Economic costs of epidemic malaria to households in rural Ethiopia

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Summary

OBJECTIVE To estimate the direct and indirect costs of malaria morbidity among communities in an epidemic area in rural Southcentral Ethiopia.

METHODS Community-based cross-sectional study of 2195 households in Adami Tulu district from October to November 2003. Treatment-seeking behaviour, expenditure on treatment and transportation, interruption of normal activities, time lost from working and household expenditure on preventive methods were ascertained through interview.

RESULTS Of 12 225 surveyed individuals, 1748 (14.3%) reported perceived malaria during the preceding 2 weeks. 77.1% sought any form of care and 70% had recovered at the time of interview. The average treatment cost per patient at private clinics was Birr 24.00 ($2.76) and Birr 12.50 ($1.44) at public facilities. The average estimated direct cost of malaria per patient was Birr 14.00 ($1.60); the average indirect cost, Birr 35.26 ($4.08). Only 5% of all households reported any preventive expenditure in the preceding month, with a mean of Birr 0.76 ($0.09).

CONCLUSION Malaria poses a significant economic burden on rural households and individuals both through out-of-pocket payment and person-days lost. The promotion and implementation of insecticide-treated nets would alleviate the economic consequences of the disease.

KEYWORDS economic cost, epidemic malaria, febrile illness, rural households, Ethiopia

Introduction

Malaria is not only a major health problem, but also has a significant economic impact on the socio-economic development of nations (Gallup & Sachs 2001; Sachs & Malaney 2002). More than 125 million people living in 26 African countries with unstable transmission are estimated to live in areas at risk of malaria epidemics (Worrall et al. 2004). Unstable malaria affects children and people in the productive age groups, resulting in substantial economic loss because of the compromised capacity and efficiency of the labour force. This contrasts with stable malaria, which has a lesser effect on the productive age group because of the development of adequate protective immunity (Kiszewski & Teklehaimanot 2004; Worrall et al. 2004).

Malaria is seasonal and unstable in Ethiopia (Tulu 1993; Abeku et al. 2003; Deressa et al. 2004; Adhanom et al. 2006), causing frequent epidemics (Fontaine et al. 1961; Mengesha et al. 1998; Abeku et al. 2003; Deressa et al. 2005; Negash et al. 2005). Infections with Plasmodium falciparum (>60%) and Plasmodium vivax (about 40%) have been consistently reported in many parts of the country (Tulu 1993; Abeku et al. 2003; Adhanom et al. 2006). In 2004–2005, malaria was reported to be the first cause of outpatient consultations (16.6%), admissions (15%) and deaths (29%) in Ethiopia (Ministry of Health 2004–2005). The peak transmission of malaria in the country coincides with the season of major agricultural activities from September to December, leading to substantial economic loss to the family as well as to the nation due to a significant withdrawal of labour force from farm work. The costs of malaria in terms of prevention, treatment and loss of productivity can comprise a significant portion of the annual income of poor agricultural households (Sachs & Malaney 2002; Chima et al. 2003; Malaney 2003).

Household expenditures on malaria can be divided into two main components: expenditure on prevention and expenditure on treatment. Individual or household direct cost on malaria-related treatment includes direct payment for drugs, consultation, laboratory tests, transport fees to and from health care providers and the cost of subsistence at distant health facilities (Asenso-Okyere & Dzator 1997). There is considerable variation in productive time lost due to malaria depending on the endemicity level of the area. In areas where malaria is stable, the duration of
illness of an episode is probably shorter than in unstable areas. In Malawi, for example, an episode lasts an estimated average of 2.66 productive days lost (Etling et al. 1994). Generally, productive time lost per malaria episode by a sick adult in highly endemic areas of Africa ranges from 1 to 6 days (Chima et al. 2003). In areas of epidemic malaria, however, the duration of illness is probably longer because of lower immunity (Nur 1993): in northern Ethiopia the average estimated number of person-days lost per episode of malaria was 18 (Cropper et al. 2004).

