COMMUNITY INVOLVEMENT AND PERCEPTION TOWARDS MALARIA PREVENTION AND CONTROL STRATEGIES IN RURAL AREAS OF KERSA DISTRICT IN JIMMA ZONE, SOUTHWEST ETHIOPIA.

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ABSTRACT

BACKGROUND: - Malaria is not only a major public health problem but also a cause for many social and economic problems in endemic countries. The control of malaria remains as one of the world's greatest public health challenges. However, the level of community involvement in the prevention and control strategies is low. Information on the level of community involvement and their perception towards malaria prevention and control strategies was not available in the study area. This study assessed community's perception about malaria prevention and control strategies and to determine the type and level of community involvement of rural areas of Southwest Ethiopia.

METHODS: A cross-sectional community-based survey was carried out on 340 rural households in two kebeles of Kersa district in Jimma zone, Southwest Ethiopia between November and December 2005. Both descriptive and inferential statistical techniques were applied for data analysis.

RESULTS: Three hundred thirty four (98 %) of the study participants believed that malaria was the major public health problem of the community. About 60% of the respondents associated the causes of malaria to the bite of mosquito. More than 87 % of the respondents had knowledge about the main signs and symptoms suggestive for malaria. Fifty percent of the participants were involved in various malaria control activities during the past few years.

CONCLUSIONS: Knowledge about mosquito bite as the cause of malaria and community's involvement in malaria control and prevention were low (58.5%) and (50%) respectively. Effective health education interventions through community health agents focusing more on women for improving malaria control activities at grass root level are recommended.

KEY WORDS: *Community involvement and perception, Malaria prevention and control strategies, Southwest Ethiopia*

INTRODUCTION

Malaria is a global leading cause of morbidity and mortality causing over a million deaths and clinical illness each year (1). Most of these deaths were among children under the age of five years and pregnant women. Africa accounts for 80% of malarial morbidity and 90% of mortality related to malaria (2, 3, 4). The control of malaria remains one of the world's greatest public health challenges .The fight to control malaria through out the world achieved major success in the 1950s and 1960s after the discovery and use of new tools including residual insecticides and new anti malaria drugs. The application of these tools led to eradication in parts of the world with low levels of transmission and good infrastructure (3, 5). Africa was not part of the global eradication effort except some pilot eradication projects in few countries because of the malaria endemicity, poor health infrastructure, dispersed settlements, shortage of trained people to manage the program and limited financial resources (6).

The global malaria eradication program was abandoned in 1969 and changed to malaria control program and this led to World Health Organization (WHO) resolutions on malaria control in line with the Alma-Ata declaration in1978 on Primary Health Care (7, 8).

Roll Back Malaria is a sector wide partnership to combat the disease at global, regional, country and local levels and calls for well coordinated wider development processes in malaria endemic countries including Ethiopia (8, 9).

Malaria is a leading public health problem in Ethiopia. Almost 75 % of the land is malarious and an estimated 48 million (68 %) of the population live in areas at risk of malaria infection (7, 10, 11). The epidemiology of malaria in Ethiopia is more variable and unstable than in any other African country due to extraordinarily diverse topography and climatic condition (10, 11).

Different strategies and approaches has been tried and implemented to control malaria at the community level in the different parts of the world. A lack of education, information and access to effective intervention restricts the successes of malaria control initiative in many countries (12, 17). Most researches done else where focus on the knowledge, attitude and practice of the community towards malaria and its control and identified the gap of community involvement in the control program (12, 14, 15). The present study focused on the malaria intervention at household level considering the existing vector control strategies, particularly focusing on environmental management and personal protection methods used at household level. .

METHODS AND MATERIALS

This cross-sectional study was carried out in two kebeles of Kersa district in Jimma zone Southwest Ethiopia between November and December 2005. There were 1763 households and an estimated population of 8232. The kebeles were located within 5-10 kilometers radius from the periphery of the water bodies of Gilgel Gibe Hydro Electric Dam. Siba and Dogoso kebeles form parts of the 'Gilgel Gibe Field Research Center' of Jimma University located about 70 kilometers Northeast from Jimma town. The global position of the study site is between latitudes of 7^0 45' 38'' N and 7^0 83'84''N, longitudes of 37^0 09' 23''E and 37^0 21'31''E and Altitude ranging from 1690-2069 meters above sea level.

