

Knowledge, attitude and practice levels regarding malaria among people living in the malaria endemic area of Myanmar

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Abstract

Purpose – Malaria still remains a significant public health problem in Myanmar and it has a complex epidemiology. Evidence-based community awareness raising interventions are also particularly needed. This cross-sectional study was organized to explore the basic characteristics associated with knowledge, attitude and practice (KAP) regarding malaria among people living in the most malaria-endemic villages of the Banmauk Township, Sagaing Region, Myanmar. The paper aims to discuss these issues.

Design/methodology/approach – The Banmauk, one of the most malaria-endemic townships, was selected purposively in order to represent the survey results for people living in malaria hotspots. During the peak malaria season (July 2018), 250 household leaders were invited to be interviewed with structured questionnaires. In addition to descriptive data, the associations were determined by χ^2 -test and correlation.

Findings – Overall KAP indicated considerably low percentages of good levels, especially in practice, only 21.6 percent showed good practice, 38.4 percent had good knowledge and 56.8 percent had good attitude. Age ($p = 0.022$) and annual family income ($p < 0.001$) were significantly associated with the knowledge level, whereas having fever attacks among family members in the last two weeks ($p = 0.023$) showed statistical association with attitude at a p -value < 0.05 . Surprisingly, there were no associated variables with malaria practice. In addition, there were negative correlations between knowledge with attitude and knowledge with practice; however, the results were not significant.

Originality/value – The overall KAP regarding malaria was at relatively poor levels among people living in malaria transmission areas. Therefore, new approaches to improve malaria KAP are promptly needed in this community.

Keywords Malaria, KAP, Basic characteristics, Endemic villages, Myanmar

Paper type Research paper

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Introduction

Even though Myanmar is well on the way to reducing its incidence of malaria, it still endures considerably more morbidity and mortality from the disease than other Southeast Asia countries. In 2016, malaria was still endemic among a population of 43.9m living in 291 out of 330 townships in Myanmar. The number of malaria cases has dropped significantly, from 516,041 in 2010 to 105,178 in 2016, and deaths from 1,707 in 2010 to 21 in 2016, reflecting a substantial improvement in case management, particularly at the periphery and among populations at risk of malaria[1]. However, these are still among the highest morbidity and mortality rates in the countries of Southeast Asia Region (SEARO)[2]. Nevertheless, with high-level political commitment now in place, Myanmar is well positioned to pursue an elimination agenda.

With reference to World Health Organization (WHO)–Greater Mekong Sub-region strategies, the country plays the ongoing process of malaria elimination in areas of both multidrug and artemisinin-based combination therapies resistance, and also to be narrowed down malaria epidemiological scenery by reducing active transmission in order to achieve elimination of malaria in Myanmar by the year 2030[3]. The National Strategic Plan for magnifying malaria control and advancing progress toward Malaria Elimination (2016–2020) represents the first milestone of a 15-year strategy to eliminate malaria in Myanmar. While concentrating intensive control efforts in more affected areas to reduce cases, elimination activities are succeeding in less affected areas. These areas will be expanded progressively and it is expected that the elimination of *Plasmodium falciparum* will be achievable by 2025. Thereafter, Myanmar will be malaria free by 2030[1].

The ultimate goal is quite distant due to certain issues, including the constantly low level of the community's knowledge, attitude and practice (KAP) regarding malaria. During the malaria elimination effort, KAP must be considered an essential ingredient of adhering to the elimination agenda[4]. In the meantime, studies have proved that poor KAP levels have somehow contributed to the increased burden of malaria[5–7]. Thus, particular efforts to address the improvement of KAP always need to be considered and implemented[8]. Moreover, available data show that overall KAP levels among Myanmar's people are drastically low[9–12]. Innovative and newly produced interventions based on published findings are still limited. Most of the studies in Myanmar were targeted especially at malaria-prevention practices and care-seeking behaviors rather than factors influencing overall KAP[10, 13]. The evaluation studies for the effectiveness of current interventions were also required in addition to strengthening community participation. By knowing these elements, the new, results-based health education interventions can also be figured out, especially for current malaria transmission areas. Thus, this cross-sectional study was organized to explore the basic characteristics associated with KAP regarding malaria among people living in the most malaria-endemic villages of Banmawk Township, Sagaing Region, Myanmar.

