionnaire was used to gather the data. Chi-square and Fisher's exact test were used to determine the association between knowledge, attitude and practice.

Results: The findings showed 50.7% of respondents had good knowledge; 16.3% had good attitude, while only 6.5% had good practice regarding malaria prevention. The study found strong significance association between knowledge about malaria and prevention practices ($p<0.001$). Good knowledge and good attitude were high; and prevention practice was moderate. Knowledge towards malaria causes, transmission, symptoms and home environment prevention were significantly associated with prevention practice. Susceptibility, threat, treatment and home environment prevention attitude were found an association with prevention practice ($p<0.001$).

Conclusion: Health education program with direct interaction to community should be emphasized; and the correct knowledge about housing condition and housing structure to prevent malaria should be provided in order to improve the knowledge, attitude, and practice regarding malaria prevention.

Keywords: Knowledge, attitude, practices; Malaria; Home environment; Myanmar

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INTRODUCTION

Malaria is the infectious and tropical disease. Malaria remains a major problem of global health with approximately 3.2 billion people; nearly world's population of fifty percent lives in malaria risk area [1]. According to the World Malaria Report 2014 in Myanmar, there were 37% of high transmission (> 1 case per 1000 population) and 23% of low transmission (0–1 cases per 1000 population) in 2013 [2]. It was a national concern in Myanmar; and it is a leading cause of morbidity and

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Table 1 Frequency and percentage distribution of respondents by socioeconomic and education level (N=430)

Socioeconomic and education level	Frequency	Percentage
Age (years)		
18-30	110	25.6
31-40	105	24.4
41-53	112	26.0
54-64	103	24.0
Gender		
Male	104	24.2
Female	326	75.8
Marital status		
Single	94	21.9
Married	291	67.7
Divorced	8	1.9
Widowed	37	8.6
Education		
Never attend school	46	10.7
Primary school	180	41.9
Secondary school	117	27.2
High school	45	10.5
College/University	42	9.8
Monthly family income(kyats)		
≤150,000	156	36.3
150,001-200,000	134	31.2
200,001-250,000	53	12.3
>250,000	87	20.2

1USD = 1200 kyats (approximately)

mortality. Out of estimated 54.28 million of total population, 38.54 million populations (71%) live in at risk areas of malaria infection [3].

In Palaw Township, 89 villages were classified as high risk areas. 35 villages were in moderate risk; and only 4 villages were in low risk areas [4]. The significant reduction of malaria morbidity and mortality in Myanmar is threatened by evolving complexity of the problem, especially multiple resistances of the parasites to anti-malarial medications and the uncertainty about the financial basis to continue malaria control [5] In accordance with experiences in Malaria, prevention is cost effective and better than cure. Regarding this, socio-cultural and economic factors, housing conditions, knowledge, attitude, and practices of the community play an essential role in transmission and preventing malaria infection. Although there are some KAP studies regarding malaria conducted in Myanmar. No other studies were conducted in Palaw Township, Tanintharyi Region, Myanmar relating to malaria and home environment factors. Therefore, current study aimed to 1) determine the levels of knowledge, attitudes, and practices regarding to malaria and home environment prevention and 2) assess association between knowledge, attitudes and practices levels.

MATERIALS AND METHODS

Study site and study population

This was a cross-sectional study targeting in age 18 to 64 years who stay in Palaw Township, Tanintharyi Region, Myanmar during June, 2016 to July, 2016. The study was conducted in 9 villages in Palaw Township. The estimated calculation was at least 397; and 10% was added to prevent data losing. Totally, sample size was 436 households. Study area was purposively selected 9 high malaria risk villages from 128 villages in Palaw Township. Households were selected by proportion to size from 9 villages. Sample household in each village were selected by systemic random sampling method. A participant form each sample household would be selected by simple random sampling method.

Data collection and analysis

A structured questionnaire was designed. The first part of the questionnaire included socio-economic and education; and the second part included questions on knowledge, attitudes and practice towards malaria. Face to face interview by trained field workers was utilized. After data

Table 2 Frequency and percentage distribution of respondents by related infected malaria (n=430)

Malaria infection situation of participants	Frequency	Percentage
Malaria infected person 6 months ago		
No	412	95.8
Yes	18	4.2
Number of family member infected malaria		
No infected	284	66.0
1 person	107	24.9
More than 1 person	39	9.1
Ages of malarious persons		
<13 years	51	11.7
13-21 years	52	12.1
22-34 years	46	10.7
>34 years	43	10.0

collection, the questionnaire was monitored daily for quality control; and the data was coded before entering into the computer.