,As reviewed from health facility records around the study area, the major health

problems were communicable diseases like malaria, respiratory tract infections, diarrheal diseases and intestinal parasitic infestations were prevalent almost in all age groups. STD, HIV/AIDS, shistosomiasis and onchocerciasis are also some of the anticipated health problems in the study area as a result of the construction of the dam.

The study area (Siba and Dogoso kebeles) were selected from Kersa District by probability sampling method based on the proximity of five to ten kilometers from Gilgel Gibe Hydro Electric Dam considering both the economic potential and the health hazard to the water body of the dam. The two kebeles were the only kebeles within 5-10 km radius in the district from the accumulated water body. The sample size (n) was calculated using a formula for estimating single population proportion for cross-sectional studies that is corrected for finite population. Taking the assumptions, proportion of households of 50 % at 95 % confidence level and with the degree error of 5 %, a sample size of 316 was determined. After adding 10% for the non response, the total sample size came to be 348 households. The households were identified as a study subject and the sampling units for the survey. The study subjects were identified by systematic sampling scheme. The household heads or in their absence the spouses were interviewed.

Data were collected using structured questionnaire specifically developed for this purpose. The head of the households or in their absence the spouses were interviewed. Those who completed high school and who speak and write local language were selected as the data collectors from the respective study district. Data collectors were trained for four days by principal investigator. A demonstration and field trial was performed in non study kebele in 10 % households during the pre testing of tools both for data collectors and supervisors. During data collection, close supervision made by supervisors and principal investigator. Cross checking and re-interview was done for a random sampled of 20 %. The data wee processed and analyzed using SPSS for windows version 12.00. Both descriptive and inferential statistical data analysis techniques were employed. Point and interval estimates were used to estimate population characteristics.

The study was ethically cleared by the public health faculty as well Jimma University's Research Ethical Clearance Committees. Prior to the study, formal letter of collaboration was written to local health and administrative offices. During data collection at each household the aim of the study was clearly explained by data collectors and informed consent was obtained from the head of the household or from the spouse.

The following operational definitions were used;

Knowledge /perception:- what individual ,family or community members know about the causes of malaria, the sign and symptoms of malaria ,the breeding of mosquitoes ,the treatment of malaria diseases.

Attitudes:- a belief or feeling that influences them to do what is important for them in the malaria control and prevention activities in the community.

Involvement:- any activities or actions taken in the last one year by the community or individual to prevent and control malaria.

RESULTS

A total of 340 households participated in the study giving a response rate of 97.7%. Two hundred and eighteen (64 %) were Males. The ages of the respondents ranged from 18 to 78 with the mean age of 38

(SD±12). Most of the respondents were illiterate (85 %), farmers 285 (84 %), married 312 (95 %), Muslim and Oromo 322 (98%).

The majority, 334 (98.2%), of the study subjects believed that malaria was a major health problem of the community. About 60% of the respondents associated the causes of malaria to the bite of mosquito, while other respondents associated it to the exposure to cold air or weather change 224 (66%), stagnant water 195 (57 %), poor personal hygiene 175 (52 %), from sick person 174 (51 %), and contaminated food and water by 220 (65%), (Table 1).

Table 1. Response of the community about the sign and symptom, and causes of malaria, Siba and Dogoso kebeles, Kersa district, southwest Ethiopia, December 2005.

