

CAREGIVERS' HOME-BASED MANAGEMENT OF FEVER IN CHILDREN UNDER THE AGE OF FIVE IN THE MUKONO DISTRICT, UGANDA

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ABSTRACT

Malaria is endemic in Uganda. The study attempted to determine how Ugandan home-based caregivers managed fever. Structured interviews were conducted with 60 caregivers of children under the age of five. Caregivers were selected from each community's registers. The Epi-Info and MSExcel programs were used to analyse the data. Out of the 60 households that were interviewed, 15 (25%) reported that at least one child had died from malaria in that household.

Caregivers' decisions were influenced by health education, family members, community leaders and other caregivers. Most caregivers knew about malaria, but did not know the symptoms, and were not aware of the services offered by village drug distributors. Most of them (caregivers) administered treatment for fever at home before taking the children to health centres. Mosquito nets, indoor residual spraying and other malaria preventive measures were rarely used due to lack of funds.

The study recommended that anti-malaria drugs should always be available and accessible, the services of village drug distributors should be improved, health education should be enhanced, and malaria preventive measures should be implemented and sustained.

KEYWORDS: caregivers of children younger than five, home-based management of fever, malaria, Uganda, village drug distributor

INTRODUCTION

In Uganda, caregivers' home-based management of fever for young children (aged 59 months or younger, also known as 'under-fives') could have fatal consequences, or could result in these children being disabled. Uganda's Ministry of Health implemented a policy on home-based management of fever in 2002 (MOH, 2002:2), where pre-packed anti-malaria drugs were distributed in the villages. These drugs should be administered to young children within 24 hours of the onset of fever. This study therefore attempted

to investigate how caregivers in Mukono District, a tropical rain forest area in Uganda with a high incidence of malaria, actually managed these children's fever episodes at home.

RESEARCH PROBLEM

Uganda's home-based management of fever strategy was introduced in 2002 (MOH, 2002) to reduce malaria morbidity and mortality rates in young children, and to reduce out-patient attendances and hospital admissions due to malaria. Despite the implementation of this strategy, the number of children who received malaria treatment as outpatients in this district from 2002 till 2008 did not decrease (Owori, 2009:2). An increase in malaria outpatient cases and hospital admissions were reported from 2006 to 2008 – and many of these cases could have been managed effectively at home. Thus, it was necessary to identify reasons why a large number of children in the Mukono district continued to seek treatment for malaria at healthcare facilities despite the implementation of the home-based management of fever strategy (henceforth referred to as the fever strategy) in 2002.

Assumptions underlying the study

The effective implementation of the fever strategy could have been hampered by the fact that:

- caregivers were not aware of the availability of the free anti-malaria medication from village drug distributors
- caregivers did not have confidence in the effectiveness of locally available medications
- malaria drug supplies might have been unavailable at village level
- caregivers might have doubted the competence of village drug distributors
- caregivers might have preferred to have their children medically treated after laboratory tests have confirmed a malaria diagnosis rather than instituting symptomatic fever treatment at village level
- caregivers might have had greater confidence in the drugs administered at hospitals (believing that injections were more effective than drugs administered orally at community level or
- they might prefer traditional remedies (herbal remedies), rather than anti-malaria drugs from the village drug distributors.

Research purpose and objectives

The purpose of this study was to determine how caregivers in Uganda managed their young children's fever episodes at home and why they followed certain practices. The

objectives that guided the study were to describe environmental factors that influenced caregivers' management of fever in children; and to describe caregivers' healthcare seeking behaviours during home-based management of children's fever episodes.

Significance of the study

If shortcomings in caregivers' home-based management of fever in young children could be identified, services rendered and utilisation thereof could be improved. More effective home-based management of young children's fever episodes could reduce morbidity and mortality rates of children in Uganda, as well as the demands on both out- and inpatient healthcare services.

Operational definitions of key terms /concepts

Caregiver: A caregiver means a mother, a father, guardian or any other person taking care of a child younger than five years who suffered from a fever attack.

Fever: Eldryd et al. (2006:104) define fever as a rise in the internal (core) body temperature. In this study, fever means raised internal body temperature that can be detected by the caregivers and drug distributors by touch.

