

Assessment of knowledge, attitude and practices on Malaria prevention among secondary school students of boarding schools in Morogoro District, September 2005.

By Musa Balowa (MD5 2006/07)

ABSTRACT.

INTRODUCTION

Malaria is a parasitic disease of humans caused by a protozoon of *Plasmodium species*. Malaria remains to be a life threatening condition and a public health problem in much of Sub-Saharan Africa, it is the most important parasitic disease affecting humans, causing about 1-3 million deaths per year and more than one billion new infections. Despite of the enormous input from various fields controlling Malaria has still not been achieved.

OBJECTIVES

To assess knowledge, attitude and practices of secondary school students on Malaria prevention in September 2005.

METHODOLOGY

A cross-sectional study of 398 multistage randomly selected students was conducted in four boarding secondary schools of Morogoro District.

RESULTS

The study involved 398 respondents. Plasmodium species and mosquito bites were cited as causes of malaria by less than half of students 193 (48.5%) and 172 (43.2%) respectively. Citing Plasmodium species and mosquito bites as a cause of malaria was significantly associated with level of education of pupils (by $X^2=22.43$, $p\text{-value}=0.000433$ and $X^2=13.39$, $p\text{-value}=0.02$ respectively). Transmission factors mentioned were not using an insect treated bed nets and dirty environment by 91.0% and 77.9% respectively. Mosquito bites were the most mentioned malaria transmission method (97.7%). Students were aware of at least one malaria prevention method 395 (99.3%). 99.0% of respondents used malaria preventive measures with wearing of long clothes and ITN being mostly used by 93.2% and 86.2% respectively. Mass media was a source of information used in more than half of pupils (56.5%). Teachers and mass media as sources of information were significantly associated with pupils level of education (by $x^2=15.3$, $p=0.007$ and $x^2=21.2$, $p=0.0007$ respectively)

CONCLUSION

This study population was aware on methods of prevention of malaria however, the knowledge on the real cause of malaria is low.

INTRODUCTION

Malaria remains an enormous public health problem in much of Sub-Saharan Africa being the most important of the parasitic diseases of humans affecting more than 1 billion people and causing between 1 and 3 million deaths each year. Despite enormous control efforts, malaria has resurged in many parts of the tropics. Added to this resurgence are the increasing problems of drug resistance by the parasite and insecticide resistance of the vectors. Malaria remains today, as it has been for centuries, a heavy burden to the tropical communities, a threat to non-endemic countries, and a danger to travellers. Malaria has long been the most important parasitic disease of man in

Tanzania. Over 30 million people are at risk, 16 million cases per year and 100000 deaths per year (1 death every 5 minutes) mostly attributed by under five children and pregnant women. One study found that most residents recognized the role of mosquitoes in malaria transmission, but few knew how mosquitoes acquired their infections or understood the risk of having an untreated person in their midst. If this was more widely known, residents might put greater pressure on infected patients to seek timely and appropriate antimalarial treatment. Similarly majority of the respondents in that study knew that mosquito bred in water (62.9%) and mosquito breeding could be

prevented (56.6%), knowledge significantly better among literate¹. Among these users, 47% used purchased products, 64% used naturally available products such as leaves and animal dung, and 85% used both. Among those using products available for purchase, the most common method employed was mosquito coils (16%), followed by insecticide spray (11%). Only 1% used mosquito repellents. Having used a purchased product for malaria prevention in the household was strongly associated with both an increasing education level of the head of the household and an increasing household income level². This is in parallel to that found by Aikins et al⁶ where by bed nets were used to a varying extent, from 44% Ghana to 86% Gambia, in each community to protect against mosquito bites. A different result was obtained by Rodriguez et al³ that ninety nine percent of villagers had mosquito bed nets, 75.7% used them all year round.

