

SHORT COMMUNICATION

Knowledge on malaria transmission and its prevention among schoolchildren in Kyela District, south-western TanzaniaF. EDSON¹ and E.J. KAYOMBO^{2*}¹*Muhimbili University College of Health Sciences, P.O. Box 65001, Dar es Salaam, Tanzania*²*Institute of Traditional Medicine, P.O. Box 65001, Dar es Salaam, Tanzania*

Abstract: A school-based study was carried out to assess the knowledge on malaria and its prevention among children in Kyela District, south-western, Tanzania in August-September 2004. A total of 400 schoolchildren (age= 10-20 years) from four schools were selected. A structured questionnaire was used to collect data on knowledge on malaria transmission, methods of prevention, source of information and use of mosquito nets. More than 85% of the respondents were knowledgeable on malaria and preventive measures. Sources of information about malaria and its control were mainly from their teachers (47.4%), print materials (21.9%), family members (20.4%), television and radio (7.3%) and medical personnel (2.2.%). The perceived best control measures were untreated nets (32.1%), treated nets (21.4%), environmental management (25.7%) and burning mosquito coils and insect repellents (20.8%). Availability of mosquito nets was relatively high (70%), but only 38% of the pupils were using insecticide treated nets (ITNs). Low ITN use was due to its unavailability (57.5%), cost (35%) and foul smell and fear of side effects (7.5%). These findings suggest schoolchildren are aware about malaria and its prevention methods, but are not well-informed of the benefits of using ITNs. More education and advocacies on use of ITNs to parents and children is needed.

Key words: malaria, prevention, schoolchildren, Tanzania

Malaria has greatest impact on people's health in sub Saharan Africa. Morbidity due to malaria in the region is between 300 and 500 million clinical cases annually (WHO 2000; UNICEF 2000) resulting in about 1 million deaths (WHO 1998). In Tanzania, health statistics show that malaria is number one public health problem causing considerable morbidity and mortality (MoH, 2006). About 94% of Tanzanian population is exposed to the risk of malaria. In addition, it is one of the major factors contributing to poverty and absenteeism from work and schools in endemic areas (Kitua, 2003).

In sub-Saharan Africa, inadequate health infrastructure and poor socio economic conditions and increasing antimalarial drug resistance have aggravated the problem of malaria despite early noted success in controlling it (WHO 2000; UNICEF 2000). Increasing drug resistance of malaria has stimulated search on methods of controlling malaria which could complement chemotherapy. Previous studies have focused on measures which provide protection from adult mosquitoes including mosquito nets, window curtain, screening of windows and protective clothing (Rozendaal, 1997). Data available indicates that despite the efforts made in the country affordability remains an important obstacle to net utilisation in Tanzania (Makemba *et al.*, 1995; Okrah *et al.*, 2002). Recent surveys have also indicated that there are apparent growth in coverage in children and pregnant

women given the current campaign and sales through the Tanzania National Voucher Scheme (TNVS, 2006).

In Tanzania, mass media and public campaigns against malaria has introduced education programmes to enable people recognize malaria symptoms and signs at an early stage; promotion of early and appropriate health care seeking behaviour; effective home treatment and care; personal protective measures and environmental management (MoH, 2000). By and large, much emphasis is put on insecticide treated nets. To bring behavioural change these programmes are supposed to be community- based involving everybody. For better adoption of an intervention, community needs to be imparted with knowledge on correct information about the diseases. In case of malaria, these include knowledge on causes of malaria, symptoms, mode of transmission and control (Mboera, 1998). In the fight against most diseases, schoolchildren are important partners and can be among best target groups for health promotion.

