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Uptake of Preventive Measures on Malaria Among Adults in Ridwan Location in Bosaso District, Somalia

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***Abstract*: Background: Malaria is a mosquito borne disease caused by a Plasmodium parasite. In 2016 WHO reported an estimated 216 million cases of malaria occurred all over the world and 445,000 people died, mostly cases occurred in children under 10 years old in the Africa. Also, around 125 million pregnant women are at risk of infection each year in sub-saharan Africa. The Aim of the study is to assess the uptake of preventive measures in malaria by community members aged above 18 years in Ridwan location in Bosaso district Somalia. This will be a cross-sectional study conducted in the Bosaso district. The study participants were community members aged above 18 years in Ridwan location southwest Bosaso district Somalia who have lived in the community for at least six months. A multistage sampling method was used for this study. Three health areas were randomly selected; Shebelle A, Shebelle B and Ridwan health post, in Ridwan Bosaso district. Only one adult was interviewed per household. The data collection tool was structured questionnaire with open and closed questions. Data analysis was used SPSS version 20 using both descriptive and inferential statistics. Clearance was secured from Bosaso local government and Ridwan elders. Results: Most of respondents 98(47%),10-20 minutes were taken to reach mosquito nets or other-preventive measures on malaria, followed by 17% one hour and more were taken to reach mosquito nets or other-preventive measures .culturally preventive measures on malaria 83 (40%) of participants were Positive attitude & practice,150(72%) participants, were said that not satisfied indoor residual spray because of expensive, caused illness and less useful and followed by increases number of mosquito in the house after indoor residual spray, 57(28%), while 43(69%) were not able to buy malaria preventive measures.**

***Keywords*: Malaria, Preventive measures.**

1. Background of the Study

Malaria is a preventable disease; however, about 3.4 billion people globally are at risk for the malaria (World Health Organization, 2013). In 2012 WHO reported, malaria was responsible for the death of 482,000 under-five children. Even though an estimated 136 million Insecticide Treated Nets (ITNs) were distributed to endemic countries in 2013.The knowledge about the preventive measures on malaria is an essential preceding factor for the acceptance and use of malaria preventive measures such as Insecticide Treated Nets (ITN) by community members.

In 2015 WHO, reported six countries with areas of high malaria transmission (Afghanistan, Djibouti, Pakistan, Somalia, Sudan and Yemen).

In Nigeria, around 60% of the outpatient visits to health facilities, 30% of childhood death, 25%of death in children under one year and 11% of maternal death (National Population Commission, 2008; Noland et al., 2014). in east Africa, according to reports from Ethiopian Federal Ministry of health (2010), more than 75% of the country is malarious with about 68% of the total population

Somalia is at risk of malaria 64% at high risk. The intensity of malaria transmission in different parts of the country, ranging from epidemic-prone and unstable in Puntland and Somaliland, to moderate in Central and South zone in 2007 – 2009 on average 58,900 confirmed malaria cases reported (HMIS) and 40¬-45 % malaria deaths were reported every year. However, these data really underestimate the actual burden of malaria in the country, given the very weak health information system and low quality of public health services. Over 95% of cases are due to P.falciparum. Malaria is hyper endemic in south and central Somalia and hypo-endemic in Puntland and Somaliland, but the free movements between Ethiopia and Puntland, Somaliland is high. This is one of the contributed factors that increased malaria transmission between those areas. Different prevention and control strategies are adopted in the different regions. In Puntland and Somaliland biological measures are used combined with early diagnosis and prompt treatment of cases, and ITNs in endemic areas. South and central Somalia, preventive measures include the use of long-lasting ITNs. Since 2006, with support from UNICEF, WHO, and the Global Fund to fight AIDS, TB and Malaria and Somalia local organizations have supported the Ministry of Health for malaria control and elimination. From 2013 to date more than 800,000 Long Lasting Impregnated nets have been distributed. there for the aim of study was to assess the uptake of preventive measures on malaria among adults in Ridwan location, Bosaso District Somalia.