METHODOLOGY

A cross sectional study to assess the knowledge, attitude and practices on Malaria prevention was carried out in Morogoro district among secondary school pupils. Multistage random sampling procedure was used to secure the minimum representative sample of 384 students. Closed ended Swahili version self-administered questionnaire was used to obtain information from pupils & data were coded into a computer (whose template was made earlier) and then cleaned for errors. Analysis followed and was done using epi-6 software version. Statistical significance tests included the usage of P-value to assess for the role of chance and X² (Chi-square) test to account for the association between different variables. In this study, P-value <0.05 was used to disprove the null hypothesis. Ethical clearance for the study was obtained from MUCHS Directorate of Research & Publication.

RESULTS

Table1: Distribution of students according to class

CLASS/FORM	FREQUENCY n=398	PERCENTAGE (%)
I	93	23.4
II	51	12.8
III	56	14.1
IV	63	15.8
V	75	18.8
VI	60	15.1

Majority of the pupils were in form 1 (23.4%), while the list filled class was form 2 (12.8%)

Table2: Predisposing factors for Malaria Transmission

Transmission factors ^a	FREQ n=398
Dirty environment	310 (77.9%)
Night outdoor activities	154 (38.7 %)
Studying till mid night	198 (49.7 %)
Not using ITN	362 (91.0 %)
Others ³	77 (19.3 %)
Don't know	3 (0.8 %)
Transmission methods ^a	
Drinking contaminated water	15 (3.8%)
Mosquito bite	389 (97.7%)
Blood transfusion	104 (26.1%)
Placental transmission	57 (14.3%)
Other ⁴	43 (10.8%)
Don't know	9 (2.3%)

^aPercents totally exceed 100% due to multiple responses

³Other transmission factors were; bush around houses and water ponds.

⁴Other transmission method was not using insect treated bed net.

Predisposing factors to Malaria mentioned mostly were not using insect treated bed net and dirty environment 91.0% and 77.9% respectively (Table 2). Mosquito bites were the most mentioned malaria transmission method (97.7%) (Table 2).

Table 3: Various methods used by students to prevent getting bitten

Method of prevention ^a	Freq (%) n=395
Spraying	351 (88.9%)
Use of ITN	390 (98.7%)
Wearing long sleeves	272 (68.9%)
Mosquito repellents	319 (80.8%)
Lighting mosquito coils	313 (79.2%)
Burning cow dung	82 (20.8%)
Bush clearing	377 (95.4%)
Filling water ponds	391 (99.0%)
Malaria counselling	209 (52.9%)

^aPercents totally exceed 100% due to multiple responses

Most pupils were aware of at least one malaria prevention method 395 (99.3%). More than two thirds of pupils were aware of filling water ponds, use of insecticide treated bed net (ITN), bush clearing, spraying, mosquito repellents, lighting mosquito coils and wearing long sleeves as malaria prevention method (Table 3).

Table 4. Malaria prevention methods used in boarding secondary schools

Method of self prevention ^a	Freq(%) n=370
Use bed net	319 (86.2%)
Lighting mosquito coil	206 (55.7%)
Spraying	235 (63.5%)
Mosquito repellents	257 (69.5%)
Wearing long sleeves	345 (93.2%)

^aPercents totally exceed 100% due to multiple responses

Most pupils used at least one method of malaria prevention 395(99.3%). More than 80% of pupils were wearing long sleeves and used bed nets as methods for self prevention against malaria (Table 4).

Table 5: Source information on malaria prevention among secondary school pupils

Source of information ^a	Frequency (%) n=387
Teacher	161 (43.5%)
Books	113 (30.5%)
Mass media	209 (56.5%)
Friends	50 (13.5%)
Parents/guardian	103 (27.8%)
Other ^b	46 (12.4%)

^aPercents totally exceed 100% due to multiple responses

^bOther mentioned source of information was leaflets

More than half of pupils received information on malaria prevention from mass media (56.5%). Receiving information on malaria prevention from teachers and mass media as sources of information were significantly associated with pupils level of education (Table 5).

