Assessment of knowledge, attitude and practice regarding malaria prevention toward internal migrant population in Kawthoung Township, Kawthoung district, Tanintharyi region, Myanmar: A cross sectional study

Received June 2018
Accepted July 2018

Sa Aung Hein and Naowarat Kanchanakhan
College of Public Health Sciences, Chulalongkorn University, Bangkok, Thailand

Abstract

Purpose - This study aimed to assess and describe socio-demographic factors, knowledge, attitude and practice toward malaria prevention among internal migrants, Kawthoung Township, Kawthoung district, Myanmar.

Design/methodology/approach - A cross-sectional study with 316 respondents, age range from 18 to 65 years old, were interviewed face to face using structured questionnaires. Chi-square and logistic regression were used to analyze association between dependent and independent variables.

Findings - Of all the respondents, 65.5% had good knowledge; 17.4% had good attitude; and 49.1% had good practice for malaria prevention. Practice level was strongly associated with knowledge level and attitude level (*p*-value <0.001). Factors associated with good practice were respondents with age group of 45 to 54 years (*p*-value = 0.004, AOR = 7.478, 95% CI: 1.930-28.978, high school or higher education (p = 0.021, AOR = 11.363, 95% CI: 1.454- 88.814) income more than 200000 Kyats per month (*p*-value <0.001, AOR = 14.242, 95% CI: 3.240-62.608), less than 3 family members (*p*-value = 0.005, AOR = 4.670, 95% CI: 1.576- 13.834), accessibility to health facility with less than 30 minutes (*p*-value <0.001, AOR = 122.092, 95% CI: 20.339-732.915), source of information by government health staffs (*p*-value = 0.010, AOR = 8.293, 95% CI:1.669-41.211) and good attitude level (*p*-value = 0.017, AOR = 6.089, 95% CI:1.387-26.739).

Originality/value - Community mobilization activities through volunteer malaria workers and government health staff are necessary to improve knowledge, attitude and practice regarding malaria prevention practice.

Keywords Attitude knowledge and practice, Internal migrant, Malaria prevention, Myanmar

Paper type Research paper

Introduction

Malaria is caused by a parasite which is transmitted through the bite of certain type of infected *Anopheles* female mosquito. Malaria parasites which can cause infection in human are: *Plasmodium falciparum (P.f),* Plasmodium vivax (P.v), *Plasmodium ovale (P.o), Plasmodium malariae (P.m)* and *Plasmodium knowlesi (P.k).* Without proper treatment, people who are infected severely with *P. falciparum* can result in death. Since malaria is preventable disease, certain types of prevention measures must be done to avoid incidence of the malaria [1]. According to World Malaria report 2016, there were 212 million malaria cases in worldwide in 2015. Although reduction in incidence of malaria by 21% and mortality rate by 29% during the period of 2010 to 2015, malaria remained one of the major health problems especially in developing countries [2]. Malaria is endemic in 5 out of 6 countries in Greater Mekong Sub (GMS) Region which Myanmar was one of the counties. It has more than 60% of malaria transmission area [3]. In Myanmar, 43% of total population lives in malaria transmission area while 41% live in potential malaria transmission area. Majority of malaria species are *P. falciparum* with 66%

Journal of Health Research
Vol. 32, Suppl.2, 2018
pp. S159-S166
doi: 10.14456/jhr.2018.18

followed by *P. vivax* with 34%. Resistant malaria cases are found near Thailand – Myanmar border areas where 10 – 20 % of patients were found positive on third day after the treatment with Artemisinin combination therapy [4]. Sixty percentage of total populations in Kawthoung Township work in agriculture, fishing and forestry which are easily susceptible for transmission of malaria. In addition, almost all of the workers are internal migrants from central part of the Myanmar. An internal migrant refers to Myanmar citizen who has migrated from one place to another inside the country and stay in migrated place for more than six months. In this study, a person who was not born at Kawthoung Township and migrated to Kawthoung Township while staying for more than six months was regarded as internal migrant. According to Vector Borne Disease Control (VBDC) Tanintharyi data, in Kawthoung Township, total 887 malaria positive cases were detected in 2015 with Annual Blood Examination Rate (ABER) of 23.3 and Annual Parasite Index (API) of 6.3 [5]. For people living in high transmission of malaria areas such as in Kawthoung Township, it is crucial for them to have good knowledge, attitude and practice toward malaria prevention. It is reasonable to assess of knowledge, attitude, and practice regarding malaria prevention towards internal migrant population in Kawthoung Township, Kawthoung District, Tanintharyi Region, Myanmar where malaria cases are common and anti-malarial drug resistant area. In this study, it focused on internal migrant population from different part of Myanmar as they are sometime left out in providing health services and due to their working nature they are more prone to malaria. There is no previous knowledge; attitude and practice (KAP) study regarding malaria prevention conducted in Kawthoung Township. So, there is no information on malaria KAP for policy maker to use. This study aimed at assessing and describing socio-demographic status, knowledge, attitude and malaria prevention practice of internal migrant population.

