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The pattern of home treatment of malaria in under-fives in South Eastern Nigeria

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Summary

Malaria remains a major public health problem in most countries of the tropics with high morbidity and mortality. The toll of the disease is highest on the under-fives. The actions mothers take in the management of children with malaria is important in the fight to check the malaria scourge. A cross sectional survey was carried out in two states in southeast Nigeria – Abia and Anambra states. A multi-stage sampling technique was used to select the subjects. One thousand two hundred and sixty mothers with children under five years of age were selected from 6 Local Government Areas in the two states. Trained interviewers were used to conduct the survey. The mean age of the mothers was 30.51±6.76. Over 95% (1016) of the respondents had at least a primary school education. The first line of actions mothers took when their under-five children had malaria showed that 54.5% (687) of them either procured medicines from the patent medicine dealers or used medicines that were in the home. The two most commonly used drugs for malaria treatment for under-fives were chloroquine 65.4% (824) and pyrimethamine/sulfadoxine 12.3% (155). Between 11.5% and 46% of the mothers used correct doses of chloroquine syrup while 5.3% and 11.5% of them used correct doses of chloroquine tablets. The proportion of mothers that used correct doses of pyrimethamine/sulfadoxine tablets was comparatively higher (36.4% and 75%) than the others. Large proportion of mothers (61%) who manage malaria at home, do so inappropriately. Proper health education needs to be set up to enlighten the populace on mode of home treatment for malaria in order to reduce the disease burden on families.

Keywords Action of mothers, under-fives, malaria treatment.

Résumé

Le paludisme reste un problème majeur de la santé publique dans la plupart des pays tropicaux avec une forte morbidité et mortalité. L'effet de la maladie est le plus élevée chez les moins de cinq ans. Les actions des mères dans la gestion

des enfants atteints du paludisme est important dans la lutte pour réduire le fleau du paludisme. Une étude d'un groupe qui a été faite dans deux états au Sud-est du Nigeria. Les états d'Abia et Anambra. Une technique de l'échantillonnage à plusieurs étapes a été utilisée pour sélectionner les sujets. Mille deux cents et soixante mères avec enfants moins de cinq ans ont été sélectionnées de 6 Régions du Gouvernement Locales dans les deux états. Les enquêteurs compétents étaient utilisés pour effectuer l'étude. L'âge moyen des mères était 30.51±6.76. Plus de 95% (1016) des personnes interrogées avaient au moins fait l'école primaire. La première ligne d'actions que les mères ont prise quand leurs enfants de moins de cinq ans avaient le paludisme a montré que 54.5% (687) d'entre eux ont obtenu soit des médicaments brevetés soit qu'elles ont utilisé. Ceux dont elles disposaient à la maison. Les deux médicaments les plus commun dans le traitement de cette maladie pour les enfants de moins de 5 ans étaient la chloroquine 65.4% (824) et pyriméthamine/sulfadoxine 12.3% (155). Entre 11.5% et 46% des mères les doses correctes de sirop du chloroquine ont utilisé pendant que 5.3% et 11.5% d'eux doses correctes usagées de comprimés du chloroquine. La proportion de mères qui utilisaient des doses correctes de comprimés du pyriméthamine/sulfadoxine étaient comparativement plus élevées (36.4% et 75%) que les autres. Une grande proportion de mères (61%) qui traitent le paludisme à la maison le fait de manière inappropriée. Une éducation adéquate de la santé doit être mise en place pour sensibiliser la population sur la mode de traitement du paludisme à la maison afin de réduire le fardeau de la maladie sur les familles.

Introduction

Malaria remains a major public health problem in most countries of the tropics with high morbidity and mortality. The estimates put the population at risk at 2.6 billion with 100 million clinical cases and about a million fatalities [1,2]. Some sources project higher values of up to 300 to 500 million clinical cases and 1.4 – 2.4 million deaths annually [3,4]. Most of the malaria cases in the world occur in Africa. The toll of the disease is highest in the under-fives [5]. It is estimated that in highly endemic areas, a child under five years of age develops 5 – 6 episodes of malaria every year [6]. In Nigeria, the period prevalence of malaria is 919/100,000 per annum. It is responsible for 25% of infant mortality and 30% of childhood mortality. It accounts

for 50% of outpatient consultations/visits and between 15% and 30% of hospital admissions in the country. The disease is endemic throughout the country and more than 90% of the population lives in areas with all year high transmission rates of malaria [7]. The malaria situation has worsened with the emergence of resistant strains [8-12].

This has led to difficulty in the management of the disease. Recent efforts at the control of malaria have focused on early diagnosis and prompt treatment. Despite efforts to improve health services and encourage families to use them, most mothers treat malaria at home, usually with inappropriate doses of drugs purchased from either the patent medicine or itinerant drug sellers [13].

