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ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS MALARIA PREVENTION AND CONTROL AMONG ASSOSA WOREDA COMMUNITIES, BENISHANGUL GUMUZ REGIONAL STATE, WESTERN ETHIOPIA

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ABSTRACT

The present study was conducted to investigate the Knowledge, Attitude and Practice of community towards Malaria Prevention and Control among Assosa Woreda communities, Benishangul Gumuz Regional State, Western Ethiopia and community based assessment was investigated by using simple and structured question, as the result revealed that majority of the community had good information in relation to malaria prevention and control. Health institutions and health extension workers are the main sources of information about malaria control and prevention activities in the study community. In this study the practice of the community to malaria prevention and control is very lower than Malaria Indicator Survey 2007 of Benishangul Gumuz Regional State. However the attitude of the community towards malaria prevention and control is very highest that the expected level of attitude in the region. Among many reasons for this, the community uses ITN for other purposes. Therefore, efforts are needed to increase utilization of ITN in the community through community conversation and education.

KEYWORDS: *malaria, prevention and control, ITN.*

INTRODUCTION

Malaria is a protozoal disease transmitted by a bite of infected Anopheles mosquitoes. It is the most important of the parasitic diseases of humans, with transmissions in 103 countries affecting greater than l billion people and cause between one and three million deaths each year.[1] Malaria remains to be a public health concern and of the considerable socio-economic burden in Ethiopia. It has been known to be endemic below 2000 meter above sea level, except during the epidemics where it could be transmitted up to 2400 meter above sea level.[2] Malaria affects the health and wealth of nations and individuals alike. In Africa today, malaria is understood to be both a disease of poverty and a cause of poverty. Annual economic growth in countries with high malaria transmission has historically been lower than in countries without malaria. Economists believe that malariais responsible for a 'growth penalty' of up to 1.3% per year in some African countries.[3] Approximately 75% of Ethiopia's landmass is malaria-endemic; areas of diseases are primarily associated with altitude and rainfall.[4, 5, 7, 10] The peak of malaria illness incidence usually follows the main peak rainfall season (June to September) each year. However, certain areas in the south and west of the country have a peak rainfall season beginning earlier in April and May or have no clearly defined rainfall season.[2] Depending on these variable rainfall and altitude patterns, malaria transmission tends to be highly heterogeneous geo-spatially within each year as well as between years. Additionally, focal and multifocal malaria epidemics may occur, peaking every 5 to 8 years, with the most recent widespread epidemics reported between 2003 and 2005.[8, 9]

In 2009/2010, malaria was the leading cause of outpatient visits and health facility admissions, accounting for 14% of outpatient visits and 9% of admissions.[6, 7] In 2010, the Federal Ministry of Health (FMOH) reported 4,068,764 clinical and confirmed malaria cases to the World Health Organization (WHO) as recorded in the 2011 World Malaria Report.[11] The estimated annual number of malaria-related illnesses, however, may range even higher (7 to 8 million per year), considering there is only 40% reporting completeness by Public Health Emergency Management (PHEM). Plasmodium (P.) falciparum and P. vivax are the dominant species of the malaria parasite in Ethiopia, in respective order.[11]