Home-based management of fever strategy: This strategy refers to the diagnosis and treatment occurring outside the clinical setting (WHO, 2004:6), and refers to the Ugandan government's policy of managing of fever at home using free anti-malaria medications supplied by village drug distributors at community level.

Reference child: A '*reference child*' refers to a young child who was included in the sample, implying that this child's caregiver was interviewed to obtain information about the caregiver's home-based management of the young child's fever episodes.

Young child: In this study, the term young child includes children, boys or girls in the age group 0–59 months inclusive (MOH, 2005a:3), also known as “under-fives”.

RESEARCH METHODOLOGY

A quantitative, descriptive study was conducted.

Population, sample and sampling procedures

The population comprised caregivers of children aged 0--59 months at the time of data collection in Mukono district, Uganda. The estimated number of children in the district was 155 072 (Mukono District Council, 2008:2). A caregiver could look after one or more children, implying that there were fewer caregivers than children in Mukono district.

Stratified sampling was done in three steps: three sub-counties were selected out of 28 in Mukono district by simple random sampling (without replacement). Thereafter, two villages per sub-county were selected to get a total of six villages, by simple random

sampling (without replacement). Finally, 10 individual caregivers were selected from each of the six villages' children's registers. The first name on each list was selected; and thereafter every third child until 10 children had been selected from each village. The caregivers of these selected children constituted the study sample of 60 caregivers. One caregiver could care for more than one child at any specific time, and could thus be selected more than once. In such instances, the second selection of the caregiver was discarded and the next child's caregiver was selected from the children's list.

Data collection instrument

Data were collected using a structured interview schedule, comprising 101 items, of which 12 were open-ended questions and 89 closed-ended. The initial questions addressed biographic aspects of both the caregivers and the referenced children. The rest of the questions addressed specific aspects of the caregivers' home-based management of fever in children under five. The research tool was pre-tested on 10 caregivers who did not participate in the actual study. After pre-testing, the numbering of some items was revised and the phrasing of four questions was changed.

Validity and reliability

Validity is the strength of a study's conclusions, inferences or propositions (Parahoo, 2006:300). According to Polit and Beck (2008:452), reliability of the data collection tool is the accuracy or repeatability of its measurements. A literature review helped to focus the study so that the data collection tool captured relevant aspects of the study subject, enhancing content and construct validity (Polit & Beck, 2008:458–461). The Cronbach alpha coefficient, calculated by a statistician, exceeded 0.8, indicating that the instrument's reliability was acceptable.

Data collection procedure

The researcher and two trained research assistants collected the data at household level during June and July 2009. At each household of the sampled respondents, the research assistants read the questions and recorded the caregivers' responses. After each interview, the researcher checked the completed interview schedule.

Data analysis

Descriptive data analysis was done using EPI-INFO and MS Excel 2003 computer programs, with the assistance of a statistician.

Ethical considerations

The Research and Ethics Committee of the Department of Health Studies of the University of South Africa approved the proposal. Permission for data collection was granted at district level by the district Health Officer, and at village level by the local village head of each participating site in Uganda.

Respondents' rights to self-determination and privacy were protected by ensuring anonymity and confidentiality of each respondent's information. Completed interview schedules contained no names or reference numbers. No one could link any specific completed interview schedule with any specific caregiver. Only the researchers and the statistician had access to the completed interview schedules, which were kept under lock and key.

FINDINGS

The research findings are presented according to the sections of the structured interview schedule, namely: socio-demographic characteristics of respondents and reference children, environmental factors that influenced caregivers' anti-malaria actions, personal factors that influenced caregivers' health seeking behaviours, caregivers' home-based anti-malaria actions and patterns of resorting to malaria treatment, as well as caregivers' malaria preventive actions.

Social-demographic data (n=60)

The caregivers 35.0% (n=21) were 25–35 years old and 86.7% (n=52) were females. Out of all respondents, 59.3% (n=35) were married, while 18.6% (n=11) were single and 22.1% (n=13) were divorced, separated or widowed. Out of 60 respondents, 10.0% (n=6) had no formal schooling and 36.7% (n=22) attended primary school only. According to the Uganda Health and Demographic survey (MOH 2008b:123), the education level of mothers correlated with infant and childhood mortality. Mothers who were educated were less likely to lose their children than mothers who had no education. The low level of schooling might explain why 65.0% (n=39) of the caregivers worked in the informal employment sector. Of all respondents, 72.4% (n=42) earned less than 60,000 shillings in a month, while 15.5% (n=9) earned more than 90,000 shillings per month. The low income levels might be attributed to the respondents' low education levels and the large number working in the informal sector. Most of these households would be unable to buy mosquito nets and materials needed for indoor residual spraying, due to their limited monthly incomes. (Note: US\$1 was equivalent to 2000 shillings during January 2010).