Ignorance is seen as one of the factors preventing mothers from procuring the right medications in the correct quantities. In addition, poor quality or fake substitute anti-malarial drugs and lack of comprehension of dosage regimen by some mothers worsen the disease. Low-income status of households may also be a contributory factor. However, lack of a full picture of home treatment practices for malaria still constitutes a gap in our knowledge. The present study therefore investigated the patterns of home treatment (i.e., use of drugs procured from medicine sellers or drugs at home obtained from previous ailments) of malaria in under-fives

Materials and methods

Study area and subjects

The study was carried out in Abia and Anambra states in south-eastern Nigeria. The area lies in the tropical rain forest zone. The population of the two states in the 1991 national census were 2,297,978 and 2,767,903, respectively. The people are Ibos with Christianity as the major religion. The main occupations of the people are farming, trading and civil service.

A cross sectional survey was carried out in Abia and Anambra states to investigate the home management of malaria in under-five children. A multi-stage sampling technique was used. Three Local Government Areas (LGAs) were selected by simple random sampling from each of the two states giving a total of 6 LGAs. In each LGA, 210 mothers with children under five years of age were selected using the WHO 30 cluster sampling technique giving a total of 1260 subjects for the survey in the 6 LGAs studied. Trained interviewers administered semi-structured questionnaires. The questionnaire was pre-tested and harmonized to ensure that the meaning was properly conveyed in the local language (Ibo) in which the interview was conducted.

The questionnaire sought information on the demographic variables, mother's knowledge of malaria in under-fives, actions taken when child has malaria, drug used, the dosages of the two most commonly used antimalarials (chloroquine and pyrimethamine/sulfadoxine) and disease outcome. The standard dose used in the study for chloroquine was 25mg/kg body weight

given over a period of 3 days [14]. The standard dose used for sulfadoxine/pyrimethamine combination was 30mg/2.5mg/kg body weight as single dose therapy [14]. The weights of the children were estimated from their ages [15]. Mothers who gave this were classified as correct dose while those who gave less or above for the given period were grouped as under dose and over dose respectively. Questionnaire data were analysed using EPI Info version 6 programme which used χ^2 test to compare for variables between groups.

Results

The mean age of the mothers was 30.5 ± 6.8 years. Over 95% of the respondents had exposure to formal education with 66.6% (839) of them reaching the post primary level of education (Table 1).

Table 1: Educational level of respondents

Educational status	Number (%)
No formal education	53 (4.2)
Primary education	368 (29.2)
Secondary education	552 (43.8)
Tertiary education	287 (22.8)
Total	1260 (100)

A total of 655 (52%) of the mothers reported the occurrence of perceived malaria illness in their under-five children in the last 3 months. The first line of actions mothers took when their under-five children had malaria showed that a total of 687 (54.5%) either procured medicines from the patent medicine dealers or used medicines that were in the home (Table 2). Maternal education had a positive effect on the actions of the mothers ($\chi^2 = 21.0106$, $df=3$, $P < 0.05$).

Table 2: The first line of actions mothers took when their children had perceived malaria fever

Actions mothers took	Number (%)
Traditional healer	16 (1.3)
Patent medicine dealer	318 (25.2)
Use medicine in the house	369 (29.3)
Hospital/clinic/health center	508 (40.3)
Prayer house	42 (3.3)
Others	7 (0.6)
Total	1260 (100)

The mother's action for the child who has convulsion with fever, revealed that 29.4% (371) took the child to a health facility while 53.5% (674) took one or more actions concurrently that may have adverse effects on the convulsing child (Table 3). Maternal education had significant effect on the actions of the mothers ($\chi^2 = 11.313563$, $df = 3$, $P < 0.05$).

Table 3: Effect of maternal education on actions taken for the child who has convulsion with fever

Actions of mothers	No formal education	Primary education	Secondary education	Tertiary education	Total
Right actions:(take child to hospital, clinic or health centre)	12	88	163	108	371
Wrong actions: (use of kernel oil, cover with clothes, warm child with fire, take child to prayer house etc)	35	215	302	122	674
Total	47	303	465	230	1045 *

$\chi^2 = 11.313563$, $df=3$, $P<0.05$

i.e. statistically significant.

* 215 (17.1%) of the mothers reported No action taken concerning the convulsing child.

The common anti-malaria drugs the respondents used for their under-five children were chloroquine, 65.4% (824), sulfadoxine/pyrimethamine 12.3% (155), halofantrine 10.8% (136), proguanil 7.8% (98), herbs 2.4% (30), and paracetamol 1% (13). The dosing regime of chloroquine used by the mothers is shown in Table 4. For children aged 0 – 6 months and 7 months – 1 year, 46% and 45.4% respectively gave the correct doses of chloroquine syrup while 24% and 42.6% respectively gave their children under doses respectively. The figures were worse for children 2-4 years where only 11.5% of the mothers gave the correct doses. There is a significant difference between the ages of the children and the administration of correct doses of chloroquine syrup. ($\chi^2=122.79$, $df = 4$, $p<0.05$).

A different pattern is seen in the administration of chloroquine tablets. In the age group 0 – 6 months old, there is a tendency for the mothers to give over dosage. Only 11.5% of the mothers gave correct doses while 80.8 % gave over dosage. The dosing for the other age groups showed a similar pattern. The use of correct dose of chloroquine tablets worsened with increasing age of the child ($\chi^2 = 217.21$, $df = 4$, $p < 0.05$, Table 4).