Methods

Study site and study population

This study targeted on internal migrant population, aged 18 – 65 both male and female whose are currently living in Kawthoung Township which is 20139, Kawthoung District, Tanintharyi Region, Myanmar with inclusion criteria of Myanmar internal migrant population, aged between 18 and 65, being a member of selected household, living in Kawthoung Township for more than six month, voluntarily agree to participate in the study and can communicate well in Myanmar language [6]. The sample of this research was calculated by using Cochran formula with 95% confidence level [7]. The estimated proportion of an attribute (p) that is present in the population was obtained from previous study conducted in Sa Lin Township, Magwey Division, Myanmar which was good Malaria prevention practice score and it was 25% of total sample population [8]. The calculation formula of Cochran is presented as follows:

$$N = \frac{(Z)^2 \times (p)(q)}{(d)^2}$$

$$N = \frac{(1.96)^2 \times (0.25 \times 0.75)}{(0.05)^2}$$

$$N = 288$$

Sample size was 288, however 10% was added to avoid data loss. Final sample size was 316 Respondents. 10 villages/worksites were chosen with purposive sampling method was used to include the internal migrant population. After that, stratified and systematic sampling methods were used to get desired sample size. The number of sample population was selected proportionately from each village/worksite. Sample households were selected according to a random starting point and a fixed periodic interval. The sampling interval was calculated by dividing the total household present in selected worksite by the desired sample size. If there were more than one person in selected household that met the inclusion and exclusion criteria, we chose the respondent using simple random sampling with lottery method.

Instrument

From the previous studies and articles regarding assessment of knowledge, attitude and practice on malaria prevention, standardized questionnaire was developed for face to face interview. To obtain validity of this study, consulting experts was 2 academic experts and 1 local expert. Also, review on literature, review on previous study and guidelines was done. Total Item-Objective Congruence Index: IOC was 0.97 and it was used as instrument to test validity. To establish reliability, pilot study was done. The questionnaire was tested in 30 migrant populations in Kawthoung Township. For reliability, Kuder-Richardson-20 (KR-20) was used on knowledge questions and score was 0.913. Cronbach's alpha was used on attitude questions and score was 0.941.

Data collection and analysis

For the data collection, face to face interview method was used after getting approval from respective village/worksite authority. Participant were explained about the survey verbally as well as written form by research assistant. Signature or finger print were obtained from participant after receiving the participant agreement. After collection of data, a questionnaire was coded before entering into the SPSS version 22. (licensed by Chulalongkorn University). Descriptive statistics i.e. frequency, percentage, mean, standard deviation, range and normality test were used for analyzing the general characteristics of the respondents and knowledge, attitude and practice about malaria. Chi-Square test was used to determine the association between the independent and dependent variables at 0.05 significant levels. Logistic regression was used on the independent and dependent variables which had association at ≤0.2 significant levels with bivariate analysis.

For the ethical consideration, the research proposal was submitted and approved by the Chulalongkorn University Research Ethics Review Committee (code - 051.1/61 on 21 March 2018).

Results

Knowledge, attitude and practice of malaria prevention

Table 1, there was statically significant association between knowledge level and attitude level using the Chi-square test (p-value <0.001). Compare to other groups, the proportion of good knowledge was seen more in moderate attitude group (55.1%). Respondents who had both moderate knowledge and attitude level were seen as 90.9%. Respondents with poor knowledge were seen mostly in poor and moderate attitude groups with total of 98.2%.