2. Methodology and Material

Study Design: This Study was used quantitative and qualitative descriptive cross-sectional study to assess the

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preventive, measures on malaria by community members aged above 18 years in Ridwan location in Bosaso District Punt-land –Somalia.

Study area: This study will be conducted in the Bosaso district. Bosaso is a city in the northeastern Bari Province of Somalia. Bosaso District located on the southern coast of the Gulf of Aden; the municipality serves as the region's commercial capital and is a main seaport within the Puntland state. It has an estimated population of around over 750,000, residents (2016) and it has a third largest city of Somalia. This vicinity is select because is the largest residential community area in Bosaso and it could be representative of the study population in the Bosaso. Ridwan vicinity 6km away from Bosaso town, off road 30 and neighbor the Swatow and Netcom villages, study was conducted at Ridwan west Bosaso.

Study population: The study participants were community among adults in Ridwan location, Bosaso District Somalia, who have lived in the community for at least six months. The study population was related the population of Bosaso district that was estimated, 750,000, in last census of the municipality of Puntland in 2011.

Sample size determination: The following formula was used to determine sample size (Mugenda and Mugenda, 2003) the estimate sample size for this study was 2891 households, in three health areas, in Ridwan Bosaso district.

$$n = \frac{z^2 pq}{d^2}$$

Where,

- n= the desired sample size for population > 10,000
- z= standard normal deviate (1.96), corresponding to 95% confidence level
- p= estimated proportion taken as 50% (0.5), since community preventive uptake on malaria

$$q = 1 - pq$$

- d= degree of accuracy usually set at 0.05

Therefore; $n = (1.96^2)\ (.50)\ (.50)/.05^2$

$= 384$

The study was adjusted for finite population as follows (Fishers' et al.1998)

$$n_f = n/1+n)/N$$

Where,

n_f = desired sample size for population < 10,000

n= desired sample size for population > 10, 000

N= estimate sample size for this study was 3891 households

Therefore $n_f = 384/1+ (384/3891) = 350$ households

10% is added in case of non-response and the sample size was 384 households.

Sampling Procedure: The study was using a multistage random sampling. Six stages in Ridwan were picked three out of six health areas purposively selected; Shebelle A, Shebelle B and Ridwan health post, in Ridwan Bosaso district. Every household has a code number in which you can get the data from the chief area, and each section of the households under study was selected systematic random sampling. a total number of 2800 households were selected, and each household; the head of household (either male or female) was interviewed. The number of households to be visited for each health area and for each community was determined by considering the proportion of the population of the health area/community to the total population under study. Kth interval was calculated based on the strength of the study population within a given sub-location. K was 5. The first respondent was identified randomly.

Data Collection Tool: Data was collected using structured interviewer-administered questionnaire both open and closed ended questions. During data collection the questionnaire was sections seeking information on the social demographic variables, special characteristics of respondents like once contracted malaria, lost family member due to malaria, training on malaria, having special access to information to malaria, participation in Community conversation, leadership role in the Ridwan level of knowledge about mosquito behavior, signs and symptoms, treatment modalities and prevention mechanisms, attitude towards malaria prevention and treatment seeking and practices in malaria prevention of the community.

Data analysis: Data analysis was done by SPSS version 20. The quantitative data was analyzed using descriptive statistics (frequencies, percentages, mean and standard deviation). The qualitative data was analyzed by identifying themes and patterns and then organized into categories based on the themes. Quantitative data was presented in form of tables, pie charts, histograms, bar charts and frequency and Qualitative data was categorized and coded according to themes, then was presented in form of narratives, percentages and tables with brief explanations.

Data management: The data collected from the study will be checked for completeness, the questionnaire comprised four sections: Social demographic data, knowledge about malaria and preventive measures, use of IPT for malaria, and possession and use of ITNs.

Data cleaning: Data was cleaned to remove errors and omissions. Before entering into Excel Spread sheet on the computer, the raw data will be cleaned, coded and entered into the computer as soon as data was generated.