Health education and promotion can be communicated through mass media, public meeting, literacy classes and seminars (Lwoga & Matovelo, 2005; Mboera *et al.*, 2007) as well as when mothers are visiting maternal child healthcare services. If well communicated at all levels, the response will be felt at the community by increasing demand on protective measures such as insecticide treated nets

(ITNs), mosquito repellents, and positive behaviour change actions as well as environmental sanitation and source reduction. It was therefore, the objective of this study to assess the knowledge on malaria transmission, preventive practices and coverage of insecticide treated nets among primary schoolchildren in Kyela District, south-western Tanzania.

This school-based study was carried in Kyela District in south-western Tanzania. The district (9°30'S, 34°00'E) has a total area of 965km² and a population of 173,830 (URT, 2003). The district has two hospitals, two health centres, 22 dispensaries. The district is served with 92 primary schools with total number of about 44,333 children. Kyela was chosen for this study because it is one of the malaria endemic districts in Tanzania (Minja & Matola, 1982).

The study population was primary schoolchildren of standard six and seven in four selected primary schools. This population was chosen because children would be of appropriate age and have some knowledge on malaria learned from science subjects at school and could identify interventions against malaria done at their respective homes.

A multistage sampling method was used to get schools and schoolchildren to be involved in this study. First a table of random numbers was used to get schools to be involved in the study from all primary schools registered in district and out of which four schools were chosen. Secondly, simple random sampling method was also used to obtain a representative sample of 400 primary school children who were involved in this study. A Kiswahili translated structured questionnaire was used for data collection. The questionnaires were administered using face to

information and ITNs coverage.

Official permission to conduct this study was obtained from Muhimbili University College of Health Sciences and Kyela District Administration. As for the schoolchildren, the study was explained to them and asked for verbal consent from their parents to assure confidentiality and cooperation.

A total of 400 children (10-20 years) were sampled, of these 52.5% were girls. Most (77.5%) of the respondents were of the age group 10 to 14 years which is within primary school age in Tanzania. Assessing knowledge on malaria transmission, multiple responses were allowed. The majority (85.4%) of the respondents had knowledge that a mosquito bite was the main method of malaria transmission. Eight percent of the children said one get the disease if living in the same house with someone suffering from the malaria.

As regards to malaria control, a total of 1,135 responses were recorded and ranked from the highest to lowest. Of the responses 26.4% were in favour of using untreated mosquito nets; 22% mosquito repellents (including mosquito coils); 21.1% source reduction; 17.6% used insecticide treated mosquito nets and others (smoke from burned papers and woods) (Table 1).

There was a good coverage of pupils who were using mosquito nets whether treated or not (70%). The reason given by the 30% children without nets was because their families were unable to purchase them. The majority of the respondents (62%) did not treat their nets at all. Those who mentioned to re-treat nets (38%), did not know the frequency of net treatment. The underlying factors for not treating their nets

Table 1: The number (%) of responses malaria as given by the schoolchildren

Method	Number of responses	Percentages (%)
Untreated mosquito nets	300	26.4
Mosquito coils and repellents	250	22.0
Source reduction	240	21.1
Insecticide treated nets	200	17.6
Anti-malaria drugs	60	5.3
Traditional herbs	15	1.3
Others	50	4.4
Don't know	20	1.8
Total	1135	100

face interview method. The required information was filled in the questionnaire and confirmed to ensure correctness.

All questionnaires were assigned into serial number. Data coding for variable to be measured was done and entered into computer database using Epi-Info software 2000 (CDC Atlanta, GA, USA) for analysis. All the necessary statistics computation was done to determine level of awareness on malaria, its transmission and preventions and source of

included affordability (35%), aversion to smell (5%), and the perception that untreated nets provided adequate protection against mosquito bites (57%). A small proportion (3%) of the respondents had no reason for not using insecticide treated nets.

Health care facilities were the most (43.8%) preferred source of care when children had malaria. Home medication was done by 38% of the children households and the rest were either send to traditional

health care practitioners (6%) or used herbal plants believed to be effective for malaria (12.2%).

Teachers were identified as the most common source of information on malaria (47.4%). Malaria was one of the subjects covered in the primary school syllabus. Other sources included print materials such as books and newspapers (21.9%) and television and radio (7.3%), family members (20.4%), medical personnel (2.2%); and relatives and friends (0.8%).

