Treatment seeking for malaria in Morong, Bataan, The Philippines

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Abstract

Early diagnosis and treatment for malaria has a significant impact on the severity of the disease and contributes to the interruption of its transmission. Fourteen high-risk families and nine locality-matched families, with no recent history of malaria, participated in an ethnographic study which aimed to document malaria episodes and to examine treatment paths for fevers locally termed malarya and perceived to be malaria. The study, conducted in Morong, Bataan, a low malaria endemic area in the Philippines, used a combination of qualitative and quantitative methods over a period of 12 months. Six treatment categories were identified; self-treatment with Western medicines and clinic consultations had almost equal frequencies. Twenty-six treatment paths were recognised which consisted of the six categories singly or in combination. More than 80% of the undiagnosed malarya illnesses were treated with antimalarials of inappropriate dosages. More adult men than women self-treated, but there was no significant difference by gender in terms of clinic consultation for illness. The majority of clinic consultations were made for young children. The implications for control are discussed. © 2000 Elsevier Science Ltd. All rights reserved.

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Introduction

Malaria is a continuing problem in the Philippines, and malaria control remains an important activity of the Department of Health and the Malaria Control Services operating locally in endemic areas. Current control strategies consist of case finding and treatment, and vector control, including residual house-spraying, stream clearing and from 1994, the use of insecticide-impregnated bednets. The effect of these measures on disease prevalence are monitored through cases reported in Rural Health Units (RHU) and district and provincial hospitals. In addition, various services for confirmed diagnosis and appropriate treatment may be provided, and where this occurs, staff of the Rural Health Units (RHU) in endemic villages (barangay) provide consultations, diagnosis and medicines free of charge.

In practice, conditions and services are not always ideal. The availability of services in endemic areas varies depending on population density, logistics, and...
resources, with the latter now, as a result of devolution, determined by local rather than central priorities. Microscopy services are not always available locally. The delivery of slides for confirmed diagnosis may take some time; it may be considerable longer before RHU staff — and the patient — are advised of the results and of appropriate treatment. Village residents are also differentially able to take advantage of services. Occupational commitments may affect time available to present for care. Rural families are often extremely poor and lack the ready cash to meet expenses related to attending a clinic, such as the cost of transportation to an RHU and other secondary expenses. Often, RHUs are out of drugs and a patient must purchase the medication from a local store. These considerations impact upon the choices made when there is illness within a household. Treatment is initiated according to diagnosis, severity of symptoms, and available treatment options. In rural and remote areas, given the limitations of services, people commonly take advantage of local resources including herbs and home-supplies of unused pharmaceuticals for symptomatic relief and resolution.

In this paper, we explore the treatment paths of a select group of people living in Morong, Bataan. From 1991–1992, a multi-disciplinary team studied the dynamics of malaria transmission in this area (see Lansang et al., 1997) which epidemiologically was considered typical of most low endemic malaria areas in the Philippines. Malaria is transmitted in Morong by Anopheles flavirostris, the major vector in the country, whose preferred breeding sites are clear, slow-flowing and partly-shaded streams in foothills. These streams are numerous in this area (Torres et al., 1997). Malaria transmission is limited to these areas and cases are clustered: 50–60% of all diagnosed malaria cases occur in 17% of the population who reside in geographical ‘hot spots’. There is seasonal variation in transmission (Bustos et al., 1997). Malaria incidence is highest among children aged 6–10 years; sequential episodes of malaria is highest in individuals ≤15 years. More men than women are diagnosed with the infection. The research on which this paper draws is concerned with this vulnerable sub-population.

There are no private medical clinics nor general practitioners in Morong. Until 1992, there was no resident microscopist, and blood films were made either by the RHU staff or the rural malaria coordinator (RMC), and collected and brought to the malaria outpost in the provincial capital located about 60 km away. By the time the slides were read and a laboratory confirmation of diagnosis remitted to the RHU, a week or two had passed. In 1991, the World Bank-funded Philippine Health Developmental Program (PHDP) provided a part-time malaria microscopist in Morong. Since he was also assigned to another rural clinic some 30 km away, he was able to spend only 2–3 days a week in the Morong clinic. A review of records at the RHU for that year revealed that results of 70% of the blood films were known within 48 h. In 1992, because of the research project, a full-time microscopist was assigned to the RHU to provide a more rapid diagnostic service; observations indicated reluctance and underutilisation of these services (Belizario et al., 1997; Espino et al., 1997).