Knowledge regarding malaria was defined as good (greater than 80% of total score), moderate (60% to 80% of total score) and poor (less than 60% of total score) according to Bloom's cut point [6]. Attitude and practice were classified into 3 levels using interval scale. Overall attitude was defined as good (> 53 scores), moderate (27 – 53 scores) and poor (<27 scores). Practice levels were set as good (>25 scores), moderate (13 – 25 scores) and poor (<13 scores). The data were analyzed with the statistical program Statistical Package for Social Sciences (SPSS version 22). Descriptive statistics such as frequency, percentage, standard deviation, mean and range were used for analyzing the general characteristics of the respondents as well as knowledge on malaria, attitude towards malaria and practice regarding malaria prevention. Chi-square was used to determine the association between knowledge, attitudes and practice towards malaria. Fisher's exact test was performed if chi-square test did not meet the assumption.

Ethical approval to conduct this study was sought from Ethics Review Committee of Chulalongkorn University (COA No. 116/2016).

RESULTS

The total number of paticipants in this study was 430, age between 18-64 years. Table 1 revealed that socioeconomic and education level. Majority of the respondents were aged between 41-53 years. Most of them (75.8%) were female; and they had completed primary school. Around 67% of participants were married. Thirty-six percent of them had monthly family income less than 150,000 kyats.

Table 2 presented malaria infectious situation among study participants. Only 4.2% of them had malaria infected family members in the past 6 months. Twenty-four percent of respondents reported only one infected family member; and few of them (9.1%) had more than one in the past. Majority of infected members were ranged in age between 13 -21 years old.

Knowledge and practice on malaria prevention

For practices towards malaria prevention, seventy percent of participants (301 of 430 participants) had moderate prevention practice level. Only 28 of them (6.5%) had good prevention practice; and the rest of them (23.5%) had poor practice. Table 3 showed an association between knowledge related to malaria and preventions practice. Half of the respondents (50.7%) had poor knowledge regarding malaria while only 21% of those had good knowledge. Considering on specific part of knowledge related to malaria, we found that most of them had poor knowledge on cause and symptoms of malaria. However, more than half of them (55.6%) had good knowledge on malaria transmission. Around 40 percent of participants had moderate knowledge level regarding home environment prevention. Around 80 percent of good knowledge participants had moderate practice for prevention. None of poor knowledge participants had good practice. Most of participants with good (79.5%) and moderate (81.3%) knowledge related to home prevention practice had moderate prevention practice towards malaria. Association between malaria prevention practice was strongly significance with participants' knowledge related to cause, transmission, symptoms and knowledge on home prevention ($p<0.01$).

Table 3 Association between knowledge on malaria cause, transmission, symptoms and preventions and practice on malaria prevention

Knowledge levels	Total (N=430)	Overall practice levels			*p*-value
		Good n(%)	Moderate n(%)	Poor n(%)	
Overall					
Good	91 (21.2%)	26(11.9%)	178(81.7%)	14(6.4%)	<0.001
Moderate	121 (28.1%)	2(1.7%)	87(71.9%)	32(26.4%)	
Poor	218 (50.7%)	0(0.0%)	36(39.6%)	55(60.4%)	
Cause of malaria					
Good	82 (19.1%)	26(9.6%)	216(80.3%)	28(10.4%)	<0.001
Moderate	78 (18.1%)	2(2.6%)	53(67.9%)	23(29.5%)	
Poor	270 (62.8%)	0(0.0%)	32(39.0%)	50(61.0%)	
Transmission of malaria					
Good	239 (55.6%)	14(14.3%)	69(70.4%)	15(15.3%)	0.001
Moderate	93 (21.6%)	7(7.5%)	67(72.0%)	19 (20.4%)	
Poor	98 (22.8%)	7(2.9%)	165(69.0%)	67(28.0%)	
Symptoms of malaria					
Good	78 (18.1%)	26(10.1%)	203(78.7%)	29(11.2%)	<0.001
Moderate	94 (21.9%)	2(2.1%)	58(61.7%)	34(36.2%)	
Poor	258 (60.0%)	0(0.0%)	40(51.3%)	38(48.7%)	
Prevention of malaria regarding home environment					
Good	108 (25.1%)	23(14.7%)	124(79.5%)	9(5.8%)	<0.001
Moderate	166 (38.6%)	5(3.0%)	135(81.3%)	26(15.7%)	
Poor	156 (36.3%)	0(0.0%)	42(38.9%)	66(61.1%)	