The economic cost of epidemic malaria has received little attention and has not been adequately documented. Our aim was to estimate and value the direct and indirect costs of perceived malaria morbidity in rural Ethiopia, to aid policy makers in prioritizing malaria control activities.

**Methods**

**Study area and population**

This study was undertaken between October and November 2003 in rural Adami Tulu district in south-central Ethiopia, at an average altitude of 1500 to 1600 m. The capital of the district, Zeway Town is 160 km south-east of Addis Ababa adjacent to Lake Zeway, which has an area of 434 km². The district’s population was 145 000 in 2002 according to projections based on the 1994 Ethiopian Census, with a population density of 104/km² (Central Statistical Authority 1998).

Adami Tulu is administratively divided into 62 rural kebeles (administrative units with 1000–3000 population) and four towns. The main occupations are subsistence farming and livestock herding; some people fish in Lake Zeway, or work in irrigated horticulture farms on the lake shore. Some adult males migrate from rural to towns for employment and return home for weekends and at planting and harvesting time. Most houses are circular tukuls with thatched conical roofs. Rainfall is generally inadequate and seasonal; the heaviest rains fall from June through August (long rains) and in March and April (short rains).

Malaria is the leading cause of morbidity and mortality in the district. The major transmission occurs from September through December and the minor transmission in March and April (short rains). Malaria epidemics are frequent from September to December (Mengesha et al. 1998). Parasite prevalence increases from 5.4% in July to 12.6% in September, with an average of 6.8% (Abose et al. 1998). *Plasmodium falciparum* (66%) and *P. vivax* (31%) cause most malaria infections, and *Plasmodium malariae* the rest (3%).

Malaria epidemics are frequent from September to December (Mengesha et al. 1998). In 2003, they flared up in many parts of Ethiopia including our study district (Negash et al. 2005). Consequently, 61% of the total 7864 confirmed annual malaria cases at the District Health Office (DHO) Malaria Control Laboratory (MCL) centre were reported between September and November (Adami Tulu DHO, unpublished data, 2003).

The district has two health centres, three health stations, one MCL centre, two health posts, 13 medium and lower private clinics, 34 community health workers (CHWs), one missionary clinic, 11 drug shops and rural drug vendors. The health centre in Zeway town and a malaria control unit at the DHO are responsible for coordinating malaria control activities in the district.

**Sampling and data collection**

Assuming that 50% of the households would have at least one perceived malaria case over the 2-week recall period with a 4% margin of error at 95% confidence level, the study required a minimum sample size of 2070 households, considering a 15% non-response rate and a factor of 3 for the design effect. Assuming the average number of households in each rural kebele to be 200, 12 kebeles were randomly selected from all 62 in the district. The total sample size was distributed among the selected study kebeles proportionate to the estimated number of households in each. Twelve local high-school graduates and two supervisors from the DHO were trained for 5 days in the use of data collection instruments. The principal investigator (WD) and the two supervisors monitored the data collection process.

All households in the selected 12 kebeles were included in the study. A household was defined as a person with his/her spouse, unmarried children and related or unrelated persons, who live together and constitute one unit. The head of the household (or their spouses), or a representative was interviewed with a pre-tested structured questionnaire to obtain information on treatment-seeking behaviour and the amount of money spent to treat perceived malaria cases. For children with perceived malaria illness, either the mother or both parents were interviewed. To help respondents recall the financial costs or time lost due to perceived malaria, sick adult household members also participated in answering some questions.

Respondents were asked to list all members of their households, and to report whether any household member had experienced any illness within the previous 14 days. This survey was based on people’s perception of malaria using the local Afan Oromo term for the disease (*bussa*). All household members perceived to have had malaria during the recall period were asked how long they were ill, about treatment-seeking behaviour, expenditure on treatment, interruption of daily activities, lost income and household
expenditure on preventive methods. Direct financial costs of seeking treatment comprised expenditure for both formal (public and private) and informal (traditional and home treatment) care providers, as well as transportation of the patient or companion(s) to purchase drugs or seek treatment. As it is difficult to get information on expenses for specific services such as registration, diagnosis, consultation and drugs, respondents were asked to state the lump sum of payments they made at a given health care provider per visit. To determine lost time, respondents were asked how long the sick person and the person who took care of children or other patients, if any, were unable to work or perform normal activities.