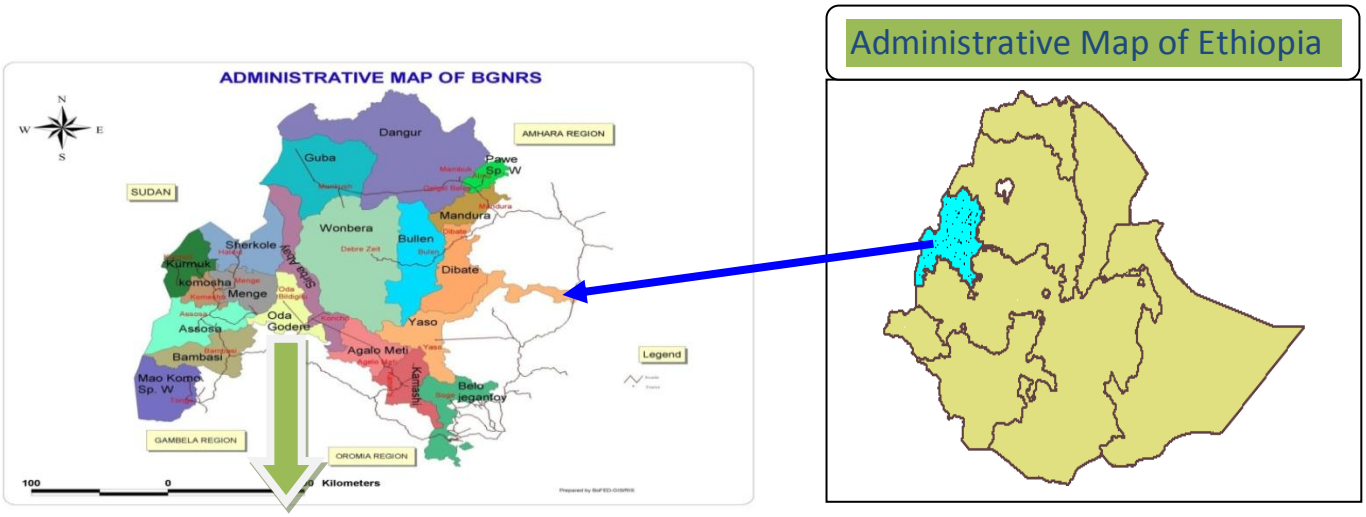
In Ethiopia an estimated 220 districts are classified as being malarious with transmission period of six and above months per year and an estimated 33 million or 6.6 million households reside in these districts. A total of 4 million ITNs are required to achieve the

Abuja target 60% ITNs coverage among vulnerable group in the target areas.[12] Assosa Woreda is one of the malaria risk areas with about 75% of the total geographical area considered to be malarious and hence 64% of the total population at risk of malaria infection. The potential health service coverage of the woreada is about 72%; malaria is among the ten top diseases in the outpatient departments of the health institutions in the woreada. Assosa woreada is, situated at altitude of 2100 to 2870 meters sea level and the annual rainfall of from850 to-1200mm. In area on average 10-25% of the residents are affected with malaria annually.[13, 14]

According to the annual report Assosa woreda, most of the diseases affecting the people of the Woreda are by the case of malaria. Based on health facility reports, malaria is one of the leading causes of morbidity and mortality in the Woreda. It was also revealed that there were both endemic and epidemic situations. This could be associated with the availability of mosquito breeding sites and suitable of climatic condition for survival of anopheles mosquitoes.[13, 14]

RESEARCH METHODOLOGY

The study was conducted in the three kebeles (Amba 1, Amba 10 and Amba 11) which found in AssosaWoreda, Assosa zone, North Western Ethiopia. They are select on the base of malaria prevalence and presence of predisposing factors in the areas. Assosa is a capital city of Assosa zone and Benishangulgumuz Regional state. It located 676 km from Addis Ababa. Assosa woreda has seventy four kebele. The District is bounded by Kurmuk, Homosha and Menge woreda to the North, Odaworeda to the East, by Tongo special and Bambasi woreda to the South and by Sudan to the West. Three kebeles have a total population whose age more than 15 years is 2,224. They three kebeles have telephone services, electric and pure water source or supply. It has one primary school each. They have one health post in each kebeles. It consists of 1,290 households in community.