Table 2 showed the association between knowledge level and practice level regarding the malaria prevention. There is significant association between knowledge level and practice level with p-value <0.001. All of the poor knowledge level had poor practice level. Good practice level is slightly higher in moderate knowledge level than

Table 1. Association between knowledge level and attitude level regarding malaria

Knowledge level	Total (n=316)	Attitude level n (%)			
		Poor	Moderate	Good	*p*-value
Poor	54	23(42.6)	30(55.6)	1(1.9)	<0.001*
Moderate	55	2(3.6)	50(90.9)	3(5.5)	
Good	207	42(20.3)	114(55.1)	51(24.6)	

Note: *Significant by Chi-square test

Table 2. Association between knowledge level and practice level regarding malaria prevention

Knowledge level	Total (n=316)	Practice level n (%)		
		Poor	Good	*p*-value
Poor	54	54(100.0)	0(0.0)	<0.001*
Moderate	55	24(43.6)	31(56.4)	
Good	207	83(40.1)	124(59.9)	

Note: *Significant by Chi-square test

Table 3. Association between attitude level and practice level regarding malaria prevention

Attitude level	Total (n=316)	Practice level n (%)		
		Poor	Good	*p*-value
Poor	67	56(83.6)	11(16.4)	<0.001*
Moderate	194	92(47.4)	102(52.6)	
Good	55	13(23.6)	42(76.4)	

Note: *Significant by Chi-square test

Table 4. Association between socio-demographic, trusted source of information, knowledge level, attitude level and practice level regarding malaria prevention (n=316)

Variables	Poor practice	Good practice	Adjusted OR	95%CI		*p*-value
				Lower	Upper	
Age (years)						
18-24**	41	24	1			
25-34	40	42	6.101	1.676	22.210	0.006*
35-44	34	41	4.300	1.230	15.038	0.022*
45-54	29	35	7.478	1.930	28.978	0.004*
55-65	17	13	5.824	1.145	29.629	0.034*
Marital status						
Single**	31	22	1			
Married	115	124	0.266	0.069	1.030	0.055
Separated	10	3	0.061	0.006	0.645	0.020*
Widowed	5	6	0.278	0.024	3.198	0.305
Education level						
Never attend school**	25	3	1			
Primary school	108	72	2.084	0.401	10.837	0.383
Secondary school	23	59	6.351	1.111	36.314	0.038*
High school and higher education	5	21	11.363	1.454	88.814	0.021*
Type of occupation						
Forest related workers**	130	110	1			
Non forest related workers	31	45	1.668	0.670	4.149	0.271

(continued)

Table 4. (continued)

Variables	Poor practice	Good practice	Adjusted OR	95%CI		*p*-value
				Lower	Upper	
Income (Kyats/month)						
< 100000**	13	8	1			
100000 - 200000	96	67	4.594	1.049	20.144	0.043*
>200000	52	80	14.242	3.240	62.608	<0.001*
Length of stay (years)						
Less than and equal to 3 years**	60	36	1			
More than 3 years	101	119	1.887	0.797	4.472	0.149
Family members (persons)						
≤3	63	76	4.670	1.576	13.834	0.005*
4-5	69	53	1.272	0.446	3.627	0.653
≥6**	29	26	1			
Accessibility to nearest health facility (minutes by motorcycle)						
<30	4	40	122.092	20.339	732.915	<0.001*
30-60	39	62	5.356	1.460	19.645	0.011*
60-90	80	46	2.076	0.594	7.251	0.252
>90**	38	7	1			
Mode of transport						
Motorcycle**	132	115	1			
Others[1]	29	40	1.246	0.476	3.257	0.654
Source of information						
Volunteer malaria workers	112	92	2.820	0.783	10.153	0.113
Government health staffs	26	35	8.293	1.669	41.211	0.010*
Media**	23	28	1			
Knowledge level						
Poor	54	0	0.000	0.000		0.996
Moderate	24	31	0.860	0.322	2.297	0.764
Good**	83	124	1			
Attitude level						
Poor**	56	11	1			
Moderate	92	102	6.063	1.556	23.632	0.009*
Good	13	42	6.089	1.387	26.739	0.017*

Note: *Significant by binary logistic regression; ** Reference group; [1] Car, boat, walking

poor practice level. Almost 60% of respondents who had good knowledge also had good practice.

For the association between attitude level and practice level of malaria prevention, there is significant association between these two (*p*-value <0.001) which is shown in Table 3. Respondents with good attitude who also had good practice are 76.4% when compared to those with poor practice. Respondents with moderate attitude were slightly higher (52.6%) when compare to those with poor practice (47.4%). Respondents with poor attitude were higher in poor practice groups with 83.6%.