Until it closed in 1994, the Philippines’ Refugee Processing Centre (PRPC) hospital in Morong also provided prompt confirmation and treatment of malaria: this was the only facility where blood slides could be read and medications prescribed immediately. For local residents, however, the antimalarial drugs were not free; in addition, a referral slip from the RHU — located 9 km from the refugee camp — had to be presented to the hospital before medical attention would be given to a local resident, except in the case of emergency treatment (Espino et al., 1997). Both for people presenting to the RHU for diagnosis, and for those referred to the PRPC, the rural health midwife would prescribe presumptive treatment (four chloroquine tablets to an adult) to patients suspected to have malaria. She would also request that the ill individual return to the clinic for a full treatment course if the malaria smear were found to be positive (Gomes and Salazar, 1990). Compliance at this point depended upon a member of staff from the RHU making a house-call, or conversely, the ill patient returning for treatment within a period of up to almost two weeks after the first presentation. If no antimalarial drugs were available at the RHU, the patient would be given a prescription for drugs which could be purchased from a pharmacy. Delays in diagnosis and lack of free or inexpensive medicines were reported to have had some effect on health-seeking patterns in the community, discouraging all but the seriously ill from presenting for diagnosis and treatment.

Early diagnosis and appropriate treatment for malaria are important, as noted above, to reduce severe morbidity and to reduce the risk of transmission. The information that we had on the use of RHU resources for diagnosis and treatment suggested a delay in treat-
ment-seeking outside the home, and reluctance or inability to adhere to medical prescription. Our research on treatment patterns for perceived malaria illness, described in this paper, was designed with this pragmatic concern in mind.

**Methods**

**Sample selection**

This paper describes the treatment paths of individuals perceived to be ill with malaria in 23 households in Morong. These households were selected on the basis of criteria developed from case records at the RHU and PRPC hospital in 1991 and from data collected in the first cross-sectional survey conducted in 1992 (Belizario et al., 1997). We selected households which represent the tails of a curve (most likely skewed) that describes the distribution of malaria in the area. The cohort families were assumed to be at relatively high risk of acquiring malaria due to any of the following factors for any member of the household (and not necessarily the same individual): (a) high malaria antibody level in the 1992 survey and a positive malaria blood film in the survey and (b) two or more episodes of diagnosed malaria in 1991 based on rural health unit (RHU) clinical records. The cohort households were selected in this manner because it is this subset of the population, with highest malaria infection and morbidity, which would benefit most from improvements in the malaria control program. The comparison families were assumed to be at relatively lower risk of acquiring disease because in all members of the household (a) malaria antibody levels were low in the 1992 survey and their malaria blood films were negative and (b) no member was diagnosed to have malaria in 1991. These families were either next-door neighbours of the cohort families, or, at least, lived in the same sitio (hamlet). In this paper we refer to the relatively higher risk families as ‘cohort households’ and the relatively lower risk households as ‘comparison households’.

**Research methods**

Data were collected from these households over a period of 12 months. A combination of different qualitative and quantitative methods were used in order to maximise validity. But for this household-based study, we collected information particularly from longitudinal observations on diagnosis at time of onset of illness; changes in diagnosis; the commencement of and changes in treatment; and patterns of home treatment; and use of health services. The observations were planned to gain further insight into, and validate reports from interview and from focus groups conducted with a larger number of study participants (Espino et al., 1997). In addition, records at the health facilities in Morong (RHU and PRPC) and clinics in nearby towns were perused to check reported clinic consultations and malaria blood smear results.