Variables (N=340)	Yes (%)	No (%)	I don't know
Is malaria a community health problem ?	334(98.2)	6(1.8)	0
What is the Causes of malaria (N=340) ?*			
Mosquito bite	199 (58.5)	118(34.7)	23(6.8)
Cold air or change in weather	224 (65,9)	107(31.5)	9(2.6)
Dirty stagnant water	195 (57.4)	131(38.5)	14(4.1)
Poor personal hygiene and sanitation	175 (51,5)	146(42.9)	19(5.6)
From sick person	174 (51.2)	138(40.6)	28(8.2)
Contaminated food and water	220 (64.7)	88(25.9)	32(9.4)
Signs and symptoms of malaria (N=340)[a]			
Fever	327 (96.2)	12 (3.5)	1 (0.3)
Headache	298 (87.6)	39 (11.5)	3 (0.9)
Chills and shivering	297 (87.4)	38 (11.2)	5 (1.5)
Thirsty	307 (90.3)	30 (8.8)	3 (0.9)
Poor appetite	299 (87.9)	37 (10.9)	4 (1.2)
Joint and body pain	248 (72.9)	86 (25.3)	6 (1.8)
Vomiting	195 (55.9)	143 (2.1)	8 (2.4)
Diarrhea	95 (27.9)	200 (58.8)	45 (13.2)

* One respondent makes more than one choice and response is asked for each notation.

Most (96 %) of the respondents perceived that malaria causes fever, 307 (90.3%) knew it causes thirst, 298 (87.6%) knew it causes headache, chills and shivering, and poor appetite (Table 1). Regarding mosquito breeding sites, 309 (90.9%) of the respondents associated mosquito breeding areas to the dirty stagnant waters, followed by grass around the houses 278 (80.3 %), rain water 250 (73.5%), and man made ditches 185 (54.4%). When asked about the usual area where mosquito bite human beings, 85% were believed that mosquito bite indoors, 248 (73%) mentioned out doors and 58 % reported that mosquito bite both indoors and out doors. Three hundred and twelve (91.8 %) respondents were mainly believed mosquitoes bite human beings at night, 216 (63.5 %) mentioned mosquito bite during the day. More than 94% of the respondents thought that mosquitoes rest in the dark places inside the houses during the day, and others mentioned at the edge of streams, dirty areas and under the bushes by 81%, 75% and 66%, respectively (Table 2).

The majority, 326 (96 %), believed that malaria was a preventable disease of which 303 (92.3 %) of the respondents reported that malaria can be prevented by eliminating mosquito breeding sites, followed by house smoking with local

materials 294 (90.2%), insecticide spray 231(71 %), chemoprophylaxis 205(63.2%), use of insecticide treated nets 207 (63.5%) ,(Table 3).

Table 3. Community perception about preventive methods of malaria, Siba and Dogoso kebeles, Kersa district, south west Ethiopia, December 2005.

Variable	Yes (%)	No (%)	I do not know (%)
Malaria is preventable disease (N=340)	326(95.9)	8(2.4)	6(1.8)
Methods of prevention (N=326)[a]			
Chemoprophylaxis	205(62.8)	45(13.8)	76(23.4)
Eliminating breeding area	303(92.3)	18(5.5)	5(1.5)
Using mosquito nets	207(63.6)	71(21.7)	48(14.7)
Insecticide spraying (DDT)	231(70.9)	64(19.6)	31(9.5)
Smoking	294(90.3)	27(8.2	5(1.5)
Mosquito coils	48(14.7)	144(44.2)	134(41.1)
Repellents	42(12.8)	124(38.3)	160(49)
Using flits	31(9.5)	142(43.5)	153(47)

* One respondent makes more than one choice and response is asked for each notation.

About half (50%) of the study participants were ever involved in various malaria control activities in their communities. Regarding knowledge and practice on traditional remedies, only 78 (22.9%) of the study subjects knew and 22.4% practiced traditional remedies for the treatment of malaria illness (Table 4). Among those who knew traditional remedies, 73 (94.8%) of the respondents knew leaves and 93.4% practiced it. Others knew roots, herbs and holy water by 74%, 42.8% and 15.6%, respectively. More over, 96% of the respondents knew modern anti malaria drugs. From those who practice modern malaria drugs , 315 (96 %) of the study subjects ever used chloroquine, 309(94%) primaquine, 154 (47%) sulfadoxine-pyrimethamine (SP) and 118 (36 %) of the participants used the current first line anti malaria drugs artemisinin based combination therapy (ACT).