Social demographic data of the caregivers' 'reference children'

Approximately half of the children (52.0%; n=31) were younger than 24 months; 68.3% (n=41) of caregivers were these children's biological parents, and only 13.3% (n=8) were grandparents. Of the households in the study, 56.7% (n=34) had more than one young child (younger than 5 years), indicating that households might have had large proportions of dependent persons. This finding is consistent with the total fertility rate of 6.9 in Uganda (Uganda Bureau of Statistics, 2002:46) indicating that 50% of Uganda's population was younger than 15 years in 2001.

Malaria was common in the households because 96.7% (n=58) of the reference children had had at least one malaria episode in the 12 months preceding the survey. In addition,

71.6% (n=43) of the reference children had had more than one episode of fever in the previous year and 30.0% (n=18) had had at least four episodes. In 62.1% (n=36) of households, all children in the household had at least one malaria episode while 11.6% (n=7) of households had at least one child who died from suspected malaria and 3.3% (n=2) of households had lost more than one child due to malaria. Uganda's Service Provision Assessment Survey of 2007 indicated that malaria remained the country's leading cause of morbidity and mortality (MOH 2008b:159). In areas where malaria is endemic, it is common for a child to get three malaria attacks per year (MOH, 2007b:12–13).

Environmental factors that influenced caregivers' anti-malaria actions

Environmental factors influenced the behaviours of caregivers (at household and individual levels) as far as seeking and accessing treatment is concerned. Out of 60 respondents, 78.3% (n=47) lived within five kilometers from a health unit, and could easily walk to the unit. Although 66.6% (n=40) of all caregivers reported that drugs for malaria treatment were mostly available, 33.4% (n=20) reported that these drugs were rarely or never available from the health units. Reports indicated that the availability of drugs in health facilities was a problem in Uganda (MOH, 2008b:162–163) – with no supplies of essential medicines, leaving caregivers with no option but to buy these from private drug shops.

Since Uganda's fever strategy was implemented, anti-malaria drugs were supposed to be available from all village drug distributors. However, 57.6% (n=34) of caregivers considered drugs to be rarely available or unavailable from village drug distributors. In addition, 46.4% (n=26) of caregivers considered drugs received from village drug distributors to be ineffective and 8.9% (n=5) thought these drugs would never be effective. The Uganda Service Provision Assessment Survey report (MOH, 2008b:162) stated that 70.0% of all public health facilities ran out of stocks of first-line anti-malaria drugs.

Availability of treatment services

Of all the respondents, 78.3% (n=47) lived within five kilometers (walkable distances in Uganda) of a health unit. However, 21.7% (n=13) of the caregivers who lived more than five kilometers away from a health facility might encounter challenges to access formal healthcare. Uganda's Health Sector Strategic Plan's (HSSP) targets indicate that 83% of the population should live within five kilometers of a health facility (MOH, 2006b:98).

Influence of 'significant others'

Family members (60.0%; n=36) and community leaders (59.3%; n=35), as well as other caregivers' actions (45.8%; n=27) were the most important 'significant others' that influenced caregivers' health seeking behaviours. However, caregivers were less likely to be influenced by culture and customs (27.1%; n=16).

Important sources of malaria information

The most frequent sources of malaria health education were health workers (85.0%; n=51), the electronic media (81.7%; n=49) and fellow care-takers (80.4%; n=45). Newspapers (61.7%; n=37), schools (61.7%; n=37), local seminars (52.6%; n=30) and places of worship (51.7%; n=31) were also important sources. However, drug distributors (40.0%; n=24), traditional healers (11.7%; n=7) and civil society organisations (37.3%; n=22) were less likely to provide malaria information to caregivers. The two most cited transmitters of malaria health education messages were health workers (63.4%; n=26) and the electronic media such as radio and TV (24.4%; n=10).