Methodology

First, the Banmawk Township was selected purposively in order to represent the survey results for people living in malaria hot-spot areas. It is located in Sagaing Region, which is situated in the north-western part of the country. The majority of population were farmers. According to the township malaria figure 2017, the annual parasite incidence was 26.61 per 1,000 population at risk. From among the 221 villages of Banmawk, 61 villages were covered by the government malaria team's volunteers and, of these, 4 villages with the highest incidence were chosen as the study area. To be represented for a total of 352 households in all selected villages, 70 percent of households were invited for interview.

The indicated sample of 250 households was selected by systematic random sampling based on a list of local administrative unit. A male or female household leader or

representative from each household who can communicate very well about other household members' health aged more than 18 years old was interviewed via structured standard questionnaires. The standard questionnaire form in English has been adopted and modified from the WHO Malaria Indicator Survey Toolkit, which was previously used in Myanmar for a Malaria Indicator Survey during 2016[14]. Back-translation methods were used for rendering responses into Burmese. For the reliability, 30 respondents were pre-tested in the ManKat village of same township with similar geographical conditions. Cronbach's α coefficient of the questionnaires was calculated and resulted 0.89 for reliability. To test the internal consistency of the questions with dichotomous choices, Kuder–Richardson formula 20 (KR20) was also satisfactory at 0.89. The majority of questions are designated as single or multiple responses with predefined choices. The information covered socio-economic status for each resident together with KAP regarding malaria.

The data collection process was carried out in all selected villages during July 2018. Two research assistants were selected before data collection. The researcher gave training to those research assistants for one day in order to understand the questionnaires, data collection process, practicing under real conditions and human ethics. The interviewer explained the objectives of the study and obtained informed consent from the respondents. Moreover, the participation of the respondents was fully voluntaries and the decision to participate or not was not being disclosed to any authority. The data collectors were requested to explain the questionnaire clearly to the respondents and not to prompt answers, in order to avoid bias.

The collected data were coded and entered by using Microsoft excel 2016 and transferred to STATA version 13.0 and analyzed. Frequencies, proportions, and mean and standard deviation were used to describe the descriptive statistics. The overall scores were calculated for each KAP section. For the knowledge, 30 mini-questions were constructed and “1” score was given for each right answer, whereas “0” for the wrong one. There were 20 statements under the attitude section and the four-point Likert scale model was applied for the scoring. The maximum score and the minimum score were 80 and 20, respectively. The practice section consisted of 25 questions regarding effective LLINs usage and other personal protective measures, malaria diagnosis and treatment seeking behaviors, and adherence to the prescribed anti-malaria medicines. A score was obtained for each correct choice and zero score for the false answer. Then the scores were determined by using mean score as a cut-off point and grouped as either good ($>$ mean score) or poor level (\leq mean score) for each KAP portion. χ^2 -test and correlation were used to illustrate associations between dependent and independent variables. Statistical significance was set at 0.05. Ethical approval for this study has been submitted and approved by the Institutional Technical and Ethical Review Board, University of Public Health – Yangon, Ministry of Health & Sports (UPH-IRB 2018/Research/29).

Results

Among 250 participants, the general characteristics showed that the majority of respondents were more than 35 years (56.0 percent), and 64.4 percent were male, 88.4 percent possessed family income up to 3,000,000 kyats. Moreover, 87.2 percent of the respondents were low educated, 66.8 percent had a less number of family members in their household and 78.4 percent of them responded that their family members had no fever attack in last two weeks. Nearly 90.0 percent of them had previous attempts of malaria in their life, almost all knew very well about malaria word and had enough ownership of good-quality bed-nets for their family members. Furthermore, 75.6 percent of them received a kind of malaria-related health education session organized either by government malaria workers and or other non-government organizations during last six months. Some participants (35.2 percent) had ever been volunteering for a kind of malaria-related activity in their village (Table I).