All households in the study were visited every six weeks for a period of 12 months by one of three trained full-time research assistants. Recall, narrative interviews were also conducted on episodes of illnesses experienced by members of the observed households one month before the first observation and during the period between observations. These were held with either the ill individual (adult or older child) or with the household head or caretaker on behalf of a young child. Depending on household size, one or two assistants were assigned to either a cohort household or its respective comparison family. The cohort household and its corresponding comparison household were visited every three days. Researchers rotated between households, and households were visited on different days of the week. Preliminary visits were made to each of the selected households to familiarise its members with the presence of the researchers, to obtain informed consent to participate in the study, and to be subject to the observation (separate consent was obtained for each succeeding visit).

Comprehensive logbooks and field notes were maintained by the research assistants. Transcribed texts from the recall interviews and observations were coded according to major variable categories based on the questionnaire guides and checklist of activities. Variable categories, codes and labels were transferred to a coding sheet and double entry of the coded text was done using EPI-INFO version 6 (Centers for Disease Control and Prevention, Atlanta, GA). This program was also used to compare proportions and means. A data dictionary was constructed from these categories and codes, which was divided into blocks based on the major variables. Data files were generated using the Statistical Package for Social Sciences (SPSS release 6 for Windows).

**Results**

**Description of households**

As noted above, 23 families were observed intensively in this study. Only 14 out of 2750 families surveyed in Morong fulfilled the criteria for cohort households, and only nine households fulfilled the criteria for comparison households. The study families came from 13 of the 106 sitios in Morong. The mean
household size was 5.4; the household size of the cohort group was significantly larger than that of the comparison group (6.85 vs. 4.0 members, respectively). Mean age was 18 (16.7 and 19.4 years for cohort and comparison households, respectively). Household members were typical of the general population of Morong, with formal schooling limited to a few years of primary school and with subsistence farming as their main occupation (Espino et al., 1997). The households were located a mean of 11.73 km from the RHU. All except two households were composed of migrants from Southern Luzon and the Visayan Island Group, and had resided in Morong for a mean of 4.62 years at the time the observations had started in mid-1992.

One household pair withdrew after the first observation; the cohort family of a second pair moved to another province after the fourth observation. Therefore, only 19 households were observed for a total of 12 months. Due to the small number of fever episodes experienced by members of the comparison households, we discuss in the following section treatment paths and patterns in reference to all study participants.

Treatment paths and patterns

A total of 124 episodes of reported fever were observed in the 21 families over the 12-month period; of these, 97 (78.2%) were treated as malarya. The other illnesses were diagnosed by householders as ‘fever other than malarya’: pasma (spasm) (11), trangkaso (flu) (8) and acute respiratory tract infections (ARI) (8)2. There were 28 microscopically confirmed cases of malaria: 20 of the 97 malarya illnesses, five from the fevers not malarya, two from trangkaso, and one from ARI. There were no significant differences in

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2 An illness is malarya if the symptoms are fever, usually high-grade, and may be recurrent, severe headache, chills (see also Espino et al., 1997). Pasma, trangkaso and ARI are illnesses which may or may not be accompanied by fever. Pasma (lit. spasm) is believed to be an illness brought about by sudden exposure of a part of the body, or whole, to hot or cold conditions. The characteristic symptom is an ache in the part of the body affected. A person is more prone to develop pasma when he or she is hungry and/or tired and partakes of a meal in the former or bathes in the latter condition. Trangkaso is a flu-like illness. The symptoms are fever, usually low-grade, joint pains and body malaise. Trangkaso and pasma are considered to be similar to malarya but the characteristic fever, headache and chills distinguish malarya from these illnesses. The illnesses categorised as fevers not malarya are those which do not fall into any of the four explained above. These include conditions such as typhoid (typhoid fever), tigdas (measles), and sinat (a low-grade fever occurring in a child).

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the number of treatment paths for pasma, trangkaso, fevers not malarya and ARI. The mean number of treatment choices for all illnesses (as opposed to treatment paths) was 1.5, and there were no significant differences in the mean number of therapeutic options resorted to by ill individuals or their caretakers between the disease categories or according to age of ill person.

A review of malaria cases from the rural clinics indicated that 50–60% of those who had had more than one episode of diagnostically confirmed malaria were children aged 15 years or younger. Observations of families indicated also that individuals in this age group (21 of 35 people or 60%) were more likely than those in older age groups (21 of 62 or 33.9%) to seek treatment at a health facility (p < 0.05) for febrile episodes perceived to be malaria. Adults in the observed households tended to self-medicate rather than seek treatment at a clinic (p < 0.05). Men were more likely than women to self-treat rather than present at a clinic, but differences by sex were not significant.

