Community knowledge, perceptions and practices on malaria in Mpwapwa District, central Tanzania

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Abstract: A study on community knowledge, attitudes and perception on malaria and its management was conducted in Mpwapwa district of central Tanzania in January-February 2001. Six villages, three with health facilities (Kibakwe, Makose and Mwanawota) and three without health facilities (Chogola, Kidenge and Wangi) lying between 975 and 1859 m above sea level were selected for the study. According to most respondents, the general health problems for adults in the district included malaria, diarrhoea, typhoid fever and pneumonia. Malaria, pneumonia and diarrhoea were the major health problems among children. Among pregnant women, malaria, abortions and diarrhoea were identified as the major public health problems in the district. In the view of most of villagers, malaria was the cause of most fevers and convulsions at low and intermediate altitudes. Cold weather was considered as the main predisposing factor to most of the fevers experienced in the highland villages. The common antimalarial drugs used in Mpwapwa district were chloroquine and quinine. The cost of antimalarial drugs ranged between TShs. 10/- and 20/- for one tablet of chloroquine, 600/- for chloroquine syrup, and 320/- for a single dose of chloroquine injection. However, shortage of drugs was frequently encountered in most of the health facilities. Traditional medicine practitioners were most frequently consulted for cases of convulsions in the district. Our findings showed that only 2.1% of the children in the district were sleeping under mosquito nets. The use of mosquito net was common among individuals living in the villages with health facilities than in those without health facilities. Generally, most respondents considered long distances to health facilities and inability to pay for health services as the main constraints in obtaining proper health care.

Introduction

Malaria remains a major cause of morbidity and mortality, with an estimated 100-300 million cases, of which 1.5-2.7 million die each year. Over 90% of the cases occur in sub-Saharan Africa, with children under five being most vulnerable to the disease (WHO, 1997). Malaria is the commonest communicable disease in Tanzania. It is the primary cause of ill health and death in the country, causing an enormous health and economic burden. Tanzania is probably the worst hit malaria endemic country in East Africa having areas with highest transmission (over 1 infective bite per person per night).

The distribution of malaria endemicity in Tanzania is not homogenous. In warm and humid coastal areas and around major lakes malaria is stable and transmission occurs for over 6 months. In other areas, malaria is unstable and transmission occurs during part of the year and in a few areas it occurs as outbreaks and only in some years(Mboera and Kitua, 2001). The geographical distribution of malaria depends on the climatic conditions necessary for the survival of the vector and the parasites.

Explanations as to why people suffer and die from malaria are very diverse and may have a spatial variation between and within districts. For instance, the local perception of malaria illness and symptoms may affect the health seeking behaviour of infected individuals as well as the general attitude towards preventive measures such as those related to the use of mosquito nets. Understanding local perceptions of malaria should be considered as a prerequisite for any successful malaria control programme (Rumisha *et al.*, 2003). The objective of this study was therefore, to assess the community knowledge, attitude, practice and behaviour on malaria and its management in Mpwapwa district, in central Tanzania.

Materials and methods

The study was carried out in Mpwapwa district (6°45'S, 36°20'E) of central Tanzania during January and February 2001. The study area was stratified into highlands, intermediate and lowlands. Sites selected for the studies were Wangi and Mwanawota (highland, 1829m), Kibakwe and Kidenge (intermediate, 1177m) and Chogola and Makose (lowland, 987m). The

selection of these villages was also based on the presence or absence of health facilities within the village. Health facilities were available at Makose (dispensary), Kibakwe (health centre) and Mwanawota (dispensary). The villages of Kidenge, Chogola and Wangi had no health facilities. Within each stratum, the villages were 7 to 15 km apart.