Households who reported no malaria were only asked questions pertaining to the cost of preventing malaria. We ascertained whether the household used a particular method and spent money on it in the preceding month. We used a 1-month recall period for estimating expenditure on preventive methods as we believed the number of households using any preventive methods to be very small.

Valuation of time lost

The indirect cost of malaria episodes was estimated from the value of work time that economically active adult patients (10–64 years old) lost, either through their own malarial illness, or through time spent caring for others. Patients younger than 10 years were considered as economically non-productive, although children perform many household chores. We also assumed that people older than 64 years were retired. We used the average daily wage rate to value the time lost by an individual. As obtained through discussions with community elders and key informants during the survey, the full daily wage rate of an agricultural labourer (10–64) was Birr 5.00 ($0.58) to 9.00 ($1.04) for both males and females, giving an average wage of Birr 7.00 ($0.81) per day. This average rate was multiplied by the total days lost by patients or caretakers. During harvest time in Ethiopia, labour is by far the most important input variable to production, and both males and females participate with similar daily payment.

Our direct cost analysis excluded patients who were ill or who did not seek care at the time of the survey. We thought that those who were ill at the time of the interview had not finished treatment-seeking and their inclusion would have lowered the direct costs incurred per patient. Similarly, we assumed that those who did not seek treatment incurred no direct costs for themselves or caretakers. However, the indirect cost analysis was done for recovered patients 10–64 years old, whether they sought treatment or not, and for all companions. Adults with uninterrupted normal activities or no activities to undertake during the illness period were excluded from the indirect cost analysis. Full recovery was defined as the ability to resume normal activity, and the status of recovery was based on the respondents’ perception.

Data analysis and ethical issues

We used descriptive statistics showing the mean values and standard deviations (SD) to summarize the direct and indirect costs, as the data seemed to be normally distributed. Costs were first calculated in Ethiopian Birr and then converted to US dollars using the exchange rate at the time of the study (8.65 Birr = $1.00). This study was cleared by the Ethical Committee of the School of Public Health at Addis Ababa University, and informed verbal consent obtained from all respondents.

Results

Characteristics of the respondents and perceived malaria patients

Data were collected from 2195 (97.4%) of 2253 surveyed households in 12 rural kebeles. Respondents were the heads of households (74%) or their spouses (17.9%). Most respondents were male (66.2%), married (93%), Muslim (97%), had no education (68%), were a farmer or housewife (69%), belonged to the Oromo ethnic group (97%) and were 25–44 years old (56.5%). Males headed 80% of households. Subsistence farming was the main source of income, and our survey took place during peak harvest time. 14% (n = 1748) of 12 225 individuals, from 851 (38.8%) surveyed households, reported malaria during the 14 days prior to the interview. Patients’ mean age (±SD) was 19 years (±15.7); 39.8% were adults ≥20 years, 35.6% were children <10 years; and 50% were females.

Treatment-seeking behaviour of fully recovered patients

Of the 1748 patients with reported malaria, 1348 (77.1%) sought any form of care for the illness and 1222 (70%) had recovered at the time of the interview. Of the fully recovered patients, 1133 (92.7%) sought any form of care including home treatment and traditional remedies, and 12 (1.1%) were hospitalized. Ninety-three (7.3%) patients did not seek any form of care but fully recovered nevertheless. The most frequently reported first response was visiting CHWs (46.3%), followed by public health facilities (30%) and private clinics (21.5%). Self-treatment (1.6%) and consulting private drug stores (0.5%) were rare.