Detailed health-seeking patterns were available for 97 febrile episodes perceived to be malaria (malarya). Six treatment choices were available to these families: (a) self-treatment with Western medicines (antimalarials, analgesics and antipyretics), (b) self-treatment with traditional medicines/remedies (decoctions of herbs, barks, leaves, oil rubs, etc.), (c) consulting a local health facility (such as the RHU and PRPC hospital), (d) consulting a traditional healer, (e) coping with the illness without self-medication but using other forms of treatment (wrapping oneself with blankets, bed rest, etc.) and (f) not doing anything to relieve symptoms.

Fig. 1 illustrates the sequence of actions taken for malarya. Consultation at the available health facilities
(the RHU and PRPC hospital) was the first resort in 42 (43.3%) episodes. Forty-four (45.4%) of the other 97 malaria episodes were treated at home with Western medicines, including antimalarials. Of the remaining 11 cases, the symptoms in five episodes were tolerated without intervention initially; but, in one case the person then self-treated with antimalarials, and in two cases, the individuals later consulted at the RHU. Self-treatment with traditional medicines was the sole option taken for three episodes; a traditional healer was consulted in the other episodes. Thirty-three individuals proceeded to a second treatment choice, the most common of which was self-treatment with Western medicines (again, this included antimalarials) (44.4%), followed by clinic consultations (36.4%). A third action was resorted to by 15 of the original 97 individuals. In order of decreasing frequency these actions were: clinic consultation (9), self-treatment with Western medicines (4) and home remedies (2). Eight individuals then proceeded to a fourth action, of whom two self-treated with Western medicines, and three consulted the clinic. Four of the malaria episodes reached a fifth therapeutic option: one each of rural clinic consultation, self-treatment with Western medicines, home remedies and tolerating the symptoms. Six treatment options were reached in two episodes before treatment finally ended.

Of the 20 malaria cases eventually diagnosed at the RHU and PRPC hospital, 10 used only one treatment option, five cases had two and four had three options before treatment-seeking ended. Only one episode of malaria in this group was self-treated with antimalarials before medical attention was sought at the clinic. Furthermore, there were only seven treatment paths identified for the confirmed malaria episodes but 22 in the undiagnosed malaria episodes.

Reasons for the treatment options

In 42 of the malaria illnesses, the available health facilities were initially approached because the illness was suspected to be malaria. Half of these illnesses occurred in individuals below the age of 15 years. Expectations from the health facilities — “it will be known whether the illness is malaria” or “I will be given medicines” — influenced this treatment option. Past experiences with malaria disease management at the rural clinic (Espino et al., 1997), aside from diagnosis by symptoms and advice from neighbours and relatives, convinced the ill individual or caretaker to treat the other malaria illnesses at home. The worsening of the illness, or uncertainty of the accuracy of home diagnosis, prompted consultations at the rural clinic, PRPC hospital or the malaria outpost at the provincial hospital. Only three individuals stated that the lack of financial resources affected their decisions. Two women were pregnant when they had malaria. One was diagnosed to have falciparum malaria and adhered to clinic advice regarding medication. The second woman did not seek medical consultation because she believed that the medicines she would be given “might affect the baby”. This same mother, after she had given birth, was diagnosed to have malaria and was given medication at that point, which she kept for an older child whom she thought had malaria.

Self-treatment with antimalarials

Although antimalarials were used in 37 of the 44 (84.0%) malaria episodes treated at home, antimalarials were used in only one of the 20 true malaria cases. Interestingly, antimalarials were also used to relieve symptoms in three of the paras ilnesses. The reason given for this was that the symptoms experienced in the illness episodes were similar to those of malaria, but without the characteristic fever and severe headache.

