MOTHERS' PERCEPTION AND HOME MANAGEMENT OF CHILDHOOD MALARIA IN NARAGUTA VILLAGE, JOS NORTH LOCAL GOVERNMENT AREA OF PLATEAU STATE, NIGERIA.

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ABSTRACT

A Structured questionnaire was administered to determine mothers' perception and home management of childhood malaria in Naraguta village of Jos North Local Government Area of Plateau State, Nigeria. One hundred and fifty (150) mothers responded to questionnaire to determine their ability to accurately recognize signs and symptoms of malaria in children and their ability to manage the disease at home. 426 children whose mothers responded to the questionnaires were screened for malaria parasites by microscopy. 120 (80%) of the mothers had a clear understanding of the cause of malaria. 105(70%) of the mothers indicated fever was the major feature of childhood malaria. Visit to health facilities was the most preferred choice for source of treatment, 136(90.6%) of the mothers adopted this option. Out of the 426 children whose mothers were interviewed and who were screened for parasitemia, results of Laboratory analysis indicated 58 out of 426 children (13.6%) with prevalence of plasmodial infection. There was no- association between infection and the various children's age groups, indicating that the infection was not dependent on the age. In addition, there was no association between the mothers' age and perception of malaria. This proves that mothers' ability to accurately identify the signs and symptoms of malaria was not related to mothers' age but may be due to other factors such as level of education and exposure not measured during this study. The study indicated that mothers' perception played an important role in management of childhood malaria.

Keywords: Childhood malaria, Perception, Home management, mother's perception.

INTRODUCTION

Home Management of Malaria is a care delivery strategy to increase access to effective treatment for malaria where health facilities are far or difficult to access, where self-treatment is common and is often inappropriate. The rationale behind Home Management of Malaria is that achievement of prompt and effective treatment of uncomplicated malaria prevents evolution to severe malaria and death. In rural areas of sub-Saharan Africa, out of 100 malaria episodes, 5 are treated in hospitals, 15 in dispensaries, 80 are self-treated at home and most children die of malaria before any contact with the health system (Pagoni, 2009). The rationale behind Home Management of Malaria is that achievement of prompt and effective treatment of uncomplicated malaria prevents evolution to severe malaria and death. *Falciparium* malaria is the most dangerous form of the disease; the high levels of parasitaemia can alone cause or result in fatal cerebral, renal or pulmonary

complications particularly in non-immune individuals (Bruce-Chwatt, 1992). There is high mortality among children in the tropical world 300-500 million cases of malaria each year have been estimated resulting in one million deaths, mainly in children under the age of five in Africa (WHO, 1995). Young children can easily convulse and can die from the high fevers caused by malaria. This could be due to the fact that many childhood illnesses cause fever, malaria being difficult to distinguish from these other diseases since they often overlap (Howard *et al.*, 1994).The low level of immunity of children, parental attitude, cultural practices, generation of artificial breeding sites of mosquitoes as well as a result of human activities, lack of proper medical attention among others, are also reasons for children having higher degree of susceptibility to malaria than adults. Ezedinachi (1996) opined that self medication (with sub-curative dose), the question of fake drugs and or substandard drugs in drug markets, changing epidemiology of malaria and chemoprophylaxis in malaria endemic areas, like Nigeria, has led to an intensive modification of the traditional clinical presentation of malaria. Another problem of malaria in recent times include the incidence of several major symptoms of malaria such as mean body temperature among others. Investigations in tropical Africa by WHO (1994), showed that these symptoms do not vary significantly between malarious and non-malarious patients. Moreover, that the body temperature may not help in making the diagnosis in areas of stable hyper-endemic and holo-endemic malaria since re-infection occur with no particular pattern or periodicity.

It is estimated that 92% of childhood deaths occur at home. Most mothers recognize the role of mosquitoes in malaria transmission, but few know how mosquitoes acquire their infections or understand the risk of having an untreated child in their midst (Klein *et al.*, 1995). A high percentage of families own bed nets, however studies carried out by Klein *et al.*, (1995) in Guatemala showed that even though most mothers believed that bed nets help protect against malaria, the major reason for using them was to prevent nuisance of mosquito bites.