Table 4: Dosing pattern of chloroquine used by mothers for under- five children

(Syrup)	Under dose Number (%)	Correct dose Number (%)	Over dose Number (%)	Total Number (%)
0-6 mnths	94 (24.0)	180 (46.0)	117 (30.0)	391 (100)
7mnths-1yr	138 (42.6)	147 (45.4)	39 (12.0)	324 (100)
2 - 4 years	111 (60.7)	21 (11.5)	51 (27.9)	183 (100)
Total	343 (38.2)	348 (38.8)	207 (23.0)	898 (100)
Tablets				
0-6 mnths	12 (7.7)	18 (11.5)	126 (80.8)	156 (100)
7 mnths-1 yr	0	2 (5.4)	35 (94.6)	37 (100)
2-4 years	9 (9.5)	5 (5.3)	81 (85.3)	95 (100)
Total	21 (7.3)	25 (8.7)	242 (85.0)	288 (100)

Over half of the mothers (61.29%) who gave their children sulphadoxine/ pyrimethamine tablets gave the correct doses (Table 5).

Table 5: Dosing pattern of sulphadoxine-pyrimethmine tablets used by mothers for under-five children

Age group	Under dose Number (%)	Correct dose Number (%)	Over dose Number (%)	Total Number (%)
7 mths-1yr	1 (9.1)	4 (36.4)	6 (54.5)	11 (100)
2-4yrs	5 (25)	15 (75)	0 (0)	20 (100)
Total	6 (19.4)	19 (61.2)	6 (19.4)	31 (100)

*Sulphadoxine-pyrimethamine is not recommended for children less than 6 months of age. As a result, the values obtained for the age group were not in the calculations

Discussion

The line of actions many mothers took when their under-five children had malaria was to resort to self-medication or patronize the ubiquitous patent medicine dealers. This practice is a common phenomenon in many African countries [16-18]. It is only in 40.3% of the cases that they visit the hospital, clinic or health center as a first resort. The low patronage of the formal health services may not be unconnected with the weak health care system in the country resulting from the depressed economies of the last two decades. This led to decreased funding of health facilities, high medical bills and inadequacies of medical supplies in the midst of a people with low purchasing power [19-21]. A study in one of the nearby states showed that 27.7% of mothers first took their children to a health facility for treatment when they had perceived malaria illness [22].

Apart from economic factors and educational status of patients, which influence care utilization, many Nigerians probably see malaria as a common ailment, which they could treat themselves. The use of the formal healthcare service is worse in children who have convulsion with fever. Only 29.6% of the mothers took such children to a health facility. This may be connected with the

the belief that alternative (traditional) medicine is a better remedy for it. The other actions of the mothers are adverse to the convulsive child as they could either lead to aspiration or result to increase in the body temperature. Maternal education had positive effect in influencing taking right actions in handling the child that has convulsion with fever. A survey conducted in Tanzania showed that higher level of education was associated with promptness in taking management actions for the child with malaria [23]. However, the proportion of mothers that took right actions is unacceptably low especially those with secondary and tertiary education (35.1% and 46.9%) respectively. It means that there is need for public enlightenment, as level of education alone cannot lead to proper health action.

Chloroquine remains the mainstay of malaria treatment in the homes accounting for 65.4% of drugs used for treatment. However, in this study less than half the mothers gave the right dose of the drug. This is worse in the age group 3 – 5 years where only 11.5% gave the right dose with syrup. Apparently, mothers have observed that many drugs (syrups) that health personnel prescribe such as antibiotics, paracetamol, multivitamins and cough syrups are given mostly in 5ml or 10ml dosing. The mothers too resorted to make their own drug administration in the same way. That may explain the reason why at the older age group 3 – 5 years where the chloroquine dose becomes increasingly higher (reaching 35-45 mls in 3days) the percentage of mothers that gave right doses became less. Similarly, those that gave anti-malarial tablets (chloroquine and sulphadoxine/pyrimethamine) tended to give higher doses of the drug to the younger age group. Up to 88.2% of the children aged 0-6 months were given over dose of chloroquine tablets with its possible consequences. On the other hand among the 3 – 5 years, 60.5% were given under dose. It appears that since mothers break the tablets they can't go below half tablet and as such give the 0 – 6 months large quantities while among the older groups many continued with either giving half tablets or giving slightly more resulting in a large number of children being given inappropriate doses. In a similar study in Ghana, it was found out that the use of inadequate doses of chloroquine was wide spread [24]. This bad practice is a direct result of self-medication and patronage of patent medicine dealers that is in vogue among the populace. The role of over the counter drugs and inappropriate prescription of anti – malaria drugs is a serious problem in many parts of Africa [12,16,25]. It undermines therapeutic efficacy, encourages emergence of drug resistant strains and worsens the morbidity and mortality situation in the region.

Conclusion

Most mothers manage malaria inappropriately in the home. The children are either given under or over dosage of the drugs with possible consequences. It is necessary that

policy makers recognize the big threat to the Nigerian child from mismanagement of the disease and set proper health education measures to enlighten the people in order to reduce the disease burden on the populace.

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