Table 2. Community perception about habits of mosquito vectors, Siba and Dogoso Kebeles, Kersa district, south west Ethiopia, December 2005.

Variables	Yes (%)	No (%)	I don't know
Common breeding sites for mosquitoes(N=340)			
Stagnant water	309 (90.9)	16(4.7)	15(4.4)
Running water	80 (23.5)	214(62.9)	469(13.5)
Grass around the houses	273 (80.3)	52(15.3)	15(4.4)
Rain water	250 (73.5)	67(19.7)	23(6.8)
man made ditches	185 (54.4)	95(19.7)	60(17.6)
Irrigation	61 (17.9)	169(49.7)	110(32.4)
near water bodies (river ,stream ,wells)	131 (38.5)	148(43.5)	61(17.9)
Usual area mosquito bites humans (N=340) [a]			
in door	288 (84.7)	41((12.1)	11(3.2)
out door	248 (72.9)	80(23.5)	12(3.5)
both in door and out door	197 (58.5)	117(34.4)	26(7.6)
Usual biting time for mosquitoes (N=340) [a]			
Day time	216 (63.5)	101(29.7)	23(6.8)
Night	312 (91.8)	18(5.3)	10(2.9)
Any time	199 (58.5)	101(29.7)	40(11.8)
Usual mosquitoes resting areas (N=340) [a]			
Dark places inside the houses	320 (94.1)	12(3.5)	8(2.4)
At edge of streams	274 (80.6)	47(13.8)	19(5.6)
Dirty areas	254 (74.7)	68(20)	18(5.3)
Under the beds	171 (50.3)	134(39.4)	35(10.3)
Under the bushes out side houses	216 (63.5)	96(28.2)	28(8.2)

* One respondent makes more than one choice and response is asked for each notation.

Community perception about bed net use and involvement in malaria control activities was associated with residence, while Knowledge on bed net use was associated with sex and residence ($p<0.05$) (Table 5).

Table 5. Community perception, Knowledge on the use of bed nets ever involvement in malaria control by sex, education and study kebeles; Kersa district, Southwest Ethiopia Dec, 2005

Variables	N	Community perception: Yes	Community perception: No	x^2	p-value
Sex					
Female	122	55(45.5)	67(54.9)	1.0	0.312
Male	218	86(39.4)	132(60.6)		
Education					
Illiterate	288	124(43.1)	164(56.9)	1.949	0.163
Primary	52	17(32.7)	35(67.3)		
Kebeles					
Siba	175	90(51.4)	85(48.6)	14.73	0.001
Dogosso	165	51(30.9)	114(69.1)		
		Knowledge on bed net use			
Sex					
Female	122	58(47.5)	64(52.5)	5.66	0.017
Male	218	75(34.4)	143(65.6)		
Education					
Illiterate	288	108(37.5	180(62.5)	2.069	0.163
Primary	52	25(48.1)	27(51.9)		
Kebeles					
Siba	175	114(65.1)	85(48.6)	102.55	0.001
Dogosso	165	19(11.5)	114(69.1)		
		Ever involvement in malaria control activity			
Sex					
Female	122	68(55.7)	54(44.3)	2.506	0.113
Male	218	102(46.8)	116(53.2)		
Education					
Illiterate	288	147(51.0)	141(49)	0.81	0.366
Primary	52	23(44.2)	29(55.8)		
Kebeles					
Siba	175	91(52)	84(48)	0.577	0.448
Dogosso	165	79(47.9)	86(52.1)		

Table 4. Perception and ever practices about traditional and modern anti malaria drugs, Siba and Dogoso Kebeles, Kersa district, southwest Ethiopia, December, 2005.