Most second and third visits were to private and public services. Of those who visited CHWs at their first visit,
37.8% made their second visit to a private provider; 25.2% revisited public health facilities. Of all the second visits, 38.8% were to private clinics and 36.8% to public facilities; 50% of all the third visits were to public services and 30.4% to private care providers. Only 222 (18.1%) of cases were microscopically confirmed as malaria.

Direct costs for perceived malaria illness

Direct cost analysis was limited to those patients who sought any form of care and fully recovered at the time of interview, leaving 1133 cases for analysis. Because of missing data, the final analysis comprised 1122 patients (1110 non-hospitalized and 12 hospitalized) for direct cost analysis. The costs were generally classified into direct and indirect costs, and expenditures for non-hospitalized and hospitalized patients were calculated separately.

Considering all providers, 96% of 1110 malaria patients who sought any form of care at the first visit incurred treatment costs. Of those patients who sought any form of treatment, 89.5% incurred treatment costs at public health facilities, 98.7% at private clinics, 99.2% at CHWs and 88.9% for home treatment. The average direct cost of malaria per patient at the first provider was Birr 1.09 (Table 1). The average treatment cost per patient was Birr 2.76 at private clinics and Birr 1.44 at public facilities. The cost of drugs or treatment comprised a significant proportion of the total direct treatment cost: 82% for the first visit at public health facilities and 90% at private health facilities. Transportation cost to patients and caretakers to the facility represented about 18% of the total treatment cost for public health facilities and 10% for private clinics.

Considering all types of providers at first, second and third visits, 96% of 1110 non-hospitalized patients who sought any form of care paid for treatment. 94.8%, 96.3% and 100% of those who sought treatment from one, two and three sources, respectively, incurred costs. There seemed to be no difference between children (<10 years) and adults (≥10 years) with regard to the number who incurred treatment costs. The mean treatment/diagnosis cost at the three levels of visits varied significantly, ranging from Birr 9.52 ($1.1) per person for treatment from one provider to Birr 24.22 ($2.8) per person for treatment from two or more.

Of 655 patients for whom we collected data on transport costs, 20.92% paid for travel. Children <10 years were assumed to travel with caretakers free of charge. The average direct cost of malaria per person was Birr 11.25 ($1.30) for those who sought treatment only from one source and Birr 38.65 ($3.00) for those who sought treatment from two or three sources. Combining all levels of treatment, the average direct cost of malaria per patient was Birr 13.79 ($1.60) (Table 1).

Hospitalization due to malaria during the previous 2 weeks was reported for 12 (0.9%) patients. Eight were admitted to hospital and four to a private clinic. Seven of the hospitalized patients were males. The mean duration of hospitalization was 10.9 days (15 days at hospital and 2.3 days at private clinic). The average direct cost of treatment to the inpatients including travel costs for patients and companions was Birr 256.56 ($29.66). The highest proportion of direct cost for the inpatients was for medication (29.68%), followed by food and lodging (25%).

In this subsistence agriculture community, 36.1% patients used interest-free loans to cover expenditures; 26.8% spent available cash or savings; 17.1% sold cereal crops and 13.3% sold livestock. Working as a wage-labourer was also mentioned for 1.9% of the patients. As a last resort, 1.1% took out loans with interest and 1.1% accepted gifts from kin to cope with financial costs of malaria treatment.

Only 5% (n = 110) of all 2195 surveyed households reported any preventive expenditure in the preceding month (Table 2). The average expenditure per household per month was Birr 15.10 ($1.75), but this dropped to Birr 0.76 ($0.09) when all surveyed households were considered. 82.5% of the total expenditure on malaria prevention in the preceding month was for a mosquito net; only 1.5% of households spent money on repellents. Only 3.3% of all households had at least one mosquito net at the time of the survey.