Qualitative data collection techniques including focus group discussions, individual in-depth interviews and direct observations were employed in data collection. The modified Roll Back Malaria Guidelines were used in these assessments. The focus group discussions involved two separate groups of 8 men and 8 women. Information collected was related to illness classifications, perceived causes, treatment seeking behaviour and relative perceptions of treatment options. For the individual interviews, children caretakers or heads of households were involved. An inventory of antimalarial drug sources and providers and detailed illness narrative interviews were also conducted. Information was also collected on the use of mosquito nets and whether the net was treated with insecticide or not. In addition, schoolchildren were interviewed on whether they slept under a mosquito net during the previous night. Information on other malaria control measures was also sought.

Data analysis

All data were entered into EXCEL and Epi-Info 6 and analysed using STATA version 6 software.

Results

In this district the general health problems for adults were malaria, diarrhoea, typhoid fever and pneumonia. In pregnant women malaria and abortions were the most important health problems. Malaria, tuberculosis, typhoid fever, HIV/AIDS and maternal complications, were the major causes of deaths in adults. Pregnant complication was mentioned as an important problem in all villages except Wangi and Chogola. The most important health problems in children were malaria, convulsions, diarrhoea and pneumonia. Anaemia and convulsions were mentioned as the major causes of death in children in the district. However, in the highlands of Mwanawota and Wangi, most deaths in children were associated with pneumonia.

In the villages at low and intermediate altitudes, the causes of fever and convulsions were mentioned to be malaria whereas at high altitudes, fever was associated with cold weather. Most of the respondents (61%) in the district mentioned mosquito bites as the main cause of malaria. Mosquitoes were also mentioned as the major cause of nuisance, particularly in Kibakwe. Respondents in Mwanawota had poor knowledge of the role of mosquito in malaria transmission. Some few individuals from villages in the low and midland villages mentioned unsanitary environment as one of the major causes of malaria in their communities. Other causes of fever included soft ticks and cold weather. Some (19.7%) of the people of Wangi and Mwanawota (in the highlands) did not know the cause of malaria. Drinking of contaminated water was thought as a cause of malaria among these people. A high proportion of respondents (90.6%) associated the occurrence of malaria with rainy seasons. However, a small proportion of the population, especially in Makose, said that malaria is a problem throughout the year.

Malaria classification differed from areas of low and higher altitudes. In Chogola and Makose, malaria was classified as a very serious disease, affecting mainly (50%) children. Respondents in midland villages (Kidenge and Kibakwe) classified malaria as a serious disease affecting women and children while in highland villages of Wangi and Mwanawota, malaria was considered as a normal disease, affecting all age groups.

Traditional healers were consulted for treatments and prevention of convulsions in Kibakwe, Kidenge and Makose. Sponging, topical application of burnt garlic leaves, elephant dung or mothers' urine on the body of a sick child, were traditionally used in the treatment of convulsions. Antipyretics and antibiotics were used to treat fevers among communities in Chogola. Treatment of hot-body by sponging and use of aspirin/paracetamol and or chloroquine was common in all villages except Wangi. Interestingly, in all villages most respondents mentioned that health facilities were the best source of care for malaria and convulsions. In all villages, most of the respondent admitted that traditional medicine was least effective. Nonetheless, long distances and inability to pay for health services were the major constraints in obtaining proper health care from conventional health facility and hence the reason for seeking care from traditional healers or home-medication.

It was observed that most (69%) treatments for malaria cases were obtained from health care facilities (Figure 1). However, home medication accounted for 22% of all treatments of malaria and fever cases in the district. Some 11% of the respondents mentioned

other sources of treatment such as traditional healers, drug stores, shops, and drug kiosks.

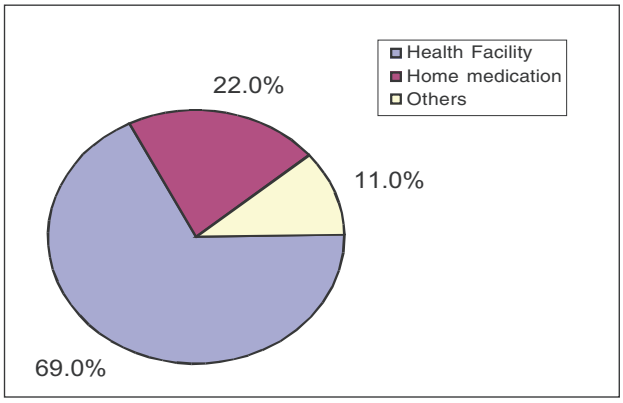

Figure 1: Malaria treatment seeking options in Mpwapwa

Transport and distance to the nearest health facility was the common problem among communities in Mpwapwa district. For instance, 30.7% had to travel >4 km to reach the nearest health facility in Makose, Wangi and Kidenge. The rest of the population lived 1-3 km from the health facilities.