Characteristics	Frequency	Percentage	Knowledge, attitude and practice levels	
<i>Age (years)</i>				
18–35	110	44.0		
> 35	140	56.0		
<i>Sex</i>				
Male	161	64.4		
Female	89	35.6		
<i>Annual income (kyats)^a</i>				
≤ 3,000,000	221	88.4		
> 3,000,000	29	11.6		
<i>Education</i>				
Primary school	218	87.2		
High school and above	32	12.8		
<i>Family members</i>				
≤ 5	167	66.8		
> 5	83	33.2		
Fever attacks among family members in last 2 weeks	54	21.6		
Having previous attempts of malaria in life	220	88.0		
Knowing of malaria term	246	98.4		
Enough ownership of good-quality LLINs ^b	247	98.8		
Receiving of health education services in last 6 months	189	75.6		
Volunteered for village-based malaria-related health services	88	35.2		
Notes: ^a \$1~1,550 kyats; ^b the nets were impregnated with deltamethrin not exceed three years and provided for two persons/net				

Table I. General characteristics of 250 respondents

For overall KAP regarding malaria, after grouping with its mean score, the results indicated considerably low percentages of good levels especially in practice. Almost 40.0 percent of respondents had good knowledge, 56.8 percent had good attitude while only 21.6 percent showed good practice (Table II).

The significantly associations were found between age ($p = 0.022$) and annual income ($p < 0.001$) with the knowledge level of respondents whereas having fever attack among family in last two weeks ($p = 0.023$) showed statistically association with the attitude level (Table III). By the results, those who aged more than 35 years were likely to have poor knowledge (67.9 percent). Again, participants with the annual income of ≤3,000,000 kyats were more favorable to have a poor level of knowledge (65.6 percent). For the attitude, it found 70.4 percent

Characteristics	Frequency	Percentage	
<i>Overall knowledge</i>			
Good	96	38.4	
Poor	154	61.6	
<i>Overall attitude</i>			
Good	142	56.8	
Poor	108	43.2	
<i>Overall practice</i>			
Good	54	21.6	
Poor	196	78.4	
Notes: $n = 250$. Grouping by mean scores			