Malaria parasitological indexes carried by Faye *et al.*, (1993) in Tanzania shows that each village of the three villages in which investigations were carried out had its own health care unit until the consumption of anti-malarial drugs became the general order of the day. Howard *et al.*, (1994) observed that a high proportion of patients using health services for malaria illness would have had some prior therapy from drug stores, traditional health practitioners, private physicians or another health facility.

Studies by Kengeya-Kagondo *et al,* (1995) in Africa and especially in the rural areas revealed that words for malaria in the local language could cover a broad symptom complex and which does not constantly correspond to the clinical case definition of malaria. A survey of mothers in rural Uganda to understand their treatment seeking behaviours, showed that they understood fever as a set of symptoms which are loosely concordant with clinical malaria, primary cause of fever as heat and particularly in rural areas, an understanding of mosquitoes in transmitting fever was limited. Survey of mothers suggested that fever was conceptualized in biomedical terms whereas the etiology of severe malaria was perceived to be of more complex cultural origin (Mwenesi *et al.*, 1995). Mothers and caregivers are of foremost importance in recognizing malaria disease and seeking treatment. This study therefore seeks to encourage the inclusion of mothers and caregivers in control programmes if a successful result is hoped to be achieved.

MATERIAL AND METHODS

The study area

The study was carried out in Naraguta village in Jos North Local Government Area of Plateau state. The village is about 4 kilometres from the Jos North Local Government Area Headquarters. It is located on latitude 9^0 53′ and Longitude $8^0$54′ and about 1,200 meters above sea level.

Sample collection

Questionnaires were administered to mothers to acquire demographic and other information represented in the tables. The sampling was carried out with the consent and cooperation of the parents and caretakers of each of the children recruited in the study. The first phase of the sampling was carried out daily from Monday to Saturday at Naraguta village. Individual houses were chosen at random and visited for blood sampling. About eleven samples were collected each day. The second phase of the sampling was carried out in the two Primary Health Care clinics.

Parasitological Techniques

One to two drops of blood was obtained from each child on a glass slide which had the child's name. The blood was obtained by piercing the thumb using a sterile disposable lancet, one per child. A log book was used to enter the personal and medical data of each child.Thin blood films were prepared and examined according to the techniques outlined by Bruce-Chwatt (1992) and Cheesbrough (1991). The thin film was afterwards stained with Giemsa solution that was prepared using phosphate buffer; this was adjusted to a PH of 7.2 and air dried for 40minutes. Each stained slide was gently flushed with distilled water care being taken not to wash away the blood film. The stained slide was then placed upright to dry, after which microscopic examination of the slides was carried out under oil immersion. Malaria infection was defined as the presence of the ring form or crescent-shaped gametocyte of the parasites in peripheral blood of subjects sampled. Parasite count was not carried out during the study.

Results

Results of laboratory analysis indicated 13.6% prevalence of plasmodial infection, this being highest in the age group 2-4years(4.2%) however, chi-square test was not significant at $P>0.05$, (Table 1).

Mothers' ability to accurately identify the cause of malaria was evaluated, 56.0% of the mothers were of the opinion that malaria was transmitted by mosquito bite, 14. 0% reported that heat of the sun was responsible. Other possible causes of malaria as inferred by the mothers include stagnant water 8% and evil spirits 12.0% while 10.0% of the mothers did not know the cause of malaria. Mothers' ability to properly diagnose features/ signs of malaria was also evaluated. Table 2 has the summary. Fever and headache, chill, body pains, bad dreams, bitter taste in mouth and loss of appetite (17.3%, 7.3%, 42.1%, 11.3%, 12.7% and 9.3% respectively) were the prominent features diagnosed by mothers. One outstanding activity exhibited by mothers in their diagnosis of the infection was eye-check. 38.6% reported doing this.