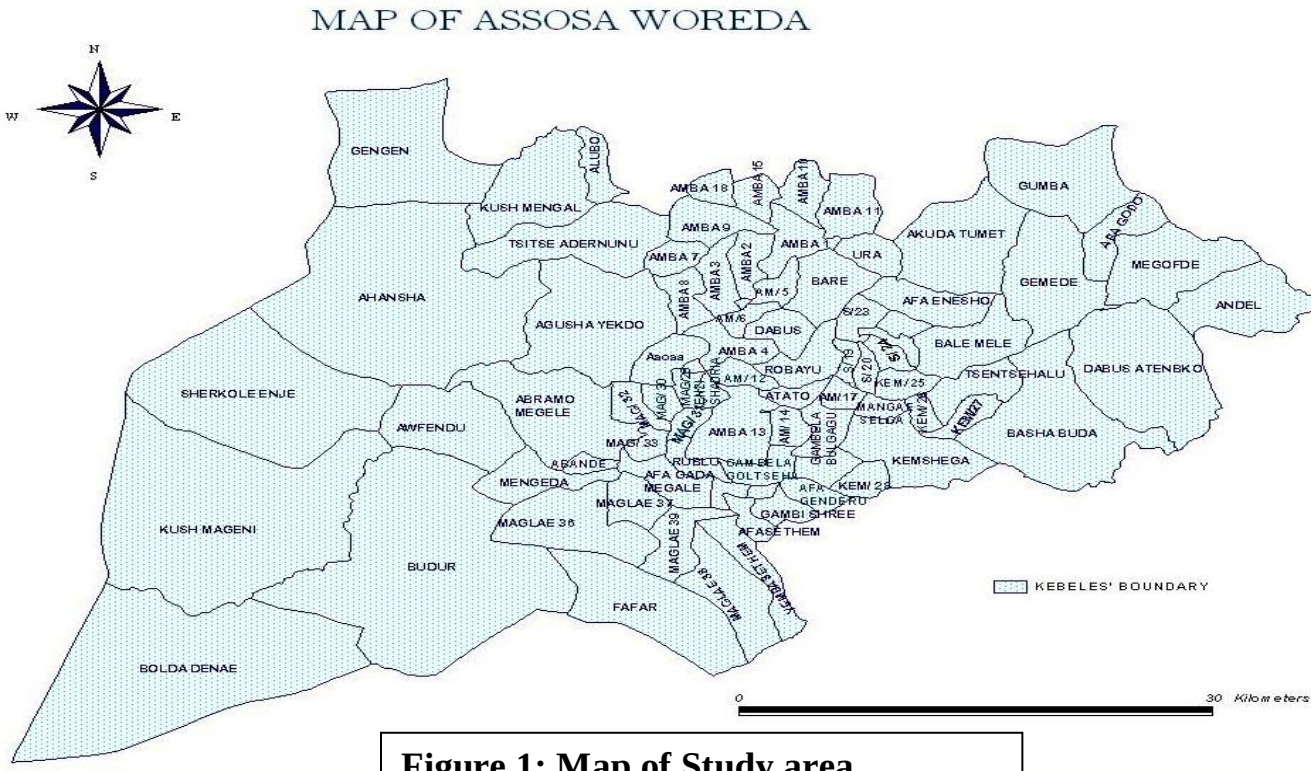


Figure 1: Map of Study area

Study Design and Period

A community based cross sectional study design was applied on 8 May to 18 May 2014 G.C for descriptive studies of knowledge, attitude and practice of the community towards malaria prevention and control.

Sampling Technique

Systematic sampling method was used to draw the sample size which is 207 individuals from the study population. To carry out systematic sample method for population is difficult to arrange population in sequence; therefore we were taking the household. Households was

chose at regular interval which is K = 1290/207≈ 6.23 ≈ 6 from the sample frame of the households. The first unit to be selected was taken at random from 1 to 6 households. The number of the first household to be included in the sample was chosen randomly by blindly picking one out of 6 pieces of paper. The 3rd number was selected, and then every 6 household starting with household number 3 until 1290 households was selected. One individual is selected from one household by lottery method if more than two individuals whose age groups greater or equal to 15 years are exist in one household. Thus, 207 individuals were selected for the study.

RESULT

The study enrolled a total of 204 household with a response rate 98.55% which representatives to assess knowledge, attitude and practice of the community towards malaria prevention and control in three kebeles of AssosaWoreda, Benishangul Gumuz Regional State.