Table 4 Association between attitude towards malaria susceptibility, threat, treatment and home environment and practices on malaria prevention

Attitude levels	Total (N=430)	Overall practice levels			*p*-value
		Good n(%)	Moderate n(%)	Poor n(%)	
Overall attitude					
Poor	59 (13.7%)	1(1.7%)	16(27.1%)	42(71.2%)	<0.001
Moderate	301 (70.0%)	18(6.0%)	227(75.4%)	56(18.6%)	
Good	70 (16.3%)	9(12.9%)	58(82.9%)	3(4.3%)	
Susceptibility					
Poor	94 (21.9%)	5(5.3%)	55(58.5%)	34(36.2%)	<0.001
Moderate	280 (65.1%)	13(4.6%)	201(71.8%)	66(23.6%)	
Good	56 (13.0%)	10(17.9%)	45(80.4%)	1(1.8%)	
Threat					
Poor	29 (6.7%)	1(3.4%)	10(34.5%)	18(62.1%)	<0.001
Moderate	264 (61.4%)	8(3.0%)	185(70.1%)	71(26.9%)	
Good	137 (31.9%)	19(13.9%)	106(77.4%)	12(8.8%)	
Treatment					
Poor	52 (12.1%)	2(3.8%)	15(28.8%)	35(67.3%)	<0.001
Moderate	234 (54.4%)	10(4.3%)	163(69.7%)	61(26.1%)	
Good	144 (33.5%)	16(11.1%)	123(85.4%)	5(3.5%)	
Home environment					
Poor	94 (21.9%)	2(2.1%)	43(45.7%)	49(52.1%)	<0.001
Moderate	307 (71.4%)	21(6.8%)	234(76.2%)	52(16.9%)	
Good	29 (6.7%)	5(17.2%)	24(82.8%)	0(0.0%)	

Attitude and practices on malaria and home environment prevention

Majority of the respondents (70%) had moderate attitude regarding malaria. Only 16.3% of them had good attitude toward overall malaria. Most of them had moderate attitude towards susceptibility, threat, treatment and home environment. Seventy percent of poor attitude participants had poor practice; however, those who had good attitude (82.9%) were classified into moderate prevention practice. Focusing on specific attitude part towards malaria, most of participants who had moderate and good attitude would have moderate prevention practice. But most of poor attitude led to poor prevention practice in this study. Most of participants who had moderate (76.2%) and good (82.8%) attitude towards malaria prevention also had moderate prevention practice. Consequently, we also found a strong association between malaria prevention practice participants' attitude related to malaria ($p<0.01$), Table 4.

DISCUSSION

The contribution of KAP study in high risk areas of malaria infection in Palaw township of Myanmar has not received much attention. This study had been carried out to provide current understanding of malaria among this population. Regarding to malaria prevention, 70% of participants had moderate prevention practice; while 50.7% and 16.3% of them had poor knowledge and attitude respectively. The results showed significance association between knowledge and practice and between attitude and practice ($p<0.001$).

Concerning to overall knowledge on malaria prevention, 50.7% out of 430 subjects had poor knowledge. This figure was lower than the finding of the study which conducted in Paksong district, Champasack province, Lao PDR (59%) [7]. The results showed that most of respondents had poor knowledge regarding causes and symptoms of malaria. These finding was the same as a study in rural area of Ghana, which showed that people's knowledge about symptoms of malaria was low [8]. Nevertheless, they had moderate knowledge regarding home environment prevention. Improved housing to protect malaria is characterized by features that can reduce the entry of mosquitoes indoors, such as closed eaves, screened doors and windows, ceilings, metal roofs and finished or improved wall surfaces. There is strong evidence that modern housing is protective in many tropical countries [9-11].