among the people in the district. However, 10% of people in Kidenge admitted to have used SP in treating cases of malaria. Respondents in Kibakwe and Kidenge reported to be using sulfalene-pyrimethamine (Metakelfin®) in the treatment of malaria in their areas. The cost of treatment of malaria ranged between TShs. 10 and 20 (US$1= TShs. 1000) per tablet of chloroquine. Chloroquine syrup and injectable solutions were sold at TShs. 600 and TShs. 320, respectively. Shortage of antimalarial drugs was frequently encountered in most of the health facilities in the district.

On average 2.1% of the schoolchildren in the district were using mosquito nets for protection against malaria. Mosquito net utilisation among the schoolchildren was 2.7% (N=187) and 9.5% (N=200) for Kidenge and Kibakwe villages respectively. None of the schoolchildren in Wangi and Mwanawota was using a mosquito net. Households in a village with a health facility (Kibakwe) had more nets than those in a village without a health facility (Kidenge) (P = 0.005, χ^2=7.74). The use of mosquito nets in pregnant women was fairly poor in both villages. Use of treated

Table 2: Antimalarial drug utilisation pattern in Mpwapwa

Village	Chloroquine	Quinine	Sulfadoxine-pyrimethamine	Sulfalene-pyrimethamine
Wangi	100%	-	-	-
Mwanawota	100%	-	-	-
Makose	92%	8%	-	-
Chogola	100%	-	-	-
Kibakwe	89%	-	-	11%
Kidenge	70%	10%	10%	10%

Information on drug utilisation pattern was obtained from 75 respondents. The common antimalarial drugs used in Mpwapwa district included chloroquine and quinine (Table 1). Most respondents in villages at higher altitudes did not know the names of antimalarial drugs. Most respondents in study villages preferred to use chloroquine for the treatment of malaria. Quinine was mentioned as a common antimalarial drug in Makose and Kidenge. Sulfadoxine-pyrimethamine (SP) was poorly known

and untreated mosquito nets as means of controlling malaria was mentioned by 31.7% of the female respondents. Other mosquito control measures included the use of coils, plant repellents and cow-dung. The use of antimalarial drugs (14.3%), cleanliness and indoor spraying were among other malaria control methods mentioned. About 34.2% of the female respondents did not know any means of controlling malaria.

Discussion

Malaria in Mpwapwa district was considered to be the major health problem by the communities. The knowledge of malaria disease differed between communities of the low, intermediate and highland areas. The communities in the lowlands considered malaria to be a very serious health problem. The disease was considered less serious in the midlands and highlands. This classification corresponds to the findings that malaria is more prevalent in the lowlands than in the midlands and highlands (Clyde, 1967) . Data from many districts of Tanzania indicate that malaria is the most important communicable disease in lowland areas than highlands (Clyde, 1967, 2001; Rumisha *et al.*, 2003).

Variation in the perception of community on malaria according to altitudes has also been reported in Iringa district (Rumisha *et al.,* 2003). The responses of the community on the magnitude of malaria corresponded well with the findings of a malariometric survey carried out during the same period of the year. In the latter study malaria parasite prevalence rate in the district varied markedly with altitude, with higher parasite rates being observed in villages at low than higher altitudes ((Mboera *et al.,* 2002).

Correspondingly, the communities in the lowlands had a better knowledge of the seasonal transmission of malaria than those living in the highlands. This was expected, because malaria was virtually absent in the highlands (Mboera *et al.*, 2002) and therefore, the community would not be able to identify the season when malaria transmission most occurs.