Indirect costs for malaria illness

Cost of person-days lost due to non-hospitalized malaria patients and the companions. Our indirect cost analysis for non-hospitalized patients was calculated for all cases who had recovered including those who did not seek any form of treatment. The average of 5.29 sick days per patient was similar for males (5.19) and females (5.38). Of 713 adults (10–64 years) reporting malarial illness, 473 (66.3%) had to stop their normal activities (Table 3), for 6.82 person-days on average, which was almost equal for men and women. 49.6% of the total person-days lost by all economically active patients were lost by women.

Overall, an average of 6.79 days per person was lost for both patients (6.82 days) and caretakers (6.7 days). Person-days lost by patients constituted 57.65% of the total. An adult’s work day was valued at Birr 7.00 ($0.81), assuming that patients and companions participated in
all work activities during peak harvest. The cost of person-days lost was Birr 47.71 ($5.52) for patients and Birr 47.22 ($5.46) for companions, giving Birr 94.93 ($10.97) per patient.

Cost of person-days lost due to hospitalized malaria patients and their companions. The mean number of days lost by per hospitalized patient was 14.5 per patient and 17.1 per caretaker. Person-days lost cost an average of Birr 280.87 ($32.47) per episode of malaria per adult inpatient.

Total cost of malaria

For non-hospitalized patients, the direct cost of treatment averaged Birr 13.79 ($1.60) per case; the indirect cost in terms of days lost averaged Birr 35.26 ($4.08) which constituted 72% of the total cost (Birr 49.06 or $5.67). For
hospitalized malaria patients, the total cost was Birr 443.83 ($51.31), of which direct costs comprised 58%.

**Discussion**

This study attempted to estimate both the direct and indirect costs of perceived malaria in a rural setting. The indirect cost to the households accounted for 72% of the cost per fully recovered patient, the remaining 28% covering both treatment and transportation costs. Although treatment of malaria is provided free of charge at MCL and with nominal fees by CHWs in this area, households spent a significant amount of their meagre resources on malaria treatment at private health services. More than half (57.65%) of the time lost due to malaria is a loss to patients because the economically productive population is most affected.

Household expenditure on preventive methods, however, is generally low. Mosquito net costs approximately $2.00 at the time of the survey, and initiatives by donor organizations were underway to freely distribute insecticide-treated nets (ITNs) in malarious areas of Ethiopia. Both private health care and CHW services are important sources of treatment and deserve special attention in designing malaria control strategies. Private health facilities were more expensive than public ones [Birr 23.87 ($2.76) vs. Birr 12.48 ($1.44) in direct costs, per case].

The findings of our study are consistent with those of other studies on the household costs of malaria. In Ghana, the average cost of treating malaria per individual amounted to $8.67 and an average of 5 days lost due to malaria morbidity and care-taking (Asenso-Okyere & Dzator 1997). The indirect cost of malaria in Malawi, based on the days lost, ranged from $2.13 in very low income households to $20.00 in high income households (Ettling et al. 1994). Mills (1994) found that the mean number of days lost as a result of malarial illness ranged from 3.8 to 9.5 in two epidemiologically different settings.

Many studies found that indirect costs make up more than 75% of total malaria costs (Jayawardene 1993; Asenso-Okyere & Dzator 1997; Konradsen et al. 1997a). In Sri Lanka, they accounted for 76% (Attanayake et al. 2000); in Ghana for 79% (Asenso-Okyere & Dzator 1997). In contrast, Ettling et al. (1994) and Sauerborn et al. (1991) found indirect costs to be 40% of the average cost per patient. The total direct cost of treating malaria in Ghana in 1993 was $1.81 per episode (Asenso-Okyere & Dzator 1997); 10 years later it had risen to $6.87 (Asante & Asenso-Okyere 2003).

In our study, the cost of treatment accounted for 89.26% of direct cost per fully recovered patient. Hospitalization also caused very high direct costs in our study (58%). Transport costs are significant, particularly for rural populations. In Sri Lanka, where public malaria treatment is free, transport constituted 21–22% of direct costs (Konradsen et al. 1997a,b), whereas in our study it was 10%.