Table II. Overall level of knowledge, attitude and practices regarding malaria

Characteristics	Knowledge level			Attitude level			Practice level		
	Good n(%)	Poor n(%)	<i>p</i>	Good n(%)	Poor n(%)	<i>p</i>	Good n(%)	Poor n(%)	<i>p</i>
<i>Age (years)</i>									
18-35	51 (46.4)	59 (53.6)	0.022*	64 (58.2)	46 (41.8)	0.696	21 (19.1)	89 (80.9)	0.393
> 35	45 (32.1)	95 (67.9)		78 (55.7)	62 (44.3)		33 (23.6)	107 (76.4)	
<i>Sex</i>									
Male	56 (34.8)	105 (65.2)	0.114	90 (55.9)	71 (44.1)	0.699	34 (21.1)	127 (78.9)	0.803
Female	40 (44.9)	49 (55.1)		52 (58.4)	37 (41.6)		20 (22.5)	69 (77.5)	
<i>Annual income (kyats)^b</i>									
≤ 3,000,000	76 (34.4)	145 (65.6)	< 0.001*	123 (55.7)	98 (44.3)	0.313	44 (19.9)	177 (80.1)	0.073
> 3,000,000	20 (69.0)	9 (31.0)		19 (65.5)	10 (34.5)		10 (34.5)	19 (65.5)	
<i>Education</i>									
Primary school	79 (36.2)	139 (63.8)	0.067	127 (58.3)	91 (41.7)	0.225	48 (22.0)	170 (78.0)	0.675
High school and above	17 (53.1)	15 (46.9)		15 (46.9)	17 (53.1)		6 (15.8)	32 (84.2)	
<i>Family members</i>									
≤ 5	68 (40.7)	99 (59.3)	0.285	92 (55.1)	75 (44.9)	0.439	35 (21.0)	132 (79.0)	0.726
> 5	28 (33.7)	55 (66.3)		50 (60.2)	33 (39.8)		19 (22.9)	64 (77.1)	
<i>Fever attacks among family members in last 2 weeks</i>									
Yes	24 (44.4)	30 (55.6)	0.302	38 (70.4)	16 (29.6)	0.023*	11 (20.4)	43 (79.6)	0.804
No	72 (36.7)	124 (63.3)		104 (53.1)	92 (46.9)		43 (21.9)	153 (78.1)	
<i>Having previous attempts of malaria in life</i>									
Yes	82 (37.3)	138 (62.7)	0.321	129 (58.6)	91 (41.4)	0.112	48 (21.8)	172 (78.2)	0.82
No	14 (46.7)	16 (53.3)		13 (43.3)	17 (56.7)		6 (20.0)	24 (80.0)	
<i>Knowing of malaria term</i>									
Yes	94 (38.2)	152 (61.8)	0.631	139 (56.5)	107 (43.5)	0.459	54 (22.0)	192 (78.0)	0.290
No	2 (50.0)	2 (50.0)		3 (66.7)	1 (33.3)		0 (0.0)	4 (100.0)	
<i>Enough ownership of good-quality LLINs^a</i>									
Yes	96 (38.9)	151 (61.1)	0.169	140 (56.7)	107 (43.3)	0.729	52 (21.1)	195 (78.9)	0.056
No	0 (0.0)	3 (100.0)		2 (66.7)	1 (33.3)		2 (66.7)	1 (33.3)	
<i>Receiving of health education services in last 6 months</i>									
Yes	71 (37.6)	118 (62.4)	0.633	107 (56.6)	82 (43.4)	0.917	44 (23.3)	145 (76.7)	0.256
No	25 (41.0)	36 (59.0)		35 (57.4)	26 (42.6)		10 (16.4)	51 (83.6)	
<i>Volunteered for village-based malaria-related health services</i>									
Yes	29 (33.0)	59 (67.0)	0.192	49 (55.7)	39 (44.3)	0.793	23 (26.1)	65 (73.9)	0.199
No	67 (41.4)	95 (58.6)		93(57.4)	69 (42.6)		31 (19.1)	131 (80.9)	

Table III. Associations between general characteristics and knowledge, attitude and practice levels regarding malaria

Notes: *n* = 250. Degree of freedom for χ^2 -test = 1. ^aThe nets were impregnated with deltamethrin not exceed three years and provided for two persons/net; ^b\$1~1,550 kyats. **p* < 0.05

of the respondents who had good attitude, their family members experienced fever attack within past two weeks. In contrary, the respondents who had no family member suffered from fever attack had poor attitude. However, there were no associations with constructed variables and respondents' practice at *p* < 0.05.

Finally, Table IV illustrated the correlations among knowledge, attitude and practice. The results showed that there was a negative association between knowledge with attitude and also knowledge with practice. Moreover, there was a positive association between attitude and practice. However, there was no drastically significant between them at *p* < 0.05.

Discussion

Overall KAP levels were considerably low percentages of good levels especially in practice, even among people living in malaria transmission areas. This might be due to easy access to diagnosis and treatment services by village health volunteers' network; effective interactions of current using anti-malarial drugs; improvements in transportation facilities; cultural beliefs and questionable health education curriculums; and information, education and communication materials distributed by various partners. Therefore, new approaches to improve malaria KAP are promptly needed among this community. These results were similar to other studies showing poor levels of KAP among their targeted community[4, 15, 16].