Variable	Perception		Ever Practice	
	Frequency	%	Frequency	%
Traditionnal malaria remedies(N=340)	78	22.9	76	22.4
Traditional medicine	(N=78[b])	76	(N=76 [b])	
Leaves	73	93.6	71	93.4
Roots	57	73	57	75
Herbs	33	42.3	33	43.4
Holy water	12	15.6	12	15.7
Modern malaria drugs	(N=340)		N=329 [b]	
Modern malaria drugs	329	96.8	329	96.8
Chloroquine	317	96.3	315	96
Primaquine	310	94	309	93.8
Sulphadoxin Pyrimethamine	163	51..3	154	46.8
Artemisinin based Combination Therapy	142	43.8	118	35.8

[b] numbers varies due to skipping patterns

DISCUSSION

The result showed that, more than 98 % of the respondents believed malaria was a major health problem of the community. Similar findings (96.7%) were reported in previous studies (16, 17, 18). About 60% of the study participants correctly identified mosquito bite as the cause of malaria in the current study area, while others associated causes to cold, stagnant water, sick person, and poor environmental sanitation. This is in agreement with other study findings else where (9, 16, 17).

In the current study, most of the participants recognized the role of mosquitoes in transmitting the infection but as in other areas of the world, a majority believed that malaria could be caused in a variety of ways (12, 13, 19), while this belief in multiple causes of malaria may make some residents believe that control or prevention is impossible or may divert attention from the mosquito vector.

Most of the participants had knowledge about main signs and symptoms suggestive for malaria. Previous studies also reported similar findings (13, 16, 20, 21). Dirty stagnant water, rainwater, and man-made ditches has identified as the main mosquito breeding sites. A considerable number of the study subjects thought mosquito bite human beings indoors. Mosquito mainly believed to bite at night and rest during the day time inside the dark places inside the houses .The result of the current study is also consistent with findings of other studies (13, 16). Familiarity with many aspects of mosquito behavior, such as biting in the evening and night time hours and their increased numbers during the rainy seasons might help the communities on the use of personal protection methods against the bite of mosquito.

Most of the study subjects believed that malaria is a preventable disease. This finding is in agreement with other studies done in the country (13, 20). A survey in Malawi (16) however, has found that only 52% of the subjects reported that malaria is preventable. The difference could be explained by the fact that the malaria control activities to prevent and control the disease in the current area for the last several years might have enhanced their

knowledge on the preventability of malaria. In the current study area, about 63.5 % of the study population believed that using mosquito nets was preventing malaria. Similarly, the proportion of households who owned mosquito nets was 27 %. This result was higher than the national base line survey (20). The difference could be explained by the fact that the current promotion and distribution of mosquito nets to the communities by health facilities in the study areas.

Community involvement in malaria control and prevention strategies in the current study kebeles was much lower when compared to the study reported from the national baseline survey (20). The difference of the study result could be explained by the difference in the methods. The latter study was conducted mainly in urban areas and where better educational status is expected unlike the current study area is rural with less educational status. In addition, different intervention activities particularly those made to raise community awareness about malaria and its control in urban areas could be a possible explanation.

The knowledge and practice about modern anti malaria drugs for the treatment of malaria in this study area is high as reported in other study findings (13, 20). The knowledge of modern anti malaria drugs seemed to be related to the use of these drugs by the communities for many years. In the contrary, the knowledge and practice of a traditional remedies over modern anti malaria in the current study is low. This could be attributed to the long duration of malaria control activities and the accessibility of anti malaria drugs from different sources.

Among the respondents, however, more than one prevention methods were found to be in common practices in the study area. Usages of mosquito nets, spray of disinfectant or insecticide, using clothing were some control interventions notified by the study respondents. Smoking local materials in the dwelling is common practice for removing mosquito from the houses in this community. These methods are simple and easy to apply and did not require any expertise and can be applied by individual or household for their own protection.

In conclusion, study participants were familiar with the major signs and symptoms of malaria. However, their knowledge on the relation between mosquito bite and malaria was low (58.5%) while their knowledge about the preventability of malaria was high. But, the level of their involvement in malaria control and intervention strategies in the studied communities was low. Therefore, effective communication strategy that provides the community with appropriate information about the disease, its cause ,the mosquito's habits and the importance of treatment is needed. Household level behavioral change communication using health extension workers is recommended to facilitate community malarial action.

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