In Ethiopia, free antimalarial treatment is offered by the malaria control programme, but a nominal fee is required by CHWs to compensate for transportation cost to and from the DHO for obtaining drugs and submitting reports. However, many malaria patients spend their money on a higher level of public services and private sources of treatment. There is only one MCL in the study district to which the overwhelming majority of malaria patients do not have geographical access, whereas health posts, health stations and private health facilities are widely accessible.

| Table 2 | Household malaria prevention costs in the preceding month, Adami Tulu district, 2003 |
|-----------------|-----------------|-----------------|-----------------|
| Type of preventive methods incurred cost | No. of households (%) | Sum in Birr* (%) | Mean (SD) |
| Mosquito net | 72 (65.4) | 1368.00 (82.5) | 19.00 (4.2) |
| Aerosol spray | 20 (18.2) | 190.00 (11.5) | 9.50 (6.9) |
| Drainage | 9 (8.2) | 59.00 (3.6) | 6.60 (5.6) |
| Local repellents | 7 (6.4) | 24.00 (1.5) | 3.40 (1.7) |
| Other | 2 (1.8) | 18.00 (1.1) | 9.00 (1.4) |
| Total | 110 (100) | 1659.00 (100) | 15.10 ($1.75) |
| *1 $ = 8.65 Birr. |

| Table 3 | Average indirect cost of treatment by the combination of providers at all levels, Adami Tulu district, 2003 |
|-----------------|-----------------|-----------------|-----------------|
| Patients (10–64 years) Caretaker | Total |
| No. of individuals that lost person-days due to malaria | 473 | 351 | 824 |
| Total person-days lost | 3224 days | 2368 days | 5592 days |
| Mean (SD) number of days lost | 6.82 (4.28) | 6.70 (4.4) | 6.79 |
| Sum cost of total person-days lost | 22568.00 | 16576.00 | 39144.00 |
| $ Equivalent cost of total person-days lost | 2609.02 | 1916.00 | 4525.02 |
| Mean cost of total person-days lost | 47.71 Birr | 47.22 Birr | 47.50 Birr |
| $ Equivalent of total mean cost | 5.52 | 5.46 | 5.49 |
| *1 $ = 8.65 Birr. |
The estimated average value of days lost due to malaria is high given the poverty levels in many countries. In Ghana, it was $7.63 per episode (Asenso-Okyere & Dzator 1997), in Sri Lanka $4.78 (Attanayake et al. 2000), in Malawi $1.54 (Ettling et al. 1994) and $4.04 in our study area. Losses from malaria can range from 2% to 6% of annual income (Ettling et al. 1994; Konradsen et al. 1997a; Attanayake et al. 2000; Onwujekwe et al. 2000). Although the indirect costs of malaria were <10% of the household annual income, they must be related to other indirect illness costs (Russel 2004): in Nigeria, indirect costs from malaria were higher ($1.31 or 2% of income) than for all other illnesses combined ($1.10 or 1.7%) (Onwujekwe et al. 2000).

Malaria transmission in Ethiopia is unstable, resulting in frequent epidemics because of the low levels of protective immunity (Fontaine et al. 1961; Abeku et al. 2003; Kiszewski & Teklehaimanot 2004; Negash et al. 2005). In 2003, 60.8% of the total 7864 microscopically confirmed malaria cases at Zeway MCL occurred between September and November (Adami Tulu DHO, unpublished data, 2003), and 50.5% occurred among adults ≥15 years old. This is a clear indication of the devastating economic impact of malaria in the district.

There are several limitations to this survey. The study was conducted during peak malaria transmission and does not capture the seasonal pattern of the disease. Some of the illnesses classified as malaria by the respondents could have been other diseases, and vice-versa. The limitations of diagnosis without laboratory tests are obvious, but none of the health stations and health posts including CHWs in Ethiopia has laboratory facilities, and malaria is usually clinically diagnosed in patients with fever. Thus, we do not feel that these misclassifications would have caused major problems as the prevalence of malaria in the study area at the time of survey was very high. It is also true that not all person-days lost translate to productivity, as many households would internally reorganize to replace the functions of the sick and the caretaker.