Separately, only 38.4 percent of participants showed a good level of knowledge, even though they are living in malaria control activities prioritized villages. This is similar to results from several other studies[9, 11]. This can be explained as the community people still have wide misconceptions and misbeliefs, though they have had involved in health education sessions, health talks and peers' education programs as seen in Ethiopia[17]. The effectiveness of interventions implemented by the partners will also be questionable thing[18]. Generally, most of the education activities were organized during daytime, at a convenience place with only some of a family's decision makers. Usually, villagers were at their working places in the daytime and hence, the majority of attendances were female who were either too young or too old to efficiently disseminate information, or make decisions for other family members. On the other hand, large numbers of low educated people (87.2 percent) might also be another contributing factor[19]. There were significantly associations between age ($p = 0.022$) and annual income ($p < 0.001$) with the knowledge level of respondents. Older age groups possessed more experiences on disease and participated in higher numbers of awareness raising activities. The result was aligned with a study of Ethiopia[8].

Among the respondents, more than half (56.8 percent) had a good level of attitude, which was the highest level among KAP. The results were coincident with the studies in Nigeria and Ethiopia[7, 8]. This might due to a bounce effect on their attitude, as the study was conducted among the highest malaria burden villages, within peak season (July 2018). However, the significance of attitude on affecting malaria transmission is quite low[20]. Again, there were also two-fifths of samples (43.2 percent) who described a low level of attitude. This poor proportion may be increased during low malaria seasons, even among people living in high endemic villages. In the meantime, having a fever attack among family in last two weeks ($p = 0.023$) showed statistically association with the attitude level. If there was fever attack among any family members within past two weeks, a majority of respondents (70.4 percent) would have a good attitude level, compared than that of others. This is a simple fact that among those who have lived with malaria, attentions on that disease would certainly be higher. This was demonstrated in a study among Chinese international travelers[21].

Contrastingly, the results revealed only (21.6 percent) of good practice among sampled population, which was allied with other findings[10, 12, 22]. It was drastically low and alarming, considering that it is a new kind of intervention in this community to strengthen malaria control practices, especially care-seeking and prevention behaviors. In fact, diagnosis and treatment facilities in each village are staffed by village health volunteers. However, the

Descriptions	Attitude		Practice	
	<i>r</i>	<i>p</i> -value	<i>r</i>	<i>p</i> -value
Knowledge	-0.0752	0.235	-0.0147	0.816
Attitude			0.1045	0.098

Note: $n = 250$

Table IV.
Correlations between
knowledge, attitude
and practice

performance of those assigned volunteers still needs to be addressed[23]. Again, though villagers possessed enough bed-nets (98.8 percent), the proper use of Long Lasting Insecticide-Treated Nets (LLINs) should be encouraged, to overcome people's ignorance and misperceptions in addition to sustaining the quality of distributed bed-nets[24, 25]. The durability of LLINs should also be upgraded in order to deal with both cold and hot weather. Care-seeking (diagnostic- or treatment-seeking) practices were essential to prevent unnecessary developing of severe forms and to curtail onward local transmission. Nevertheless, there were no associations with constructed variables and respondents' practice at $p < 0.05$.

Concerning correlations among KAP, the results showed that there was a negative association between knowledge and attitude as well as between knowledge and practice. Similar results could be found in Nigeria[26] and contrary findings were seen in studies in Lower Myanmar, Lao PDR and Southeast Ethiopia[9, 17, 27]. This means that, despite improving on knowledge, the attitude and practice will still remain constant or even tend to be poor. Therefore, each activity should be targeted as a specific priority (i.e. either knowledge or attitude or practice by itself) rather than addressing the improvements in overall KAP. There was a positive association between attitude and practice, however. So, it seems that, if people pay more attention to malaria, their practices are going to improve. However, there was no statistical significance correlation between KAP at $p < 0.05$.

Conclusion

Overall, KAP regarding malaria was poor among people living in malaria transmission areas. On the other hand, only a few associated factors were found, as people are mostly neutral. Therefore, new approaches to improving malaria KAP are evidently needed in this community. Quality interventions should be conducted according to area situation and malaria data, while discouraging static and continuous delivering of traditional form of application. From the results, the study concluded that the intervention should be a simple, friendly, short-points presentation to complete essential tasks in a timely manner. Last but not least, similar studies, of wider scope and with broader populations, as well as studies addressing evaluation of community participation in current health programs, are also encouraged.

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