

HOUSEHOLD RESPONSES TO MALARIA: COST IMPLICATIONS IN ANANTIGHA AREA OF CALABAR SOUTH LGA OF CROSS RIVER STATE, NIGERIA

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ABSTRACT

A study of household responses in terms of types and costs of treatment of malaria was carried out in Anantigha area of Calabar South Local Government Area of Cross River State. A total of 180 households were involved in the survey. Households had an average of 25 episodes of malaria per year with treatment costing an average of 10% of the total household income. The people had a good knowledge of the disease with resultant prompt response to malaria. Preventive measures include, use of insecticides and mosquito nets. Out of the 108 persons interviewed in the survey, 51% engaged in self medication, 28% used hospitals and health centres and 11% used traditional methods (use of herbs and roots) and 10% did nothing since they could not afford the cost. The results show that the malaria parasite in the area is *Plasmodium falciparum*. Although malaria is a major cause of morbidity and mortality in Nigeria, the costs of treatment has not been well documented. Knowledge of the cost of treatment and health-care seeking behaviour of people will form baseline data for more research in the control of malaria in the community.

KEY WORDS: Malaria, households, cost-implications.

INTRODUCTION

Malaria is one of the most important causes of morbidity in tropical areas of the world (Sachs and Malaney, 2002; WHO, 2003) and consequently one of the major obstacles to development in these areas. Death due to malaria worldwide is currently put at 3,000 a day, (Sachs and Malaney, 2002), with 90% of the death occurring in young children and pregnant women. Majority of them die at home due to poverty and inability to pay for cost of treatment.

About 40% of the world's populations living in the tropics are at risk from malaria infection. According to WHO (2003), the new strategy is for home treatment to commence within 24 hours of onset of the disease. The idea is to avoid the problem and consequences of delay in treatment while waiting for proper diagnosis to eliminate other fever-causing, diseases. (McCombie 2002). The consequences of malaria misdiagnosis are felt at the individual, household and community levels. According to Foster (1995), treating any fever presumptively as malaria, may mask underlying potentially fatal diseases. This will result in prolonged and worsened illness with resultant loss of income.

In view of inadequate health facilities and inadequate funding for free medical care for the populace, communities are increasingly being called upon to bear the cost or participate in bearing the costs of preventive and curative health care. It is therefore important to know the implications and cost of treatment

of malaria on the individual households and communities. Consequently, planning a sustainable malaria control strategy must be based on various circumstances which include socio-economic status of people in the community, environmental parameters and epidemiology of the disease.

According to McCombie (2002) and Filmer (2005), over 80% of malaria cases do not present initially to health facilities but rather diagnose and manage their "malaria" (fever) at home with traditional remedies or drugs bought from chemist shops (Snow 1992, Goodman et al 2004).

They only resort to health centres after failure of self-treatment or wrong diagnosis or misdiagnosis – based mainly on the presence of fever.

Malaria takes an enormous toll on human health and well-being in tropical regions. The costs of malaria are also enormous when measured in economic terms. The annual loss of economic growth from malaria is estimated to range as high as 1.3% per year (WHO, 2003). Costs include lost work time, economic materials and losses associated with child and maternal mortality and morbidity, the costs of treatment and prevention. Also, there are non-quantifiable economic costs of the pain and suffering associated with the disease (Snow, 1992, Asenso-Okyere, 1997). Repeated bouts of malaria may hinder a child's physical and cognitive development and reduce the child's attendance and performance at school.

Malaria imposes a heavy cost on both the

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income, economic growth and development of a country. According to Chima et al (2003) malaria surveys, unfortunately, have underestimated the short term costs of malaria and have completely neglected the long-term costs, in terms of household income and loss of man-hours.

The malaria burden differs according to age and gender with most deaths occurring in children under 5 years and pregnant women who are most at risk.

METHODS

Study Area

The study was carried out in Anantigha area of Calabar South Local Government Area in Cross River State from June 2008 to September 2008. This period coincided with the peak of the rainy season and the peak transmission period of malaria.

Anantigha is a peri-urban settlement on the outskirts of Calabar in Cross River State. The nearest General Hospital was over 10 kilometers away. The closest health centre serving the community was located at a distance of 3 kilometers from the Local Government Headquarters. The inhabitants are traditionally fishermen, traders, artisans and civil servants. The households included those of low income owners (civil servants and fishermen). A typical household consisted of an average of 6 persons. Pipe-borne water supply is not regular and inhabitants depend on commercial borehole water for their domestic use.

Few households have water closet toilets while majority use pit latrines for defecation. Heads of household had similar levels of education and most mothers were housewives and market women while some were employees of the civil service.

Data Collection

One hundred and eighty Households were selected at random. A bottle was spun on the ground and when it came to rest, all the households in front of the bottle top were chosen for sampling.