The unofficial sources of antimalarials in Morong are the small provision (sari-sari) stores and pharmacies located in the Barangay Poblacion (township) and in the sitios. Antimalarials are frequently sold without prescription and as single tablets rather than in full courses. Three drug stores and four sari-sari stores were monitored during the same time as the household observations were conducted. Purchases of chloroquine, Fansidar (sulfadoxine/pyrimethamine) and quinine were noted down by the store owners and this information was collected monthly by the research team. Over-the-counter purchases of these drugs peaked during the months of January to April (see Fig. 2). The increase in the over-the-counter sales of chloroquine reflected either procurement for prescriptions given by the RHU or PRPC hospital or self-treatment. However, since the RHU or the PRPC hospital do not prescribe Fansidar and quinine as first line antimalarial drugs, sales of these two drugs reflect over-the-counter purchases for self-treatment.

Discussion

The human reservoirs of infection in this study area are children below the age of 15 and adult males (Belizario et al., 1997; Espino, 1999); persistence of transmission of malaria is secondary to chronic carriers (i.e. those who are chronically ill; individuals with sequential episodes of malaria illness; see Belizario et al., 1997). At the same time, given the low prevalence of malaria in the area, it is unlikely that “antitoxic immunity” would develop in the community. As a control
strategy for malaria, it is important to increase early diagnosis and treatment, and by reducing the proportion of infected individuals, the source of new infection is also reduced. In this case, however, while children are taken to the RHU for diagnosis and treatment, in contrast, three quarters of those over the age of 15 self-treated when they developed signs of malaria.

Diagnosis and treatment depend upon recognition of signs and symptoms of malaria, the fit between local categories of illness and biomedical nosology, and therapeutic strategies (e.g. Agyepong and Manderson, 1994; Kengeya-Kayondo et al., 1994). In Morong, self-treatment (albeit incomplete) was as common as seeking medical attention for illnesses perceived to be malaria. When chemotherapy from the RHU consultation failed to relieve symptoms, people resorted to other modes of treatment. Although the data presented were for illnesses perceived to be malaria, partial and inappropriate treatment — i.e. limited medication only to suppress symptoms and anti-malarial intake for illnesses not secondary to the infection — suggests the possible basis of drug resistance by parasites. The study of the management of febrile episodes perceived to be malaria revealed information of delay in confirmation of diagnosis and appropriate treatment, hence clues relating to transmission. As earlier discussed (also Burton et al., 1992; Espino et al., 1997), inaccessibility of facilities for diagnosis and treatment of malaria, and the availability of unofficial alternatives (especially Western drugs), influence treatment patterns.

Lack of financial resources was rarely given as a reason for treatment choice. However, the irregular income of most of the study participants, the cost of fares to the RHU and the cost of antimalarials when none were available from the RHU, were disincentives. Fansidar, for example, costs 15 peso per tablet, and three tablets need to be bought; chloroquine costs 5 peso a tablet but 10 are required for full treatment. The cost of drugs for one course of treatment is equal to half a day’s wage.

The comparison of treatment paths from different methods used for data collection is shown in Table 1 (see also Espino et al., 1997). A total of 154 episodes of malaria were described in the in-depth interviews; 97 in the focus group discussions; and 686 of the 1369 individuals interviewed in the survey claimed to have had malaria sometime in the past. In-depth interviewees reported self-treatment as the most common resort at onset of illness, although focus group and survey participants most often said that they consult health facilities when ill. In the 24-h observations, an almost equal proportion of individuals sought consultation and self-treated when they thought that they had malaria. Self-medication is common, and depending upon the data source, ranged from 35 to 54% of all treatments used by study participants. Pharmaceuticals procured from small provision shops, and local pharmacies, and the use of left-over drugs from previous episodes of illness, are, as already noted, common in Morong as elsewhere in the Philippines for the treatment of a wide range of illnesses. These stores allowed people to self-treat in order to suppress symptoms of possible malaria, as they do also for other illnesses in the Philippines (Hardon, 1987; Nichter and Nichter, 1994; Simon et al., 1996) and elsewhere (Van der Geest and Whyte, 1988; Agyepong and Manderson, 1994).