Analysis on the association between the age of the mothers and their ability to accurately identify the cause of malaria and diagnose the disease was also carried out statistically (Table 3). $P>0.05$, there was no significant difference in the trend.

Table 4 reports mothers' choice of treatment of childhood malaria. Most of the mothers (52.7%,) preferred visiting

health facilities 38.6% go to chemist to buy drugs while 8.7% visit herbal home.

Table 5 shows the mothers' reasons for the choice of treatment this include: Effectiveness 14.7%, safety 34.0%, ready availability 14.7%, cheapness 12.7% and accessibility 24.0%.

In Table 6, 22.7% of the mothers administered complete dosage of drugs while only 16.0% administered incomplete dosage, 61.3% did not give at all.

Table 7 is a summary of mothers' action following failure of proprietary treatment of childhood malaria.72.0% of the mothers go back to health facility, 10% buy more drugs while 11.0% use herbal treatment and 6.7% try other drugs.

A total of 150 mothers were sampled. The distribution of subjects according to demography, marital status and number of children per mother is summarized in Table 8.The average age was 29years, the age range 25-29years and 30-34years had the highest number of mothers with (33.3%), while ages less than 20years had the least number of mothers (Table 8c). Number of children per mother ranged from 1-5.

Table 1: Prevalence of infection in the studied children

Age	No(%) infected	No(%) uninfected	No(%) overall
0-11 months	10(2.4)	68(16.0)	78(18.0)
12-23 months	13(3.0)	69(16.0)	82(19.0)
2-4 years	18(4.2)	123(28.9)	141(36.0)
5-9 years	17(4.0)	108(25.4)	125(27.0)
TOTAL	**58(13.6)**	**368(86.4)**	**426(100)**

X^2=0.472; df=3;p=0.05

p>0.05

TABLE 2a: Mothers' ability to accurately identify the cause and symptoms of malaria

Parameter	Number (%)
Causes of Malaria	
Heat of sun	21(14.0)
Evil spirit	19(12.0)
Mosquito bite	81(56.0)
Stagnant water	13(8.0)
Do not know	16(10.0)
TOTAL	**150**

TABLE 2b: Mothers' ability to identify signs and symptoms of malaria

Parameter	Number (%)
Fever and Headache	26(17.3)
Chill	11(7.3)
Body pains	63(42.1)
Bitter taste in mouth	17(11.3)
Bad dreams	19(12.7)
Loss of appetite	14(9.3
TOTAL	**150(100)**

Table 3: Mothers' ability to identify malaria infection base on signs and symptoms

Age(years)	Number of mothers	Number of children	Number(%) of infected children	No(%) of mothers with correct perception of malaria
<20	15	40	8(1.9)	17(11.3)
20-24	23	110	18(4.2)	28(18.7)
25-29	34	120	15(3.5)	30(20.0)
30-34	53	88	12(2.8)	24(16.0)
35-40	25	68	5(1.2)	18(12.0)
TOTAL	**150**	**426**	**58(13.6)**	**117(78.0)**

P>0.05

Table 4: Mothers' choice of treatment of childhood malaria

Parameter	Number (%)
Health facility	79(52.7)
Chemist	58(38.6)
Herbal Home	13(8.7)
Total	**150(100)**

Table 5: Mothers' reasons for choice of treatment

Parameter	Number (%)
Ready availability	22(14.7)
Effectiveness	51(34.0)
Accessibility	22(14.7)
Cheapness	19(12.6)
Safety	36(24.0)
TOTAL	**150(100)**

Table 6: Mothers' attitude toward treatment of childhood malaria

Dosage of drug administered	Number (%)
Complete	34(22.7)
Incomplete	24(16.0)
Do not give at all	92(61.3)
TOTAL	**150(100)**

Table 7: Mothers' action following failure of proprietary treatment of childhood malaria

Parameter	Number (%)
Visit health facility	108(72.0)
Buy more drugs	15(10.0)
Use herbal treatment	17(11.3)
Try other drugs	10.0(6.7)
TOTAL	**150(100)**