The most common types of messages about the causes of malaria and its prevention are that malaria is transmitted by mosquitoes (35.6%; n=21), malaria parasites cause malaria (35.1%; n=20), and that the breeding of mosquitoes should be prevented (25.4%; n=15) and that indoor mosquito populations should be reduced (25.4%; n=15). Among the most common health education messages conveyed regarding malaria treatment was that community drug distributors play a role in providing malaria treatment (42.1%; n=24), and when to take the child for immediate medical help (30.4%; n=17).

Respondents were knowledgeable about preventive aspects of malaria, and consider malaria to be a dangerous disease (52.5%; n=31), that fever is a major sign of malaria (42.4%; n=25) and that malaria is preventable (40.7%; n=24). Many respondents knew about treatment aspects of malaria – including how to determine whether the child's condition is deteriorating (49.1%; n=28) and how to determine whether treatment is effective (40.4%; n=23).

Respondents' levels of knowledge about malaria

Only 28.3% (n=17) of caregivers knew that malaria is caused by malaria parasites, and most respondents (56.7%; n=34) thought that mosquitoes are the direct cause of malaria, while 11.7% (n=7) reported the direct cause of malaria to be dirty water. With regard to malaria transmission, 74.6% (n=44) of caregivers knew that malaria is transmitted by mosquitoes. However, 6.8% (n=4) reported that malaria is transmitted through dirty water while 5.1% (n=3) maintained that transmission results from maize that is not cooked properly. The most frequently mentioned symptoms of malaria included fever (60.0%; n=36), vomiting (50.0%; n=30) and high temperature (40.0%; n=24). Only 60.0% (n=36) of caregivers knew that fever is the most common symptom of malaria--something that every caregiver in Mukono district should know. There were also gaps in the knowledge of common malaria complications. For example, only 45.0% (n=27) knew that convulsions indicate potential complications of malaria.

Caregivers' home-based anti-malaria actions

Anti-fever drugs (paracetamol and aspirin) were commonly used (43.4%; n=26) as the first action when a child developed fever while 35.0% (n=21) of caregivers applied tepid sponging (see table 1). Only 13.3% (n=8) of caregivers used local herbs to

control the fever. However, 88.2% (n=45) of caregivers reportedly gave the child anti-malaria medications within 24 hours of the onset of fever. Uganda's malaria treatment guidelines specify that children should receive initial anti-malaria drugs within 24 hours of onset of fever (MOH, 2006a:1–2). However, 11.8% (n=6) of caregivers who did not initiate immediate anti-malaria treatment, represented the at-risk households for malaria complications.

Table 1: Actions taken by caregivers in the event that a child had a fever attack

Characteristic	Frequency	Percentage
Immediate action taken when the child developed a fever (n=60)		
Gave aspirin/paracetamol	26	43.3
Tepid sponged	21	35.0
Gave local herbs	8	13.3
Gave anti-malaria pills	4	6.7
Other actions	1	1.7
Time from onset of fever to administration of anti-malaria (n=51)		
0–24 Hours	45	88.2
25+ hours	6	11.8
Child taken to health unit (n=58)		
Yes	27	46.6
No	31	53.4

Places where caregivers sought help for their young children's fever episodes

Table 2 shows that most caregivers (66.1%; n=39) sought treatment from health facilities when the young child's fever failed to subside with home-based measures. Only 44.8% (n=26) of caregivers sought help from village drug distributors, and 8.5% (n=5), consulted traditional healers, who could not supply recommended anti-malaria drugs.

Table 2: Caregivers' treatment-seeking options when a child had fever

Characteristic	Response rate	Frequency (Yes)	Percentage
Hospital/local clinic	n=59	39	66.1
Blood testing facility	n=56	35	62.5

Consult elders	n=57	31	54.4
Drug distributor	n=58	26	44.8
Drug store	n=59	23	39.0
Church	n=58	12	20.7
Traditional healer	n=59	5	8.5

Caregivers' preferred actions for different malaria symptoms

Out of all respondents, 46.7% (n=28) said that they preferred taking the child with fever straight to the hospital or health unit, while 40.0% (n=24) preferred administering home remedies before taking the child to a health unit and 13.4% (n=8) preferred treating the child entirely at home. Of these caregivers, 93.0% (n=53) would take a young child with convulsions immediately to the health unit. However, 7.0% (n=4) of caregivers preferred to take the convulsing children to alternative places such as drug distributors and elders, while 74.1% (n=40) would not take a child who is vomiting immediately to the hospital. The Ministry of Health's policy on treatment of complicated malaria stipulates that all these cases with danger signs should be managed at established health units (MOH, 2007c:24).