Data presentation: Quantitative data was presented in form of tables, pie charts, histograms, bar charts and frequency polygons. Qualitative data will be categorized and coded according to themes, then was presented in form of narratives, percentages and tables with brief explanations

Ethical consideration: Punt land developed research committee (PDRC) was given a permit Local government of Bosaso District-Ethical Review committee this study was conducted.

3. Results and Data Analysis

A. Socio-Demographic Characteristics

Table 1 Result: The majority of the respondents were female 122(59%). The most of group age respondents was 20-30 years, 75(36%) and 31-40 years, 59 (28.5%). 110(53%) were married, 62(30%) never married, 20(10%) were widowed while 15(7%) were separated. Most of the respondents had attained college/tertiary level of education 67(32%) followed by Secondary education 29(14%), Primary 46(22%) and 34(17%) were informal education. 67 (32%) of respondents were business persons, 84(40.5%) were students, 57(27.5) and others included, home wife, government staff, Freelancers.

Table 2: Most of respondents 98(47%),10-20 minutes were taken to reach mosquito nets or other-preventive measures on malaria, followed by 17% one hour and more were taken to reach mosquito nets or other-preventive measures .culturally preventive measures on malaria 83 (40%) of participants were Positive attitude & practice, while,40(19%) were complained environment challenges e.g. hot climate that lead difficulty to use mosquito nets and 16% were said that low community awareness and lack of proper care about communicable diseases include malaria can increases opportunity of infections.

Correlation Tables: Knowledge about Malaria

Table 3 Result: Most of participants were used by indoor residual spray, 86(87%) while 27(13%) were not used by indoor residual spray, because some of them they complained allergic, generalized weakness and asthma. Majority of research participants, 150(72%) were said that not satisfied indoor residual spray because of expensive, caused illness and less useful and followed by increases number of mosquito in the house after indoor residual spray, 57(28%), while 43(69%) were not able to buy malaria preventive measures. 57% of participants were ever Contacted illness from malaria and 86% were never lost Family/friends from malaria. While most of respondents 65% were experience about malaria causes, transmission, sign and symptoms.

Attitudes towards Malaria:

Table 4 Result: Majority of respondents about attitudes towards malaria, 89(43%) were strongly disagree malaria is a serious and life threating disease. 82(40%) of respondents were strongly agree Sleeping a mosquito bed net is one of the uptake preventive measures on malaria. 79(38%) of research participants were disagree, malaria can recover by suddenly without any medication or treatment and 20% of respondents were agree incompletely anti malaria medication is unsafe.

Figure 1 Results: Most of respondents 44% were not received mosquito net last six month, while, 32% of respondents were received mosquito net last six-month one time from local government. Majority of respondents 49% were not received local government made indoor residual spray last year and small number of respondents were made indoor residual spray last year more than ones.

Table 1
Socio-demographic characteristics of participants

Variable	Category	Frequency (n=207)	Percentage%
Gender	Male	85	59
	Female	122	41
Age	20-30	75	36
	31-40	59	28.5%
	41-50	43	21%
	>50	30	14.5%
Marital status	Married	110	53%
	Unmarried	62	30%
	Widow/widower	20	10%
	Separated	15	7%
Education level	College or university level	67	32%
	Secondary	29	14%
	Primary/intermediate	46	22%
	Others	31	15%
	Non	34	17%
Occupation	Business	84	40.5%
	Students	57	27.5%
	home wife	36	18%
	government staff	8	4%
	Freelancers	22	10.5%

Table 2
Time and Culture about preventive measures on malaria

Variable	Category	frequency(n=207)	Percentage%
How many munities it takes to reach mosquito nets or other-preventive measures	10-20min	98	47%
	20-30 m	57	27%
	30-1hour	18	9%
	More than one Hour	34	17%
How is your culture about preventive measures on	Positive perception & practice	83	40%
	Environment challenges e.g. hot climate malaria	40	19%
	low community awareness and lack of proper care about CD include malaria	33	16%
	Negative perception & practice	51	25 %

