People and Health

Socioeconomic factors in malaria control
W. Kwadwo Asenso-Okyere

A knowledge of people’s perceptions of malaria and of the socioeconomic implications of the disease is of considerable value when control programmes are being planned and implemented. Observations on these matters are reported from Ghana.

Malaria is endemic in most parts of Ghana. Some 9% of deaths in the country are attributed to the disease, which also accounts for 30% of outpatient visits and 9% of hospital admissions.

The transmission of malaria is substantially influenced by socioeconomic factors, among them sanitary conditions, agricultural development, irrigation, the availability of drugs and pesticides, knowledge of and attitudes to the disease, migration, and outdoor activities. The development of resistance to chloroquine by the parasite has created problems, although alternative antimalarials are available and herbs have been used with some success to treat people suffering from malaria attacks.

In 1992, a new strategy was recommended at an international meeting to combat malaria, in which the main emphasis was to be on encouraging people to try and avoid being bitten by mosquitoes, and to obtain treatment quickly in the event that biting nevertheless occurred (1). Of course, disease control can be effective if people are empowered to act; this includes the acquisition of knowledge about the problem, its consequences, causes and remedies, and the obtaining of resources.

Knowledge and perceptions of malaria among the general population

In Ghana most people refer to malaria as atiridii, a term covering major signs and symptoms associated with the progression of infection to severe forms of the disease (2). However, the most extreme and complicated form is not recognized as atiridii but as another disease manifestation associated with supernatural forces.

At the onset of malaria and until the eyeballs turn yellow many people rely on self-medication, including hot fomentation with herbs and camphor. Once body weakness is experienced, however, accompanied by chills and a

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Dr Asenso-Okyere is Senior Research Fellow and Head of the Economics Division, Institute of Statistical, Social and Economic Research, University of Ghana, P.O. Box 74, Legon, Ghana.
sensation of bitterness in the mouth, help is likely to be sought at a clinic. If high fever and nightmares ensue a supernatural cause may be blamed and help may be sought from a herbalist or a spiritualist.

A survey conducted in four areas of Ghana revealed that the factors perceived as causing malaria included malnourishment, mosquitoes, excessive heat, excessive drinking, flies, fatigue, dirty surroundings, unsafe water, bad air, and poor personal hygiene. Some of these supposed factors clearly have no direct bearing on malarial infection, but others could predispose individuals to being bitten by mosquitoes. Although many adults were aware that mosquitoes carried malaria they commonly did not know how to break the transmission cycle. Some adults suggested that the disease could be transmitted by the sharing of crockery or beds, by overcrowding in bedrooms, through sexual intercourse, as a result of snoring, or by stepping in the urine of an infected person. Most adolescents had no idea how the disease was spread from person to person.

Many complications were suggested as being associated with malaria, including high fever (the most commonly mentioned), rheumatism, anaemia, convulsions, nightmares, mental disorders and stroke. Some people, however, among them literate adults, considered that the disease did not lead to any complica-

tions at all. The symptoms most frequently considered to be linked to malaria were yellowing of the eyeballs, chills and shivering, headache, a bitter taste, body weakness, and yellowish urine. Among the other symptoms mentioned as being associated with the disease were loss of appetite, high temperature, perspiration, dizziness, bad dreams and delirium, vomiting, bodily pains, yellowish palms, sleeplessness and nausea. Malaria was considered to be the most important disease in the communities of Kojo Ashong, Barekese, Barekuma and Oyereko. However, it was the second, third and fifth most important disease respectively according to the people interviewed. It is worth observing that both health care and environmental sanitation were distinctly inferior in Kojo Ashong. There was a widespread understanding that malaria had a major adverse impact on the ability of adults to work and of children to attend school. It was stated that infected children, if not treated, could die very quickly.

Herbal preparations for self-medication, including liquids for drinking, liquids for use as enemas, and potions for hot fomentation, were known in most households. Most people used the leaves of the neem tree (Azadirachta indica) to make such preparations. The syrup obtained by boiling pineapple and mango peel, and the broth produced by boiling kenkey (a major staple food in southern Ghana, prepared from corn dough) were also used to treat malaria. Some persons aged over 60 who contracted malaria took a purgative, in the belief that this would cleanse their bodies of impurities.