Multivariate analysis

Table 4 showed there was association between good practice level and age group 45 to 54 years (*p*-value = 0.004, AOR = 7.478, 95% CI: 1.930-28.978, high school or higher education (p = 0.021, AOR = 11.363, 95% CI: 1.454- 88.814) income more than 200000 Kyats per month (*p*-value <0.001, AOR = 14.242, 95% CI: 3.240-62.608), less than 3 family members (*p*-value = 0.005, AOR = 4.670, 95% CI: 1.576-13.834), accessibility to health facility with less than 30 minutes (*p*-value <0.001, AOR = 122.092, 95% CI: 20.339-732.915), source of information by government

health staffs (p-value = 0.010, AOR = 8.293, 95% CI:1.669-41.211) and good attitude level (p-value = 0.017, AOR = 6.089, 95% CI:1.387-26.739).

Discussion

When the age was added into multivariate model, age groups from 25 to 65 showed that they were more likely to do the good practice. This result was similar with study conducted in Ethiopia, Africa where age group of 18 to 24 was set as reference and age group 25 to 34 had more likely usage of malaria prevention measure [9]. Young adults (age 18 – 24) were likely to live outside the scope and influence of parents and less likely to pracitce healthy behavior [10]. There was significant association between knowledge level, attitude level and marital status. This result was similar with study conducted in LAO PDR where marital status was significantly associated with knowledge level [11]. Married people were more likely to influence or control on their partner health behavior and knowledge [12]. Education level is significantly associated with knowledge level ,attitude level and practice level. This result was similar with study conducted in Madagascar, Africa where knowledge level of malaria prevention was associated with education level [13]. Educated people had easier and better understanding of malaria knowledge [14]. About 75.9% of respondent in this study were forest related workers which were high risk group of malaria. There was association between type of occupation and practice of malaria prevention.. The result was similar with study conducted in Cambodia where malaria prevention practice was significantly associated with type of occupation [15]. For example, type of occupation such as rubber planttation workers who had to work at nightime, were more likely to used personal protetive measures such as wearing long sleeves cltohes instead of using bed nets. The higher the income, the better the malaria prevention practice. This result was similar with study conducted in South Ethiopia [16]. Affordibilty to certain preventive materials such as mosquito repellent cream may play a role in income of respondents since it was not provided by the goverments. For the accessibility to nearest health facility by motor cycle, 71.9 % took between 30 to 90 minutes. The distance showed association with knowledge level, attitude level and practice level . A study conducted in Kenya showed protective efficacy increased as duration of travelling time decrease. From Kenya study, longest duration of more than 120 minutes was set as reference group and risk of developing malaria was set to analyze and respondents who had to travel for less than 30 minutes had less likely to suffer from malaria with 0.52 time chance [17]. As the travelling to health facility for receiveing health education and services was convinient, respondents can access the health facility more and likely to have good knowledge and practice regarding malaria. For the source of information regarding malaria prevention, most sources were coming from the volunteer malaria workers (64.6%) and followed by government health staffs (19.3%). The attitude level of malaria prevention was significantly associated with the source of information. An intervention study conducted in Uganda, Africa showed the behavioral change communication activities done by health staffs and community health worker improved malaria prevention knowledge from 76.6% to 90% in school children, bed net utilization rate from 51% to 74.4% in children who are under 5 years old and from 24% to 78% in pregnant women which are malaria risk groups [18]. Face to face health education method was easier for the respondents to understand, memorizable and more related to their socio-economic condition than general information from media. Practice level in this study is significantly associated with knowledge level and attitude level. The results are similar with previous studies in Palaw Township, Myanmar with malaria prevention practice significantly associated with knowledge and attitude level [19]. With the

better understanding of malaria prevention, respondents knew how to prevent malaria with correct methods.

Limitation

Time limitation is one of the barriers to find out about the reason behind the incorrect knowledge, attitude and practice. As the study was cross-sectional, it was difficult to determine between causal factor and effect.

Conclusion

Most of the sources of information from the studied population were derived from Volunteer Malaria Workers and government health staffs. Community can access to Volunteer Malaria Workers and government health staff more easily than other source. Other source may need accessibility and availability such as television and radio. Health system decision makers should focus on capacity building and make motivation for health workers. Although respondents used bed net, usage on personal protection seem to be low. Some of the jobs such as rubber plantation workers need to work at night. Personal protection measure needs to make more available to risk group. Government and Non-government organizations should try to provide not only bed nets but also personal protective measures.

Acknowledgment

I would like to thank Tepanata Pumpaibool, Ph.D and Nanta Auamkul, M.D, M.P.H for their kind guidance, advice and giving direction whenever I need them. Without her help, this study will not be successfully complete. I am a student under Scholarship for International Graduate Students in ASEAN Countries supported by Graduate School, Chulalongkorn University. I wish to show my sincere thanks to scholarship program which allow me to study the program.