Socio-demographic characteristics of study participants

Mean age of study participants was 43.86 years and almost one fourth 26.5% of the respondents were between ages of 31 – 40 years old. All of the respondents were from rural kebeles, about 58.3% of the respondents were male, about 69.1% were orthodox Christians by religion and about 94.6% were Amahara by Ethnicity. Regarding education status nearly 53.4% were illiterate, about 67.6% of the respondents were married by their marital status and 41.2% of the study participants were house wife regarding occupational status (Table- 1).

Table – 1: Frequency distribution of socio-demographic characteristics of the respondents, Assosa Woreda, Benishangul Gumuz Region, 2014G.C.

Variables		Frequency	Percentage
Sex	Male	119	58.3%
	Female	85	41.7%
Age	15 - 20 Years old	6	2.9%
	21 - 30 Years old	36	17.6%
	31 - 40 Years old	54	26.5%
	41 - 50 Years old	47	23.0%
	51 - 60 Years old	44	21.6%
	Greater than 60	17	8.3%
Religion	Orthodox	141	69.1%
	Muslim	60	29.4%
	Catholic	3	1.5%
Ethnicity	Berta	2	1.0%

	Amhara	193	94.6%
	Oromo	9	4.4%
Educational Status	Illiterate	109	53.4%
	read and write	68	33.3%
	grade 7 – 8	8	3.9%
	grade 9 – 10	10	4.9%
	College or University Graduate	9	4.4%
Marital Status	Married	138	67.6%
	Single	28	13.7%
	Divorced	28	13.7%
	Widowed	10	4.9%
Occupation	House wife	84	41.2%
	Governmental workers	13	6.4%
	Merchants	14	6.9%
	Students	14	6.9%
	Farmer	79	38.7%

Knowledge of the respondents towards malaria prevention and control

The study indicated that 197 (96.6%) of the respondents have ever heard about malaria from different source of information. So that health institutions/ health workers, health extension workers were the dominant sources of information about malaria in the community. However 188 (92.2%) of the respondents were said that malaria is one of the public health problem in the community. (Table - 2)

Knowledge on sign and symptoms, transmission and prevention of malaria

One hundred ninety six (96.1%) of the study participants were know the sign and symptom of malaria. So that commonly mentioned manifestations of malaria were chills and shivering 149(73.0%), fever 128(62.7%), vomiting 126(61.8%), headache 117(57.4%), back pain 63(30.9%), joint pain 83(40.7%), loss of appetite 96(47.1%) and bittering of test of any things 21(10.3%) and thirsty 32(15.7%).

Regarding knowledge on transmission of malaria, 139 (68.1%) of the respondents were know that malaria is a transmittable disease which means it transmitted from one person to another person. Mode of the transmission of malaria 127(62.3%) of the respondents were said that through mosquito bite, 5(2.5%) of the respondents were said that through bodily contact with patients, 5(2.5%) of the respondents were said that through breathing and 5(2.5%) of the respondents were said that by file were mode of malaria transmission. Regarding place were mosquitoes mostly breed; 149(73%) of the respondents were mentioned stagnant water as breeding sites for mosquitoes, 12(5.9%) of the respondents were mentioned that running

water as breeding sites and 41(20.1%) of study participants were mentioned that waste materials as breeding site for malaria. However, 187(91.7%) of the respondents were state that the time of mosquitoes bite is the night time and 7(3.4%) of the respondents were state that day time.

Regarding prevention of malaria, all of the respondents were state that malaria is a preventable disease. So that method of the malaria prevention known by the respondents were take tablets 49 (24%), house spray with insecticides 63(30.9%), drainage of stagnant water 99 (48.5%), clear the vegetation 100 (49%), use of mosquito net 172 (84.3%) and 3 (1.5%) of the respondents state that closing windows and doors (Table - 2).

Table – 2:- Frequency distribution of knowledge of the respondents towards malaria prevention and control, AssosaWoreda, Benishangul Gumuz Region, 2014G.C.