Table 3
Knowledge about malaria

Variable	Category	Frequency(n=207)	Percentage%
Have you ever used by indoor residual spray	Yes	180	87%
	No	27	13%
	get an allergic	7	
	not available	8	
If No way	Insecticides have bad smell	11	
	Reduce surrounding air	1	
Satisfied indoor residual spray	Yes	57	28%
	No	150	72%
	Expensive	47	
If No way	Causes illness/asthma	24	
	less useful	69	
	increase No of mosquito	10	
Ability to buy malaria preventive measures	Yes	64	31%
	No	143	69%
	Yes	90	43%
	No	117	57%
Family/friends have you lost from malaria	Yes	36	14%
	No	171	86%
family/friend ever had malaria	Yes	133	65%
	No	74	35%
If yes, Causes of malaria	Female Mosquito bites	59	28.5%
	Dirt stagnant water	43	20.77%
	Poor housing and toilets	79	38%
Transmission of malaria	People sleeping together	26	12.6%
	Stagnant water and running seasons	20	9.66%
	By bites of mosquito which has bitten a malaria patient	32	15.45%
	By bites of any mosquito	55	26.57%
Sign and symptoms of malaria	Dizziness	5	2.4%
	Chills and pain	40	19.3%
	Vomiting	67	32.36%
	Headache	5	2.4%

Table 4
Attitudes towards malaria

Variables	Strongly Disagree Freq. (%)	Disagree Freq. (%)	Neutral Freq. (%)	Agree Freq. (%)	Strongly agree Freq. (%)
Malaria is a serious and life- threatening disease	89(43)	35(17)	48(23)	31(15)	4(2)
malaria can be transmitted from one person to other persons	54(26)	66(32)	33(17)	33(16)	19(9)
sleeping a mosquito bed net is the one of the uptake preventive measures on malaria	42(20)	33(16)	17(8)	33(16)	82(40)
anyone can get malaria	50(24)	54(26)	42(20)	35(17)	26(13)
I can treat myself if you get malaria	39(19)	64(31)	52(25)	35(17)	17(8)
Malaria can affect only pregnant women and children under 10 years	74(36)	39(19)	42(20)	31(15)	21(10)
A Person who has a malaria can recover by suddenly without any medication or treatment	58(28)	79(38)	29(14)	31(15)	10(5)
if somebody has got malaria, is it suitable to avoid having a close contact with his or her	52(25)	72(35)	35(17)	35(17)	13 (6)
it is unsafe when you are not taking completely anti malaria medication	59(29)	48(23)	39(19)	42(20)	19(9)
When you are suspect from malaria you should buy anti malaria from pharmacy or shops to treat your self	62(30)	43(21)	43(21)	35(17)	24(11)
Will you look for advice or treatment when I get Malaria	62(30)	48(23)	33(16)	42(20)	24(11)
Advantage of mosquito nets	52(25)	48(23)	24(11)	35(17)	48(23)

Table 5
Health education received on malaria

Variable	Category	Frequency (n=207)	Percentage %
Sources received information about malaria	Broadcasts/media	56	27%
	Health workers	78	38%
	Community	19	9%
	MoH/NGO	33	16%
	Non	21	10%
Last time received health education about malaria	Last month	29	14%
	3-6 months ago	47	23%
	1- year and more	73	35%
	I can't remember	41	20%
	Never received	17	8%
Health education helpful	Most helpful	91	44%
	Helpful	32	15%
	Somewhat helpful	54	27%
	Not very helpful	23	11%
	Not at all helpful	7	3%

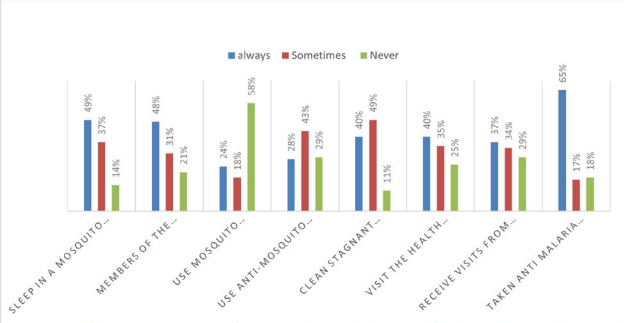

Fig. 1. Practices towards malaria prevention

Health Education Received on Malaria:

Table 5 Results: Most of respondents 78(38%) were received information about malaria by health workers, 56(27%) were received information about malaria Broadcasts/media and 33(16%) were received information about malaria by MoH & Ngo. 73(35%) of participants the last time they receive health education was and 91(44%) of respondents were said that health education was most helpful information about malaria while 3% were said that health education not at all helpful.