DISCUSSION

Association of *Plasmodium species* and mosquito bites as the cause of malaria is significantly associated with year of study ("form"). This trend is similar to a study from Delhi which portrayed awareness on the cause of malaria increased with literacy status (49.4% in illiterate to 85.4% in high school and above literate)¹. Almost all the pupils in this study knew at least one form of malaria transmission, used at least one method of malaria prevention, had knowledge and had received information on malaria. Most pupils recognized the role of not using insecticide treated bed nets and mosquito bites in malaria transmission. This finding is important in the targeting of malaria preventive methods as advocated by the Ministry of Health through use of insecticide treated bed nets. Filling water ponds, use of insecticide treated bed nets and bush clearing were commonest known malaria preventive methods. The knowledge on the use of insecticide treated bed nets is quite high; however their use is slightly low. This trend is similar to other studies^{3,4,7} that found majority of respondents knew mosquito nets as an excellent means of protection against mosquito bites (by 100%, 82 - 98% and 86% respectively) however use of mosquito nets was low (by 75.7%, less than 27% and less 35% respectively). This awareness is important in the prevention of malaria by decreasing mosquito breeding sites and prevention of mosquito bites. The decreased use of insecticide treated bed nets suggests the low prevention of malaria hence the need of increasing the access and knowledge on importance on use of insecticide treated bed nets. Most of respondents received information on malaria prevention through multiple sources most commonly mass media followed by teachers. This is different from a study² that found 36% of the respondents received malaria information from clinics and through radios, this can probably be explained by the multi-sectorial involment by the government in giving information on malaria prevention via television stations, newspapers and conferences. These have led to a marked disperssion of information. Receiving information on malaria prevention from teachers and mass media was significantly associated with pupil's level of education. It is therefore apparent that the information on malaria prevention although given to the whole community major beneficiaries are those with high literacy status.

CONCLUSION

Study subjects were knowledgeable on symptoms, complications and methods of prevention of malaria however the knowledge on the real cause of malaria is low.

RECOMMENDATIONS

There is a need for stakeholders to associate *Plasmodium species* with malaria as it enhances people's knowledge on prevention and treatment against malaria hence improving adherence to malaria preventive measures and treatment. Deliberate efforts certainly have to be undertaken through different means of communications to provide information on malaria prevention to pupils in lower level of education classes as they have low knowledge on malaria and are likely to suffer from its complications.

REFERENCES

1. Rasanias SK, Bhanot A, Sachdev TR (2002): Awareness and practices regarding malaria of catchment population of a primary health centre in Delhi. J Commun Dis. Mar; 34(1):78-84.
2. Ziba C, Slutsker L, Steketee R.W (1994): Use of malaria prevention measures in Malawian households. Trop. Med. Parasitol. 45: 70-73.
3. Rodriguez AD, Penilla RP, Henry-Rodriguez M, Hemingway J, Francisco Betanzos A, Hernandez-Avila JE (2003): Knowledge and beliefs about malaria transmission and practices for vector control in southern Mexico. Salud Publica Mex. Mar-Apr;45(2):110-6.
4. Karanja DM, Alaii J, Abok K, Adungo NI, Githeko AK, Seroney I, Vulule JM, Odada P, Oloo JA. Knowledge and attitudes to malaria control and acceptability of permethrin impregnated sisal curtains. East Afr Med J. 1999 Jan;76(1):42-6.
5. Aikins MK, Pickering H, Greenwood BM (1994): Attitudes to malaria, traditional practices and bed nets (mosquito nets) as vector control measures: a comparative study in five West African countries. J Trop Med Hyg. Apr; 97(2):81-6.
6. Aikins MK, Pickering H, Greenwood BM (1994): Attitudes to malaria, traditional practices and bed nets (mosquito nets) as vector control measures: a comparative study in five West African countries. J Trop Med Hyg. Apr; 97(2):81-6
7. Donnie JM, Konan YL, Alabaman K, Attain J. Knowledge, attitudes and practices of populations towards mosquitoes in urban and rural area (Côte d'Ivoire-West Africa)]. Bull Soc Pathos Exit. 2004 Nov;97(4):295-301