Variables		Frequency	Percentage
Have you ever heard of malaria?	No	7	3.4%
	Yes	197	96.6%
Is malaria a public health problem	No	16	7.8%
	Yes	188	92.2%
Do you know sign and symptom of malaria	No	8	3.9%
	Yes	196	96.1%
Which sign and symptom of malaria do you know	Fever	128	62.7%
	Chills and Shivering	149	73.0%
	Headache	117	57.4%
	Back pain	63	30.9%
	Joint pain	83	40.7%
	Vomiting	126	61.8%
	Thirsty	32	15.7%
	Loss of appetite	96	47.1%
	Bittering of test any things	21	10.3%
Is malaria transmissible disease	No	43	21.1%
	Yes	139	68.1%
Which mode of transmission of malaria do you know	Through mosquito bite	127	62.3%
	Through bodily contact with patients	5	2.5%
	Breathing	5	2.5%
	By flies	5	2.5%
Where do mosquitoes mostly breed?	Stagnant water and swampy areas	149	73.0%
	Running water	12	5.9%
	Waste material	41	20.1%
	Others	2	1.0%
When do mosquitoes mostly bite?	Day time	7	3.4%
	Night time	187	91.7%
	I don't know	10	4.9%

Is malaria a preventable disease	No	0	0%
	Yes	204	100%
Which method of malaria prevention do you know	Take tablets	49	24.0%
	House spray with insecticides	63	30.9%
	Drainage of stagnant water	99	48.5%
	Clear the vegetation	100	49.0%
	Use of mosquito net	172	84.3%
	Closing windows and doors	3	1.5%

Attitude of the respondents towards malaria prevention and control

Regarding attitude of the respondents towards malaria prevention and control, 62(30.4%) of the respondents were strongly agree and 135 (66.2%) of the respondents were agree on the malaria is a preventable disease so that they are considered that favorable attitude towards malaria prevention but rest were unfavorable attitude towards malaria prevention.

Regarding the serious of malaria disease, 133(65.2%) of the respondents were disagree and 41 (20.1%) of the respondents were strongly disagree on the statement of malaria is not a serious as media advocates so that they are considered that favorable attitude towards malaria is a serious problems as media advocates but rest were unfavorable attitude towards malaria is serious disease.

Based on the curability of malaria disease, 151(74%) of the respondents were disagree and 33 (16.2%) of the respondents were strongly disagree on the statement of malaria is not a curable disease so that they are considered that favorable attitude towards malaria is a curable disease but rest were unfavorable attitude towards malaria is curable disease.

Based on transmission of malaria disease, 137(62.2%) of the respondents were disagree and 37 (18.1%) of the respondents were strongly disagree on the statement of malaria is a hereditary disease, so that it does not transmit from one person to an others person via hereditary. Therefore, they are considered that favorable attitude towards mode of malaria transmission that is malaria is not hereditary disease but rest were unfavorable attitude towards malaria is curable disease.

Regarding prevention of malaria disease, 131(64.2%) of the respondents were agree and 73 (35.8%) of the respondents were strongly agree on the statement of Proper use of bed net in the home is important in the prevention of malaria transmission. Therefore, they are considered that favorable attitude towards prevention of malaria disease that is proper use of bed net in the home is important in prevention of malaria transmission. (Table - 3)

Table – 3:- Frequency distribution of attitude of the respondents towards malaria prevention and control, AssosaWoreda, Benishangulgumuz Region, 2014G.C.

Variable	Status of attitude	Frequency	Percentage
Do you think malaria is preventable?	Strongly Agree	62	30.4%
	Agree	135	66.2%
	Neutral	2	1.0%
	Disagree	5	2.5%
Malaria is not a serious as media advocates	Strongly Agree	6	2.9%
	Agree	18	8.8%
	Neutral	6	2.9%
	Disagree	133	65.2%
	Strongly Disagree	41	20.1%
Malaria is not curable disease	Strongly Agree	10	4.9%
	Agree	5	2.5%
	Neutral	5	2.5%
	Disagree	151	74.0%
	Strongly Disagree	33	16.2%
Malaria is a hereditary disease, so that it does not transmit from one person to an others person.	Strongly Agree	3	1.5%
	Agree	17	8.3%
	Neutral	10	4.9%
	Disagree	137	67.2%
	Strongly Disagree	37	18.1%
Proper use of bed net in the home is important in the prevention of malaria transmission.	Strongly Agree	73	35.8%
	Agree	131	64.2%