A household questionnaire survey was undertaken between June 2008 and September 2008. the survey was undertaken by a team which included an interpreter and a community based worker. The questionnaire was pre-tested by the same team outside the study area and was made up of open and semi-structured questions which focused on knowledge of malaria, preventive measures and costs incurred in episode of malaria in the past three months.

treatment, household income and resources. Detailed information was obtained on all malaria episodes within the 3 months preceding the survey period from the Head of Household or the wife (in his absence). The Head of Household was asked to provide information about each family member, the number in the household, monthly family income, number of malaria episodes experienced by each family member, expenditure on treatment and methods used for the prevention of malaria in the household.

Parasitological examination of the blood collected from 61 respondents who were having fever at the time of survey was done using thin and thick blood films stained by Giemsa method.

RESULTS

Parasitological: *Plasmodium falciparum* was identified in 49 samples out of the 61 samples collected. No other plasmodium species was identified.

Knowledge of Disease: A total of 1,082 people from 180 households were interviewed. The number in each household ranged from 3 to 15 with an average of six persons. Out of the number interviewed, 64% of the respondents were females, while 36% were males, aged between six months and 68 years.

Among the adults, only 28% were civil servants (with regular fixed income), while others were either self-employed (54%) or 18% with no defined means of livelihood. Of the population, the total number of children was 640 (59%). The respondents were asked to mention the five most important diseases affecting the household and malaria was ranked as the first and their major health problem. Almost all respondents (95%) knew that mosquitoes were responsible for "causing malaria" Table 1 shows the number of episodes of malaria in each household and indicates that 72 households reported the occurrence of more than 10 episodes each of malaria within the three months preceding the survey period. Nine households had zero episode, while 54 (30%) households had less than five episodes and 45 (25%) had 6–10 episodes.

Table 2 shows symptoms of malaria as identified by the respondents. A total of 540 respondents (49%) included headache, fever, body pains, shivering and vomiting in severe cases. Amongst the respondents, 91% used traditional herbs, 44% had side effects (itching, blurred vision, loss of appetite). Almost all households had experienced an

Table 1: No of malaria episodes in each Household in the past three months.

No. of Episodes of Malaria	Households	%
0	9	5
1-5	54	30
6-10	45	25
11-15	43	24
16-20	29	16
Total	180	100

Seventy two Households reported the occurrence of more than 10 episodes each of malaria within the three months preceding the survey period.

Table 2: Main Symptoms of Malaria as reported by Respondents

Symptoms	No. of Persons	%
Fever	229	21.1
Headache/Fever/Bodyaches	540	49.9
Fever/Shivering/Bodyaches	313	8.9

Household Costs of Malaria

The average yearly income of most households is about ₦120,000.00. The estimated cost of treatment per household was about ₦8,000.00 while some families spend over ₦20,000.00 per malaria episode i.e about 15% of total household income.

Apart from the direct financial impact, malaria was also seen as an indirect factor that further reduced household income. People were further impoverished since they remained weak for a considerable time after a malaria attack. On the average, about seven man-days were lost during an episode of malaria.

It was observed that 130 out of the 180 households interviewed, indulged in self-medication by using simple malaria drugs bought from the local chemists, while 22 households resorted to the use of herbal remedies and 28 households went to the government medical centres and hospitals. For this last group, the total cost of malaria treatment per annum was about ₦20,000.00 i.e. including preventive measures and also cost of admission in hospital in some cases.

Treatment Seeking Behaviour

Only 28 households reported their malaria episodes to clinics, medical centres and hospitals, while 130 households bought drugs across the counter and indulged in self-treatment. This involved the use of paracetamol following the onset of headache and/or fever. Twelve (6.6%) households had stocks of malaria drugs mainly chloroquine-based in the household, while 22 households used traditional methods involving the use of herbs.

DISCUSSION

Knowledge regarding the disease was high. People sought medical treatment in the health centre and hospital after the failure of self-medication. It is likely that one of the factors that influence prompt treatment sought by the people was because of the knowledge of the disease in the area. This is similar to the report by Attanayake et al (2000) Onwujeke and Uzochukwu (2005) who reported that there was a high knowledge of malaria disease among the people. Often however, people still confused side effects of anti-malaria drugs with symptoms of the disease and this resulted in poor patient compliance. Self treatment was also reported by Foster (1995) Asenso – Okyere and Dzator (1997). In the very poor households, herbal medicines were still being used. Studies on malaria are often difficult since any fever is usually tagged “malaria” or the onset of malaria. This affects the exact number of true incidences of malaria as reported by Heads of Household. The responses from Head of Household in recalling episodes

of malaria in the past three months and costs of treatment and prevention may have been under or over-estimated due to recall failure. This was also observed by Foster (1995) and Koram et al (1995) who stated that most Heads of Household gave approximate figures for the number of episodes of malaria in their households.

The high expenditure incurred involves not just for treatment but also for the provision of control measures – mosquito coils, insecticides and provision of special diet – pepper soup and other delicacies (since most patients lose appetite and have to be coerced to eat). All the same, expenditure maybe regarded as estimates since it is from recall. To avoid possible recall bias, only cases that occurred within the last three months prior to the survey were used.