4. Discussion of the Results

Level of knowledge uptake preventive measures on malaria most of respondents have a good knowledge on different methods on malaria, including level of satisfied indoor residual spray, causes, transmission and sign and symptoms on malaria, and part of respondents have had a history on malaria, unfortunately more than 72% of respondents are not used uptake preventive measures on malaria due to different reasons included prices of preventive methods e.g. mosquito net, expensive, poor perception on uptake preventive measures on malaria such as uptake preventive measures on malaria can lead illness, include asthma and other are believes uptake preventive on malaria specially indoor residual spray can increases the number of mosquito, less useful, also venerable communities are not ability to buy preventive methods on malaria due, to financial crisis. According to transmission on malaria and courses majority of respondents are aware, stagnant water, running seasons, poor housing and toilets and climate changes are participating malaria transmissions and out breaks. Comparable with other studies in northwest Ethiopia, chana, comaron, revealed that results of knowledge scored 80% of respondents had good knowledge about malaria. Thus, was ahigh level community awareness of malaria, transmission, sign and symptoms, treatments (Alelign A. et al 2018). Another study carried out in Uganda shown that community member's knowledge about malaria has increased from figures as low as 40%in early 1990s in most parts of country to as a high as 80% by 2001 in several districts. Another study conducted seven districts in Uganda indicated that 91% of the respondents in seven districts knew that mosquitoes cause malaria although according attitude towards malaria the most of respondents about attitudes towards malaria, 89(43%) were strong disagreed malaria is a serious and life threating disease. 82(40%) of respondents were strong agreed Sleeping a mosquito bed net is one of the uptake preventive measures on malaria. Compared with other studies, in chana,2020 shown that the majority of respondents (60%) strong agreed that malaria is series and life treating diseases (lopez AR, et al, 2020). In the preset study, 79(38%) of research participants were disagree, malaria can recover by suddenly without any medication or treatment. Also Practices towards malaria prevention 65% of respondents were positive perception of taken anti malaria. Other study carried out in Ethiopia shown that majority of respondents (52.5%) strongly agreed to seek advice, or treatment when they contact malaria and almost half agreed on having blood test done at the health centers and agreed self-medication, (flattie BT, et. al 2021). Also, countries where malaria is endemic, Uganda, sough Sudan, Tanzania, Kenya, have noted the use drugs, purchased from drug stores, for self-treatment and even more indignity studies, revealed self-medication with herbal preparation is regarded at all primary methods of treating malaria (Awuah-RB, et al, 2018). 50% of participants were sometimes use anti-mosquito spray in houses, also most of respondents 40% were visit health center when they fall sick 40% while, 25% were never visit the health center when they fall sick.

According health education received communities on malaria, 78(38%) were received information about malaria by health workers, 56(27%) were received information about malaria Broadcasts/media and 33(16%) were received information about malaria by MoH & Ngo. 73(35%) of participants the last time they receive health education was and 91 (44%) of respondents were said that health education was most helpful information about malaria. comparable other studies in chana, majority of respondents had heard or received malaria-related information like radio, community health workers, health centers and neighbor, friends where at least (enoch-2020)

Limitations:

The study limitation was language barrier between the principal investigator and respondents which could have affected the outcome of the study. But it was corrected by recruiting research assistants who were more fluent in Somali and English language.

5. Conclusion

Most of respondents were enough knowledge of uptake preventive methods on malaria and have good concepts of causes and transmission of malaria.

According attitude words malaria majority of participants where positive attitude about malaria is series diseases that leads life threating condition and absolutely not possible to recover by suddenly without any medication and strongly agree sleeping under mosquito bed nets is one of the uptake preventive method on malaria.

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