References

1. Centers for Disease Control and Prevention [CDC]. Malaria. [cited 2018 June]. Available from: https://www.cdc.gov/parasites/malaria/index.html
2. World Health Organization [WHO]. World malaria report 2016. Geneva: WHO; 2016.
3. World Health Organization [WHO]. Population morbidity and malaria 2017. Geneva: WHO; 2017.
4. World Health Organization [WHO]. Strategic framework for artemisinin resistance containment in Myanmar (MARC) 2011-2015. Geneva: WHO; 2011.
5. The Vector Borne Disease Control Programme [VBDC], Tanintharyi, Myanmar. Annual report 2015. Myanmar: The Vector Borne Disease Control Programme; 2015.
6. Myanmar, Ministry of Immigration and Population. The 2014 Myanmar population and housing census, Tanintharyi Region Report. Tanintharyi: Ministry; 2014.
7. Cochran WG. Sampling techniques. 3rd ed. New York: John Wiley & Sons; 1977.
8. Tun KD, Soe MW. Knowledge, attitude and practice on insecticide treated nets in Myanmar. [cited 2018 June]. Available from: https://www.researchgate.net/publication/268331226_KNOWLEDGE_ATTITUDE_AND_PRACTICE_ON_INSECTICIDE_TREATED_NETS_IN_MYANMAR
9. Paulander J, Olsson H, Lemma H, Getachew A, San Sebastian M. Knowledge, attitudes and practice about malaria in rural Tigray, Ethiopia. Glob Health Action. 2009 Jan; 2. doi: 10.3402/gha.v2i0.1839
10. Neinstein LS. The new adolescents: An analysis of health conditions, behaviors, risks, and access to services among emerging young adults. Los Angeles, CA: University of Southern California; 2013.
11. Thanabouasy C, Pumpaibool T, Kanchanakhan N. Assessment of knowledge, attitude and practice regarding malaria prevention towards population in Paksong district, Champasack province, Lao PDR. Journal of Health Research. 2009; 23(Suppl.): 11-5.
12. Umberson D. Gender, marital status and the social control of health behavior. Soc Sci Med. 1992 Apr; 34(8): 907-17.

13. Krezanoski PJ, Tsai AC, Hamer DH, Comfort AB, Bangsberg DR. Household malaria knowledge and its association with bednet ownership in settings without large-scale distribution programs: Evidence from rural Madagascar. J Glob Health. 2014 Jun; 4(1): 010401. doi: 10.7189/jogh.04.010401

14. Tusting LS, Willey B, Lucas H, Thompson J, Kafy HT, Smith R, et al. Socioeconomic development as an intervention against malaria: a systematic review and meta-analysis. Lancet. 2013 Sep; 382(9896): 963-72. doi: 10.1016/S0140-6736(13)60851-X

15. Yasuoka J, Poudel KC, Poudel-Tandukar K, Nguon C, Ly P, Socheat D, et al. Assessing the quality of service of village malaria workers to strengthen community-based malaria control in Cambodia. Malar J. 2010 Apr; 9(1): 109. doi: 10.1186/1475-2875-9-109

16. Girum T, Hailemikael G, Wondimu A. Factors affecting prevention and control of malaria among endemic areas of Gurage zone: an implication for malaria elimination in South Ethiopia, 2017. Trop Dis Travel Med Vaccines. 2017 Dec; 3(1): 17. doi: 10.1186/s40794-017-0060-2

17. O'Meara WP, Noor A, Gatakaa H, Tsofa B, McKenzie FE, Marsh K. The impact of primary health care on malaria morbidity--defining access by disease burden. Trop Med Int Health. 2009 Jan; 14(1): 29-35. doi: 10.1111/j.1365-3156.2008.02194.x

18. Mugisa M, Muzoora A. Behavioral change communication strategy vital in malaria prevention interventions in rural communities: Nakasongola district, Uganda. Pan Afr Med J. 2012; 13(Suppl 1): 2.

19. Linn K, Taneepanichskul N, Norkaew S. Knowledge, attitudes and practices regarding to malaria and home environment prevention among population in Palaw Township, Tanintharyi region of Myanmar. Journal of Health Research. 2017; 31(Suppl.1): s57-s63.

Corresponding author

Naowarat Kanchanakhan can be contacted at: Naowarat.k@chula.ac.th