Often, to avoid delays and bureaucracy at the government health establishment, treatment may usually be sought at the private clinic often at a higher cost.

Obtaining correct figures of income from Heads of Households was difficult (due to fear of taxation) especially from non-salaried people. Although the incidence of malaria is less intense in some households, expenditure on malaria treatment and control was higher because of level of literacy and higher income.

Households used a variety of drugs bought from chemists to treat malaria (self medication). This is similar to reports by Snow et al (1992), Goodman et al (2004) that self-medication for malaria is widely practiced around the world especially in rural areas.

The cost of a full dose of anti-malaria drug is between ₦150.00 – ₦1,000.00 (for Chloroquine to the newer and more expensive drug combinations). Average direct expenditure on a single malaria episode treatment was about ₦500.00. However costs per household varied since some households had more persons being treated at the same time. This takes a large amount off the family's total income (money and man-hours). Households spend large amounts on the control of mosquitoes through the use of nets on windows, doors and beds (especially for babies), insecticides (sprays, coil), while few accepted the use of insecticide-treated bed nets. This is similar to reports by Goodman et al (2004), Lengeler (2004). Households spend an average of between ₦500.00 – ₦20,000.00 (hospital admission) similar to report by Snow et al (1992) and Koram et al (1995) for the treatment of an episode of malaria. This shows a remarkably high expenditure on treatment of malaria in view of the fact that these are low-income earners. Often, it amounts to about 5% - 15% of the total household income and maybe as high as 22% for higher income earners (salaried workers). This cost rises if the malaria results in death – warranting burial expenses.

Malaria was ranked by most households as their most important health problem. This was probably influenced by the fact that the survey was undertaken

during the peak transmission period. It was difficult to assess the full impact of the disease on household income and productive capacity since the economic impact is mediated by the extended family system which may reduce or even disguise the actual impact. This study was undertaken in a peri-urban setting and most families had similar economic status. Crowded households with large families living in small houses or rooms are characteristics of low socio-economic standards.

There is need for proper diagnosis to curtail the expenses incurred for treatment of "false malaria". A cost-effective measure would be to ensure that the new drug combinations are used only for confirmed cases of malaria.

The poor are less likely to seek conventional treatment for malaria than the rich, leading to delays in diagnosis and treatment. This is compounded by the fact that poor people prefer self-treatment and or traditional therapy because of unaffordable hospital charges, delays in the hospitals, unavailability of drugs and poor attitudes among government medical staff. This inevitably prolongs the disease. Most households in the study area depend on subsistence livelihoods and so additional health-care costs and protracted illness due to malaria misdiagnosis result in increased poverty. It was observed that poor patients spend a higher proportion of their income on the direct and indirect costs of seeking healthcare. Cost of treatment significantly reduces their income as sacrifices are made on basic needs – food, education, needs of children and may result in the sale of property and borrowing money. This results in delays in seeking treatment. Indirect costs associated with treatment of malaria include, loss of man-hours arising from care of the sick.

According to Williams (2004) and Sachs and Malaney (2002) children may drop out of school to work and augment household finances when adults are incapacitated. High mortality rates induce households to have more children with resultant increased poverty with resultant reduced income due to more mouths to feed. Often, persistent malaria (when not properly treated) may result in accusations of witchcraft resulting in social isolation and victimization of the accused.

The study had evaluated only the direct costs of prevention and treatment of malaria. However it must be noted that there are indirect costs which include loss of man-hours, pain and discomfort. It was found that substantial amount of time was spent in taking care of the sick. This makes the indirect cost a significant proportion of the total cost of treatment.

CONCLUSION

The cost of malaria are enormous when measured in economic terms so that highly malarious communities are often the poorest in the world since malaria obstructs overall economic development. Malaria impose a heavy cost not only on income of the household but also the rate of economic growth of the community. This is justification enough for proper malaria control since this is often lower than the cost of treatment.

The wealth of a household plays a significant role in determining whether a sick family member

receives treatment for malaria. It also influences the type of treatment taken. Poor families often lack the resources to obtain proper treatment and resort to self-medication with drugs purchased from chemist shops.

This study has shown that the economic cost of malaria treatment can still be considerable even in a community where people are aware of the disease, its causes and implications. It has confirmed the pattern of expenditure associated with treatment and prevention of malaria and the effect on household income in a community with low income earners in Cross River State.

The prevention and control of malaria may cause households about an average of 10% of their total income per year. Proper health education of a community on malaria control could prevent unnecessary expenditure spent on malaria disease.

Health systems need strengthening especially at the community level so that treatment can be given when needed and at an affordable cost. Consequences of self-treatment by the community include problems of misdiagnosis (which contributes to a vicious cycle of increasing ill-health, dependency and poverty). Misdiagnosis of malaria results in excessive reporting of malaria cases, under reporting of diseases that resemble malaria, increased true or perceived malaria resistance and misallocation of resources. This is detrimental to economic development of any community.

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