Although malaria did not contribute at all to mortality, it ranked as the third cause of morbidity in Morong when the project began, and a review of malaria from all available sources indicated that a quarter of all cases come from only four percent of its popu-
All of the observed households were from these areas. Among these families, malaria treatment did not appear to differ from the other illness categories identified with regards to the number of treatment options sought. As discussed by Belizario et al. (1997), the stability of malaria transmission in Morong is due to chronic carriers in the identified sitios with high malaria transmission. We do not know the cause of other febrile cases which were treated as malaria nor of the non-malaria fevers for which no medical consultation was made, although it is possible that some of these, too, were malaria. Fig. 3 illustrates the monthly microscopically diagnosed malaria cases at the health facilities available to Morong, and the illnesses perceived to be malaria by the observed families. Among the observed families, the difference between the number of malaria illness episodes during the low and high malaria seasons was significant ($p < 0.05$). The pattern of rise in the number of illnesses that were malaria followed that of malaria cases detected by the health facilities. The community recognises the disease, malaria, through a complex description of its symptoms, and it is a widely held belief in the community that “only a doctor can cure malaria” (Espino et al., 1997). Medical treatment is sought for malaria, but constraints such as accessibility of and previous experience with health facilities, and lack of financial resources, deter an ill individual from resorting to this action at the first instance. Furthermore, there may have been unreported episodes of diarrhea and acute respiratory tract infections (in this case, usually the mothers in these households) which were also cases of malaria, and some febrile illnesses may have gone unnoticed.

In Morong, the enormity of self-treatment is evidenced by Fig. 2 (see earlier, over-the-counter sales of antimalarials) and reported by the households for febrile episodes perceived to be malaria. Drug use is complex, however. Antimalarial drugs were also taken for illness with symptoms similar to malaria, such as back pain and joint and muscle aches in trangkaso (flu). Individuals who were prescribed and given antimalarials shared them with household members and neighbours with similar symptoms, whether or not they were believed to have malaria, and took partial courses to relieve symptoms and save the remaining tablets for a later need. Bringing the services of malaria detection and treatment closer to those who need it — such as through the use community volunteers (see also Ruebaush et al., 1990; Ruebush and Godoy, 1992) — is one way of narrowing the gap in health service delivery.

### Table 1

<table>
<thead>
<tr>
<th>Treatment paths</th>
<th>In-depth interviews ($N = 154$)</th>
<th>Focus group discussions ($N = 97$)</th>
<th>Interview survey ($N = 686$)</th>
<th>Households observations ($N = 97$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinic consultations</td>
<td>33.2</td>
<td>49.5</td>
<td>59.6</td>
<td>47.5</td>
</tr>
<tr>
<td>Self-treatment (with Western medicines)</td>
<td>53.9</td>
<td>39.2</td>
<td>35.1</td>
<td>44.5</td>
</tr>
<tr>
<td>Coped with the illness</td>
<td>5.2</td>
<td>9.3</td>
<td>2.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Traditional healer</td>
<td>5.8</td>
<td>2.0</td>
<td>0.3</td>
<td>3.0</td>
</tr>
</tbody>
</table>

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**Fig. 3.** Microscopically diagnosed malaria cases in Morong, Bataan and in observed households (HH), and febrile episodes perceived to be malaria in observed households, July 1992 to June 1993.
and may reduce the propensity to self-treat. In 1994, a community volunteer program was established in Morong with the aim of bringing diagnostic and treatment services for malaria closer to the communities who needed them (Saul et al., 1997). This scheme took advantage of the community’s awareness and recognition of malaria and the observation of the high value placed on medical consultation when accessible and available (Espino, 1999).

As with other vector-borne diseases, malaria control in Morong is complex. There is a need to comprehend the multiple factors that affect the delivery of services, from central office to the RHU, and the utilisation of services (including perceptions of disease, disease recognition and treatment seeking), and compliance with treatment. Just as broad-based multidisciplinary research is necessary to understand the conditions under which malaria transmission occurs, the approach to control in countries with limited resources for health involves intersectoral collaboration at all levels. Much has been discussed regarding integrating malaria control into the primary health care system, but this primary level of health services in much of the Philippines is already overburdened with responsibilities, leaving unresolved the question of how best to diagnose and treat early malarial disease.

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