Our findings suggest that schoolchildren have knowledge of malaria, and are aware of its mode of transmission and prevention methods, including the use of ITNs. The findings of this study underscore findings by T.W.C. Ariho *et al.* (unpubl.) in Kampala, Uganda who found that 89% of all pupils were able to recognize the method of malaria transmission. Recently, Ndyomugenyi & Kroeger (2007) established in Uganda that schoolchildren's reports of household ownership of a mosquito net and coverage could be used as a proxy of household ownership of net and coverage at community level, for routine monitoring of malaria control programme.

Despite the high coverage of mosquito nets among schoolchildren in Kyela District, however, a number of household were not using ITNs because of poor affordability. Official statistics available indicate that the proportion of individuals sleeping under ITN in Tanzania is still low. For instance, only 39% of the population were sleeping under mosquito nets in Tanzania in 2003; while only 25% of the households had at least one ITN (Ministry of Health & Social Welfare, unpubl). Improvement of the community socio-economic status through empowering rural community by income generating activities is likely to increase coverage of household's net ownership and utilisation.

Again, despite the known usefulness of ITN against untreated net, in this study over half of the respondents were convinced that the later was adequate in protecting one from malaria. The costs of nets have been consistently cited as an obstacle for many households similar to findings of our study. Lack of affordability as an obstacle in nets ownership has been reported by other workers (Ager, 1992; Makemba *et al.*, 1995; Okrah *et al.*, 2002; Onwujekwe *et al.*, 2005).

Health care seeking behaviour at the onset of malaria in this study shows that less than half of the respondents sought treatment from a health facility while over one-third employ home-medication. This means, the use of health care facility services at the onset of malaria is low and this signals to be a big problem. Self medication at home is common in Tanzania (Mnyika *et al.*, 1995; Nsimba, 2003). This might be because of the difficulties in reaching health

facilities especially in rural areas and availability of antimalarial drugs in pharmacies. However, a study in Dar es Salaam, showed that 71.7% of cases of malaria treated themselves with home-kept antimalarial drugs (Mnyika *et al.*, 1995). Self medication without prescription is likely to result in underdose or overdose both of which have serious impact on human health and are likely to cause drug resistance.

Many community intervention studies show that radio and television are powerful tools for informing the public (Ager, 1992; Lwoga & Matovelo, 2005). However, findings in this study have shown that only a few of the schoolchildren learned about malaria and its prevention through radio or television. This is likely to be true in many other rural areas as well in sub Saharan Africa where radio and television are not available. A survey conducted in Tanzania indicates a fairly high radio ownership in urban than rural area; and that television ownership stands at 3.4% and 0.1% in urban and rural areas, respectively (see Mboera *et al.*, 2007).

Teachers were identified as an important source of information. They are therefore, very useful in rural areas for intervention strategies. Teachers are close to the schoolchildren; and some of the subjects they teach include malaria. Since most of the children in Tanzania stay at home they could be a good channel for disseminating health information among household members. Similar findings have been reported elsewhere in Tanzania. In a recent study in Dodoma, Tanzania, local media, mass media, print materials and interpersonal contact were identified as the most commonly used channels of health information communication (Mboera *et al.*, 2007).

The findings of this study also suggest that print materials in rural areas form an important source of health information. This can be exploited in developing user-friendly print materials for health promotion among schoolchildren.

To conclude, this study has shown that children in Kyela district are knowledgeable on mode of transmission, methods of prevention and hence, there is need to involve them in the malaria control strategies. Since teachers have surfaced as source of malaria related information there is need to empower them with appropriate health education through seminars and other means of communication. The teacher-schoolchildren partnership is likely to play a great role in the effective implementation of malaria control strategies. Advocacy strategies on the use of ITN should be strengthened along with the empowerment of the community.

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