Interestingly, the knowledge about malaria disease and its transmission was also poor among communities living in villages without health facility. In a different study, it was shown that people living in areas with health facilities were less affected by malaria parasites than those living in areas without health facilities (Mboera *et al*., 2002). Communities close to health facilities are expected to be more knowledgeable of the disease through health education provided directly or indirectly by health care providers. Conversely, communities living far from health facilities are likely to have little knowledge from health care providers, hence poor understanding of the malaria mode of transmission and its protection.

Chloroquine and quinine were the most common antimalarial drugs used by the communities in the district. This study was conducted before the Tanzania Ministry of Health changed the first line treatment of malaria in August 2001. Although home medication and consultation of traditional healers were common in the district, most treatments for malaria were obtained from health facilities. Similar observations have been reported in Iringa district (Rumisha *et al.,* 2003). Several studies have investigated factors influencing household utilisation of health services in Tanzania (Mutalemwa *et al.*, 2003; Munga, 2004) and identified ability to pay for service and distance to the health facility as the major constraints. Economic and anthropological studies have also shown that households make certain choices relating to treatment seeking that relates to the economic situation and social and cultural factors of the household (Munga, 2004).

The overall proportion of the population in the district using mosquito nets was lower than expected. In the nearby Iringa district, mosquito net coverage was found to be 16.1% (Rumisha *et al*., 2003). Interestingly, the use of mosquito nets was high in larger settlement such as Kibakwe than in typical small rural villages. The higher proportion of net use that was observed at Kibakwe, a village with health facility, is most probably due to the presence of large number of nuisance *Culex* mosquitoes and health education that is provided by the health facility (Mboera *et al.,* 2002).

In conclusion, the knowledge and perceptions of the rural communities of Iringa district varies according to the endemicity of the disease and the close availability of health care services. From the study results, it is evident that community in malaria endemic areas and those close to health facilities were knowledgeable of malaria transmission and its control. It is evident therefore, that malaria control strategies should take into consideration such variations if it has to be effective. Outreach services to communities living in villages without health facilities should be strengthened in order to provide relevant health education that can provide knowledge on better ways of controlling and preventing malaria in the respective community.

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References

Clyde, C.F. (1967) Malaria in Tanzania. London, Oxford University Press.

Mboera, L.E.G. & Kitua, A.Y. (2001) Malaria epidemics in Tanzania. *African Journal of Health Sciences* **8**, 14-18.

Mboera, L.E.G., Kisinza, W.N., Kamugisha, M.L., Rumisha, S.F., Chuwa, G.J., Kitua, A.Y., Molteni, F. & Majori, G. (2002) The impact of altitude and access to health services on malaria prevalence among schoolchildren in Iringa Rural District, Tanzania. *Public Health Situation in Tanzania: Re-packaging Knowledge for Health Promotion.* In: Proceedings of the 20th Annual Scientific Conference of the Tanzania Public Health Association, November 19-23, 2002, Mbeya, Tanzania. Pp. 66-71.

Munga, M.A. (2004) Impact of costs and perceived quality on utilisation of primary health care services in Tanzania: rural-urban comparison. *Tanzania Health Research Bulletin* **6**, 51-56

Mutalemwa, P.P., Mboera, L.E.G. & Mittelmark, M. (2003) Living with malaria in Tanzania: an insight from a rural community of Tanga District. *Tanzania Health Research Bulletin* **5**, 13-18.

Rumisha, S.F., Mboera, L.E.G., Kamugisha, M.L., Kalumuna, A., Amri, M. & Kitua, A.Y. (2003) Pattern and distribution of communicable diseases in border districts of Bukoba and Tanga, Tanzania. *Tanzania Health Research Bulletin* **5**, 19-23.

WHO (1997) *Health and Environment in Sustainable Development. Five years after the Earth summit*. World Health Organization, Geneva. WHO/EHG/97.8.