Practice of the community towards malaria prevention and control

From the total respondents, 199 (97.5%) of the respondents reported that they use currently prevention methods of malaria. Among the methods they used are 35(17.2%) take tablet, 179 (87.7%) of the respondents were use bed net (ITN), 47(23%) of the respondents were use deltametrine spraying, 69(33.8%) of the respondents were use drain stagnant water and 102(50%) of the respondents were use clear the vegetation as a preventable method of malaria disease.

Regarding participation on malaria control activities, 183 (89.7%) of the respondents were participation in any type of environmental management activities for mosquito control. Among the activities they participate in malaria controlling system were 122 (59.8%) filling, 89(43.6%) draining and 122(59.8%) clearing of vegetation in shaded areas. Furthermore 165(80.9%) of the respondents were ever participated in malaria epidemic control activities. Among the epidemic control activities they participated 157 (77%) of the respondents were filling and drainage of mosquito breeding sites, 63(30.9%) of the respondents were

participated in health education campaigns and 23(11.3% of the respondents were participated in reporting problems to local health workers or authority.

However, 39 (19.1%) of the respondents were not participated in malaria epidemic control activities. The reason why they were not participates in malaria epidemic control activities were 12(5.9%) of the respondents state that no responsible local community health worker to organize it and 16 (7.8%) of the respondents state that no interest to participate in malaria epidemic control activities. (Table - 4)

Table – 4: Frequency distribution of practice of the respondents towards malaria prevention and control, AssosaWoreda, Benishangul Gumuz Region, 2014G.C.

Variables		Frequency	Percentage
Do you use currently prevention method(s) of malaria	No	5	2.5%
	Yes	199	97.5%
Which prevention method(s) of malaria currently use	Take tablets	35	17.2%
	Bed net (ITN)	179	87.7%
	Deltamethrine spraying	47	23.0%
	Drain stagnant water	69	33.8%
	Clear the vegetation	102	50.0%
Do you participant in any type of environmental management activities for mosquito control?	No	21	10.3%
	Yes	183	89.7%
Which type of environmental management activities for mosquito control	Filling	122	59.8%
	Drainage	89	43.6%
	Clearing of vegetation in shaded areas	122	59.8%
Have you ever participated in malaria epidemic control activities?	No	39	19.1%
	Yes	165	80.9%
In which methods of malaria epidemic controlling activities do you participants	Filling and drainage of mosquito breeding sites	157	77.0%
	In health education campaigns	63	30.9%
	Reporting problems to local health worker or authority	23	11.3%
	Others	6	2.9%
Reason why they are not participant in malaria epidemic controlling activities	No responsible local community health worker to organize it	12	5.9%
	No interest to participate	16	7.8%
	No access to get information when the program launched	7	3.4%
	Others	8	3.9%

KAP of the community towards Malaria prevention and control

The levels of knowledge, attitude and practice study participants regarding to prevention and control of malaria indicated that 22.1%, 92.2%and 11.8%of the study participants had been

regarded as knowledgeable about causes and transmission, clinical manifestations, and prevention of malaria, respectively. While 77.9%, 7.8% and 88.2%of the study participants were considered as having positive attitude towards malaria prevention, treatment, and good malaria prevention practices, respectively.(Table - 5)

Table – 5:- Frequency distribution knowledge, attitude and practice towards malaria prevention and control in AssosaWoreda, Benishangul Gumuz Region, 2014G.C

Variables		Frequency	Percentage
Knowledge state of the respondents	Not Knowledgeable	159	77.9%
	Knowledgeable	45	22.1%
Attitude state of the respondents	Unfavourable	16	7.8%
	Favourable	188	92.2%
Practice level of the respondents	Poor practice	180	88.2%
	Good practice	24	11.8%