Respondent's attitudes toward malaria prevention were about 13.7%, 70.0% and 16.3% who had poor, moderate and high level respectively. Our finding found lower percentage of high attitude (40.1%) and higher percentage of moderate attitude (58.3%) than a study conducted in Karen Ethnic group in Umpiem Mai refugee camp, Phobphra District, Tak Province [12]. This may be because negative perception of the residents who was misunderstood by local believes. We found that there was significant association between susceptibility, threat, treatment, home environment prevention and practices on malaria prevention of respondents ($p<0.001$). This study revealed out some incorrect attitudes towards malaria prevention. 51.5% of respondents thought that building house close to canal is not a risk factor of malaria. 58.7% thought that having holes in the house can be a greater risk of malaria infection. Besides, 64.9% of respondents thought that lack of ceiling is not the risk factor for malaria. Hence, the program should focus on detail information of the only cause of transmission by vector, anti-malarial drug; especially, drug resistant of malaria parasite; self-medication is risky as fake drugs and mosquito proof housing structure. Accessibility to mass media and health education might be increased awareness of malaria [13].

In relation to level of practice out of 430 respondents, only 6.5% had good practice, while most of respondents (70.0%) had moderate practice regarding malaria prevention; and 23.5% had poor practice. This result was similar in good practice (8.4%), lower than in moderate practice (90.1%) while higher than in poor practice (1.4%) of the study conducted in Teikkyi Township, Northeast of Yangon, Myanmar [14]. According to the personal protection to prevent malaria, this study found that most of respondents (67.1%) slept under net every time; 2.1% of respondents use mosquito coil at night. Our finding had higher percentage of using bed net (51%) but lower percentage of using mosquito coil (18.0%) than a study conducted in Myanmar [13]. However, a Wangdi, et al. [15] suggested washing bed net every six months was a factor associated with decreased odds of malaria infection.

On the other hand, there was very low level or poor practice regarding mosquito repellent, mosquito coil, and indoor and outdoor anti-mosquito spray. It showed that 3.2% always use repellent to prevent them from mosquito bite; and the finding

was lower than the study in Paksong District, Champasack Provinince, Lao PDR (22.9%) [7]. Possibly, this could be an economic problem. Unlike bed net, these stuffs are not freely contributed by NGOs and difficult for them to afford it. This finding was analogous to a study done in Binh Ding province, Vietnam (p=0.006) [16] and a study conducted in Karen Ethnic group in Umpiem Mai refugee camp, Phobphra district, Tak province [12].

In this study, practice was statistically significant in association with knowledge and attitude about malaria and practices on malaria and home environment prevention ($p< 0.01$). However, a previous study among women from Nigeria showed that knowledge of malaria transmission and prevention were generally poor; and of that only 36.3 % of the women associated with malaria infection from mosquito bites. [17] The higher prevalence rate is more related to the practices but not the knowledge [18]. Additionally, poverty hinders the efforts of malaria control programs. Previous studies in Nigeria have shown that the level of education was a strong predictor of positive malaria-related KAP [19, 20]. According to our finding, there is agreement that malaria is linked with poverty. There is not debate about to upgrade knowledge about malaria and provide anti-malarial supplements, get truthful understanding of housing conditions to prevent malaria for effective intervention to take place.

CONCLUSION

Most respondents showed poor knowledge, moderate attitude and moderate practice regarding malaria prevention. However, there is a need to increase an understanding causes and symptoms of malaria among population in Palaw township, Myanmar. Providing knowledge on home environment improvement is a strategy to reduce malaria infection and transmission. It is therefore recommended that NGOs and policy makers of the country should encourage for malaria elimination through local communities' perceptions and practices regarding malaria.