Preventive actions taken against malaria

Only 20.0% (n=12) of households used mosquito nets for their young children. Even those households with bed nets reported that 58.3% (n=7) of these had holes, rendering them ineffective against mosquito bites. The prevalence of other preventive activities at the household level was also low. Internal residual spraying of houses to control mosquito bites was only used by 10.0% (n=6) of all respondents. Uganda's Health Sector Strategic Plan II (HSSP II) envisaged increasing the percentage of households with at least one mosquito net from 23.5% (2005) to 72% (MOH, 2006b:10) in 2007. Most respondents (80.0%; n=48) cited cost as the major factor that prevented them from buying mosquito nets for their children.

CONCLUSION

The majority of the young children's direct caregivers were females with primary school level education and limited monthly incomes. Most caregivers were unable to afford bed nets and indoor residual spraying to prevent mosquito bites, but lived within walking distances from healthcare units. One third of caregivers reported that anti-malaria drugs were often unavailable at health units. Some caregivers lacked confidence in village drug distributors, reporting that they often ran out of anti-malaria drugs and/or provided ineffective drugs. Family members, community leaders and other caregivers influenced the respondents' health-seeking behaviours when their young children had fever attacks.

Most malaria health education messages related to malaria prevention and treatment. Specific information about the cause of malaria was mostly obtained from health educators, while general information such as how malaria is transmitted was obtained from peers. Most caregivers administered treatment at home before taking the child to a health unit. Some caregivers postponed taking children with danger signs directly to the health units.

The use of mosquito nets was low due to non-affordability. Many of the available nets had holes and were not regularly treated with insecticides, rendering them ineffective against mosquito bites.

The use of other household measures for malaria control, especially indoor residual spraying was also low, owing to the fact that households could not afford to pay for these services. Anti-malaria drugs were used more frequently for treating children with malaria than local herbs.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations can be made to improve the home-based treatment of young children with fever in Uganda:

- Policy makers should initiate low cost technologies for malaria prevention, including affordable indoor residual spraying, free mosquito net distribution and regular treatment of these nets with insecticides.
- Health providers should intensify malaria health education programmes at all contact points with caregivers of young children.
- Peer to peer education should be enhanced.
- A community and peer approach should be used alongside individual messages because communities can cascade the practice to other community members more effectively than individuals.
- Health education messages should also emphasise danger signs of malaria so that these can be detected early and so that children can be taken to health units at the first sign of malaria to prevent irreversible complications.
- The government and development partners should reactivate the services of village drug distributors.

These findings have important implications on how to target malaria communication and health education messages.

This study was conducted in Mukono district, one of 90 districts in Uganda. Similar studies should be conducted in various regions of Uganda to establish how caregivers in Uganda generally manage fever in young children. Respondents in this study were

caregivers. Future research should involve village drug distributors and health workers to identify their perceptions on improving the household management of fever in young children in Uganda.

Successful implementation of the fever strategy could help to reduce malaria-related morbidity and mortality rates among young children in Uganda, and save the healthcare services large sums of money. The findings of this study indicate that the starting point for an enhanced home-based management of fever strategy would be to enhance the services rendered by the village drug distributors, and informing the caregivers about the availability and value of these services.

LIMITATIONS OF THE STUDY

Because of limited resources, only 60 respondents from three sub-counties were interviewed. A bigger sample from more areas of the district would have been more representative of home-care practices of caregivers in the district. The caregivers' verbal reports were accepted. Future studies should attempt to triangulate the data sources by comparing the caregivers' reports with the health unit's filed information about the child concerned. However, this approach would not guarantee the anonymity of respondents.

Qualitative in-depth interviews could be conducted with caregivers who reported that at least one of their children had died from malaria. This approach could produce in-depth personal information about caregivers' decisions and/or about healthcare providers' actions that could have contributed towards these malaria-related childhood deaths.

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