Nonetheless, our findings have several policy implications. The high financial and economic burden which malaria places on households urgently requires effective control measures, particularly in poor rural areas where agricultural production coincides with peak malaria transmission. If malaria were effectively controlled, households could spend their resources on agricultural inputs, school fees, household assets and other investments to enhance the household’s overall socio-economic status. The ITNs and indoor residual spraying can substantially reduce the incidence of malaria and its associated economic consequences, and should be promoted.

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Costs économiques de malaria épidémique aux ménages en Ethiopeie rurale

OBJECTIF Estimer les coûts directs et indirects de la morbidité de malaria dans les communautés d’une zone épidémique rurale dans le sud de l’Ethiopie.

MéTHODES Etude transversale basée sur la communauté sur 2195 ménages dans le district d’Adami Tulu d’octobre a novembre 2003. Le comportement de recours au service, les dépenses pour le traitement et le transport, l’interruption des activités normales, le temps de travail perdu et les dépenses des ménages pour des méthodes préventives ont été évalués à travers des interviews.

RÉSULTATS Sur 12225 individus examinés, 1748 (14,3%) ont rapporté avoir subi la malaria au cours des deux semaines précédentes. 77,1% ont recherché toute forme de soin et 70% avaient récupéré de la maladie au moment de l’entrevue. Le traitement moyen par patient dans les cliniques privées a coûté 24,00 birr ($2,76) et 12,50 birr ($1,44) dans les services publics. Le coût direct moyen estimée pour la malaria par patient était de 14,00 birr ($1,60), le coût indirect moyen, 35,26 birr ($4,08). Seuls 4,6% de tous les ménages ont rapporté une dépense préventive quelconque au cours du mois précédent, avec une moyenne de 0,76 birr ($0,09).

CONCLUSION La malaria pose une charge économique significative sur les ménages ruraux et les individus à la fois par le paiement et le temps perdu exprimé en personne-jours. La promotion et l’implémentation des filets traités par insecticide (ITNs) peuvent facilement alléger les conséquences économiques de la maladie.

mots clés coût économique, malaria épidémique, maladie fébrile, ménages ruraux, Ethiopie
Costes económicos de la malaria epidémica en hogares de Etiopía rural

OBJETIVO Calcular los costes directos e indirectos de la morbilidad por malaria entre comunidades en un área rural del sur de Etiopía.

MÉTODOS Estudio crossecional, basado en la comunidad, incluyendo 2195 hogares del distrito de Adami Tulu, entre Octubre y Noviembre del 2003. Se evaluó, a través de una entrevista, el comportamiento de búsqueda de salud, el gasto en tratamiento y transporte, interrupciones de las actividades normales, tiempo de trabajo perdido y gasto incurrido en métodos de prevención.

RESULTADOS De 12,225 individuos entrevistados, 1748 (14.3%) reportaron haber percibido la malaria durante las dos semanas anteriores. Un 77.1% buscó algún tipo de atención y un 70% se había recuperado al momento de la entrevista. El coste promedio del tratamiento por paciente en una clínica privada era de Birr 24.00 ($2.76) y de Birr 12.50 ($1.44) para los centros públicos. El promedio del coste directo estimado para la malaria por paciente era de Birr 14.00 ($1.60); el promedio del coste indirecto, Birr 35.26 ($4.08). Solo un 4.6% de todos los hogares reportaron haber tenido algún gasto en prevención durante el mes anterior, con una media de Birr 0.76 ($0.09).

CONCLUSIÓN La malaria tiene una carga económica importante para los hogares rurales y los individuos, tanto por pagos con dinero de bolsillo como por pérdidas en personas-día. La promoción e implementación de las redes mosquiteras impregnadas (ITNs) podría aliviar las consecuencias económicas de la enfermedad.

palabras clave coste económico, malaria epidémica, enfermedad febril, hogares rurales, Etiopía