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REFERENCES

1. World Health Organization [WHO]. Malaria Media Center. [cited 2015 June 20]. Available from: http://www.who.int/mediacentre/factsheets/fs094/en/
2. World Health Organization [WHO]. World malaria report 2014. [cited 2015 July 20] Available from: http://www.who.int/malaria/publications/world_malaria_report_2014/en/
3. Ministry of Health, Myanmar, Vector Borne Disease Control. Annual report of malaria situation in Myanmar. Yangon: Ministry; 2005.
4. Ministry of Health, Myanmar, Vector Borne Disease Control. Annual report of malaria situation in Myanmar. Yangon: Ministry; 2013.
5. Department of Health. National strategic plan malaria control Myanmar 2010 – 2015. Yangon: Department; 2012.
6. Yimer M, Abera B, Mulu W, Belay B. Knowledge, attitude and practices of high risk populations on louse-borne relapsing fever in Bahir Dar city, north-west Ethiopia. Science Journal of Public Health. 2014; 2: 15-22.
7. Thanabouasy C, Pumpaibool T, Kanchanakhan N. Assessment of knowledge, attitude, and practice regarding malaria prevention towards population in Paksong district, Champasack province, Lao PDR. J Health Res. 2009; 23(Suppl): 11-5.
8. Agyepong IA, Manderson L. The diagnosis and management of fever at household level in the Greater Accra Region, Ghana. Acta Trop. 1994 Dec; 58(3-4): 317-30.
9. Vector Control Working Group. Roll back malaria 2015: housing and malaria consensus statement. [cited 2015 July 20] Available from: http://www.rollbackmalaria.org/.../RBM%20VCWG%20Housing%20and%20Malaria%20C
10. Prüss-Üstün A, Corvalán C. Preventing disease through healthy environments. Geneva: WHO; 2006.
11. Feo ML, Eljarrat E, Manaca MN, Dobano C, Barcelo D, Sunyer J, et al. Pyrethroid use-malaria control and individual applications by households for other pests and home garden use. Environ Int. 2012 Jan; 38(1): 67-72. doi: 10.1016/j.envint.2011.08.008
12. Harnyuttanakorn WPP, Kanchanakhan N. Assessment of knowledge, attitude, and practice regarding malaria prevention towards Karen ethnic group in Umpiem Mai refugee camp, Phobphra district, Tal province. J Health Res. 2008; 22(4): 195-8.
13. Van Herck K, Van Damme P, Castelli F, Zuckerman J, Nothdurft H, Dahlgren AL, et al. Knowledge, attitudes and practices in travel-related infectious diseases: the European airport survey. J Travel Med. 2004 Jan-Feb; 11(1): 3-8.
14. Kyawt Kyawt S, Pearson A. Knowledge, attitudes and practices with regard to malaria control in an endemic rural area of Myanmar. Southeast Asian J Trop Med Public Health. 2004 Mar; 35(1): 53-62.
15. Wangdi K, Gatton ML, Kelly GC, Clements AC. Prevalence of asymptomatic malaria and bed net ownership and use in Bhutan, 2013: a country

earmarked for malaria elimination. Malar J. 2014 Sep 04; 13: 352. doi: 10.1186/1475-2875-13-352

16. Hung DD. Malaria preventive behavior among rural villagers in Binh Ding province, Vietnam. Bangkok: Faculty of Public Health, Mahidol University; 2007.
17. Idowu OA, Mafiana CF, Sotiloye D. Traditional birth home attendance and its implications for malaria control during pregnancy in Nigeria. Trans R Soc Trop Med Hyg. 2008 Jul; 102(7): 679-84. doi: 10.1016/j.trstmh.2008.03.020
18. Dawaki S, Al-Mekhlafi HM, Ithoi I, Ibrahim J, Atroosh WM, Abdulsalam AM, et al. Is Nigeria winning the battle against malaria? Prevalence, risk factors and KAP assessment among Hausa communities in Kano State. Malar J. 2016 Jul; 15: 351. doi: 10.1186/s12936-016-1394-3
19. Eteng M, Mitchell S, Garba L, Ana O, Liman M, Cockcroft A, et al. Socio-economic determinants of ownership and use of treated bed nets in Nigeria: results from a cross-sectional study in Cross River and Bauchi States in 2011. Malar J. 2014 Aug; 13: 316. doi: 10.1186/1475-2875-13-316
20. Russell CL, Sallau A, Emukah E, Graves PM, Noland GS, Ngondi JM, et al. Determinants of Bed Net Use in Southeast Nigeria following Mass Distribution of LLINs: Implications for Social Behavior Change Interventions. PLoS One. 2015; 10(10): e0139447. doi: 10.1371/journal.pone.0139447