Most interviewees were aware of one or two chemotherapeutic drugs used in the treatment of malaria, chloroquine being the most commonly mentioned. All the participants said they would be willing to buy a drug to treat the disease. No one mentioned the use of chemoprophylactics. A few people sprayed their rooms with insecticide before going to bed in order to kill mosquitoes, while others used repellent coils. Bednets were rarely used.
There was little knowledge of how the transmission cycle of the parasite could be broken. Farmers, comprising a large part of the population, spent a lot of time working in the open where they were exposed to attack by mosquitoes, the breeding of which was favoured by unsanitary conditions in the villages and the presence of large areas of water.

**Social implications**

The decline of the extended family means that less support from this source is available now than formerly for individuals with malaria. When illness occurs in a nuclear or extended family, the children are asked to help with tasks both in the home and on the land. This may lead to their absence from school and a consequent drop in academic standards. In rural areas, women bear most of the burdens of cultivating crops, child-rearing, performing domestic tasks, and caring for the sick. Not surprisingly, therefore, women are subjected to immense strain when malaria strikes.

Mortality caused by malaria may have far-reaching consequences for families. If the breadwinner dies, the children may have to cease attending school because no income is available to meet the fees and other costs.

**Economic implications**

As with many other diseases, malaria is linked to poverty in a vicious cycle: people become sick because they are poor, they become poorer because they are sick, and they become even more ill as their poverty increases.

The morbidity and mortality associated with malaria cause household productivity and output to fall, partly because of direct effects and partly because some of the time of productive individuals is taken up with looking after unwell family members. Moreover, the quality of work performed by people with malaria is diminished. This may make it necessary to abandon demanding activities in favour of enterprises requiring less per-

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severance and skill and yielding reduced incomes. The outcome may be that the basic necessities of life cannot be afforded and that the people concerned are further predisposed to contract malaria.

The direct costs of malaria are those of treatment and control; they include consultation fees, drug purchases and transportation costs. The indirect costs, associated with lost time attributable to morbidity and premature mortality, are comparatively high in rural areas, where labour is the major economic input into productive activities. In Ghana, malaria is the principal factor causing lost working days.

It has been estimated that in sub-Saharan Africa the cost of a case of malaria was US$ 9.84 in 1987, comprising $ 1.83 in direct costs and $ 8.01 in indirect costs (3), equivalent to 12 days’ output on average. On the basis of 1987 values it is projected that in 1995 the total cost of a case will be $ 16.40 because of increased severity of the disease and increased resistance to chloroquine, and that this will be equivalent to 21 days’ output. The per capita burden in Africa is expected to have risen from $ 1.34 in 1987 to $ 4.02 by 1995. For Africa as a whole the annual economic burden of malaria was $ 0.8 billion in 1987 (0.6% of gross domestic product); by 1995 it is expected to be $ 1.7 billion (1.0% of gross domestic product). In Ghana during 1991 the total cost of drugs for full courses of
treatment of reported cases of malaria, each comprising ten chloroquine tablets and 10–12 paracetamol tablets, was $300,000.

There is no health insurance in many African countries, and when a household member falls ill it may become necessary to divert money from economic ventures and education to health; alternatively there may be a refusal to seek health care, an increasingly common state of affairs where user charges have been introduced in government health facilities. Growing numbers of people are returning to traditional health care providers or are resorting to self-medication.

Malaria is an important cause of poverty in Ghana and many other African countries because of the rising cost of care and the low productivity of people affected by the disease. The first step in any control programme should be to educate the people about the causation and treatment of the disease. Much can be done in the schools, while adult education in the hands of community health officers, social welfare workers and agricultural extension personnel should be supplemented by community leaders and groups, farmers’ organizations, church groups and other grassroots organizations. This leads to the empowerment of communities to deal effectively with the pandemic. District assemblies should enact bylaws on the cleanliness of households, and inspectors should be appointed and given sufficient powers to guarantee enforcement.

Acknowledgements
The investigation on which the present article is based was supported by the UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases.

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