Regarding the association between sex and knowledge of the community towards malaria prevention and control, 103 (64.8%) of males and 56 (35.2%) of females were considered as not knowledgeable whereas 16 (35.6%) of males and 29 (64.4%) of females were considered as knowledgeable on malaria prevention and control. Therefore, sex has a significant association on the knowledge of the community towards malaria prevention and control system (p. value =0.00) which is less 0.05.(Table – 6)

Table – 6:- Association between sex and knowledge towards malaria prevention and control in AssosaWoreda, Benishangul Gumuz Region, 2014G.C

Variable		Knowledge towards malaria		P. Value
		Not knowledgeable	Knowledgeable	
Sex	Male	103 (64.8%)	16 (35.6%)	0.000
	Female	56 (35.2%)	29 (64.4%)	

Regarding the association between sex and practice of the community towards malaria prevention and control, 110 (61.1%) of males and 70(38.9%) of females were considered as bad practice on malaria prevention and control whereas 9(37.5%) of males and 15 (62.5%) of females were considered as good practice on malaria prevention and control. Therefore, sex has a significant association on the practice of the community towards malaria prevention and control system (p. value =0.028) which is less 0.05.(Table - 7)

Table – 7:- Association between sex and practice towards malaria prevention and control in AssosaWoreda, Benishangul Gumuz Region, 2014G.C

Variable		Practice towards malaria		P. Value
		Bad Practice	Good Practice	
Sex	Male	110 (61.1%)	9(37.5%)	0.028
	Female	70(38.9%)	15 (62.5%)	

DISCUSSION

Community Knowledge, attitude and practice towards malaria prevention and control options is important and the effort is related to either to environmental management, personal protection or vector control. This study indicated that 96.6% of the respondents have ever heard about malaria from different source of information. However, this study knowledge of the respondents about the means of transmission of malaria indicates that 62.3% of the respondents were said that through mosquito bite which is higher that study done Tripal community of Baigachaek area which revealed that 37.6% and central Ethiopia is 4.5% of them knew that mosquito bite transmits malaria.[4, 33] However, this study subject's knowledge about the means of transmission of malaria is lower than studies done in Ethiopia. For instance, surveys done in Ethiopia Gondar (74%) and higher than study done inbutajira (48%), Assosa (48%) and three towns of Western Ethiopia (43.7%) revealed mosquito bite for transmission of malaria.[5-8, 34] This is because of availability of health extension workers in this study area and effective implementation of health extension program in Ethiopia particularly in Benishangulgumuz Region know a days. This condition may increase the communities' knowledge about malaria prevention and control activities.

The result of this study indicated that study participants mentioned stagnant water as breeding sites. The study indicated that 149(73%) of the respondents mentioned stagnant water as a breeding site for malaria. This finding agrees with the findings of a study done by Wagari and a qualitative study done in Amahara, Oromia regional states and Assosa in Benishangul Gumuz Regional State indicated that 627(72.6%)of the respondents were state that mosquitoes are mainly believed to breed in stagnant water (71%).[32, 33, 34]

The knowledge level of the community may be related with malaria prevention and control activity gives emphasizes on mosquito related problems. This study reveals that that 22.1% of the respondents were knowledgeable on malaria prevention and control activities. However, this study result is lower than a study done in Assosa Zone, Ethiopia where 30% of the respondents were aware that mosquitoes carry disease causing microorganisms[34] and

malaria indicator survey 2007 result indicated 41% respondents reported mosquito bite as a cause for transmission of the disease.[9] Misconceptions are common among the respondents on cause of malaria and understanding these is very important for malaria prevention and control.

Regarding to the biting time of mosquito, majority 187(91.7%) of the respondents mentioned night as a biting time. This study result is almost consistent with studies done in Assosa and Butajira which indicated that95% and 73.2% of the respondents knew that mosquito bites human beings during night time.[7,8] This variation may be due to differences in study settings.

This study indicated that 128(62.7%) of the respondents mentioned fever as signs and symptoms of uncomplicated malaria. This study figure is higher than Amahara regional state data as reported by Ethiopian national malaria indicator survey of 2007 which indicated that 50.2% recognizing fever as signs of malaria.[9] This difference may be related to differences in study period in which ours is done during malarias season and the later one is in none malarias season. This finding was supported by a study done in butajira district southern Ethiopia reported fever, headache and shivering and chills as signs and symptoms of uncomplicated malaria.[8] Also a study done in Swaziland, mid 2007 indicated that symptoms such as headache, high temperature/fever and chills were the three most frequently mentioned signs and symptoms of malaria.[12]

Also the present study revealed that chills and shivering 149(73.0%), vomiting 126(61.8%) were most frequently mentioned sign and symptoms of malaria disease. This result higher that the study done in other areas which revealed that seizure/convulsion (24.4%) and vomiting (16%) were most frequently mentioned signs and symptoms of malaria. This finding was supported by a study done in Myanmar which reported vomiting and convulsion are most frequently mentioned signs and symptoms of malaria.[13]

Regarding to malaria prevention options, 97.5%of the respondents reported that malaria is a preventable disease which is consistent with a study done by Wagari in Ethiopia indicated 85.7% and a study in Swaziland indicated 78% of the respondents Knew that malaria is preventable disease and study in Benishangul Gumuz Regional State reveals that 86.2%of the respondents know that malaria is a preventable disease.[34] But this study result is somewhat

higher than a study done in Nepal indicated only 50.3% known that malaria is a preventable disease.[12]

This study reveals that 179 (87.7%) of the respondents were use bed net (ITN) which is consistent with the study done Benishangul Gumuz regional state reveals that eight hundred thirty one (96.2%) of the respondents reported that they had heard about mosquito net and 52.8% of them believes ITN can prevent malaria. This study figure is higher than 2007 malaria indicator survey which indicated only 38.5% have heard about ITN [30].this is because of free distribution of ITN in Ethiopia particularly since 2005 has significantly increased the coverage of the intervention.[19, 20]

The study revealed that only 23.0% of the study participants had accepted and utilized indoor residual spray as malaria prevention method. This study indicated that the acceptance rate is lower, 42.7% of the participants house had been sprayed with insecticide residual. This figure was higher than the report of Ethiopian MIS 2007 which indicated that 14.2% of the country and 18.7% of Amahara regional state residents' houses were sprayed with chemicals.[30, 32]
This study indicated that 7.8% of people who has bad attitude towards malaria prevention and control mechanism this result lower than study done on Assosa Zone that is 39.7% of the study participants responded wrongly to the item "There is no any effective means to prevent malaria, but God".[34] Moreover, study done in other areas 21.9%, 31% and 52.9% of the study participants had unfavorable attitude towards malaria prevention and control system regarding cause, transmission and prevention of the malaria.[32] This study indicated that 37.5% of the study participants recognized fever as signs of malaria. This is because in this study area there is effective implementation of health extension program.

CONCLUSION AND RECOMMENDATION

Health institutions and health extension workers are the main sources of information about malaria control and prevention activities in the study community. Even though there are low levels of knowledge of the community on cause, sign and symptoms, means of transmission and prevention methods compared to other region, it was lower than other studies conducted previously in the country.

Based above conclusion we recommend the following points

- To achieve the intended plan of the intervention program, it is recommended to focus on common misconceptions about malaria causes, means of transmission and clinical manifestations through community involvement activities as a main strategy.
- Regional health bureau and different partners should providing adequate Information, Education and communication (IEC) on malaria prevention and control activities in order to bring good knowledge as well as behavioral change to the community.
- Even though there are improvements on the importance of ITN on malaria prevention and control, ITN utilization rate and other malaria prevention methods are still very low. Among many reasons for this, the community uses ITN for other purposes. Therefore, efforts are needed to increase utilization of ITN in the community through community conversation and education.

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