TABLE 8a: Demographic data of 150 mothers who responded to questionnaire

Parameter	Number (%)
Age(years)	
<20	7(4.7)
20-24	14(9.3)
25-29	50(33.3)
30-34	50(33.3)
35-40	29(19.3)
TOTAL	**150**

Table 8b: Marital status

Parameter	Number (%)
Married	128(85.3)
Single	22(14.7)
TOTAL	**150(100)**

Table 8c: Number of children per mother

Parameter	Number (%)
1	104(24.4)
2	96(22.5)
3	68(16.0)
4	75(17.6)
>4	83(19.5)
TOTAL	**426(100)**

Table 8d: Disease awareness

Parameter	Number (%)
Aware of Malaria	107(72.3)
Unaware of Malaria	41(27.7)
TOTAL	**150(100)**

DISCUSSION

In endemic areas in the absence of microscopy, the World Health Organization (WHO) case definition of malaria is the presence or a history of fever without other obvious cause (Gomes *et al*, 1994). Several studies have been conducted in various malaria endemic areas of the world to access the mothers' ability to clinically diagnose and manage childhood malaria. Ever since, early man became a seed user and encountered malaria, he has probably found it necessary to attempt to find medicines to relieve its symptoms. That is why the botanic world was often tapped for this purpose. Kengeya-Kagondo *et al*, (1994) reported mothers' use of herbs as the first treatment action, followed by the purchase of tablets from shops with final recourse being the formal health sector, if the previous actions had not effected a cure. In this study however, the reverse is the case. It is found that mothers' and caregivers' first place of call for the treatment of childhood malaria is the health facility, followed by the purchase of drugs from shops while the final resort is the use of herbs. This change in the mothers' management of childhood malaria could be attributed to the increasing awareness on the control of malaria and its mosquito vector which is now a global phenomenon.

This could also be due to discouraging information from medical personnel and researchers on the dangers of using some of these herbal malaria remedies. Ault (1989), for example gives a question that has been raised by a scientist concerning the unknown effects of indigenous remedies prescribed by traditional healers in Sri Lanka. A study carried out by WHO for the period of 1993-2000 showed private sector treatment, especially in rural areas to often be the rule than the exception (WHO, 1993). Greer *et al*, (2004) reported that in sub-Saharan Africa; between 15% and 82% of the population choose to first consult drug shops and informal providers for advice about and assistance with treatment of childhood illnesses. It has also been found for private shops that a large percentage of the drugs provided or dosages given, or both, are inappropriate, indicating the need for innovative and effective approaches to achieve rational prescribing practices. These reports are in concordance with the present result which shows significant number of mothers buying anti-malarial drugs through several public advertisements, most of which recommend the dosage to be taken. The dangers of self-medication especially with anti-malarial drugs have been emphasized through many studies. Henry *et al.*, 1994 measuring blood chloroquine levels using ELISA test, suggested that many people took chloroquine routinely. Further studies showed that 37.5% of resistance was found in subjects who have high blood chloroquine concentration and out of the 24 cases of resistance, were children all under 7 years of age. Studies by Hellgreen *et al*, (1994) also showed that sub-therapeutic doses of chloroquine were considered to promote the development of *Plasmodium falciparium*. In this study, 16.0 % of the mothers admitted administering incomplete dose of prescribed drugs to their children for malaria treatment. This poor adherence to the treatment schedule by mothers and caregivers could reduce the efficacy of ACT which is the current drug of choice for malaria and facilitate the emergence of drug resistance. This same problem was also encountered by Ajayi *et al*, (2008) in a study carried out in three study sites in sub-Saharan Africa with ACT.

Over 50% of the mothers sampled in this study were able to state the clinical signs and symptoms of malaria however, laboratory tests carried out on the children so diagnosed by the mothers, showed that very few of them (13.6%) actually had parasitaemia. It is important for mothers to understand that assessment of clinical symptoms alone is an imprecise means of diagnosis in malaria. Although fever is the characteristic sign of clinical malaria, many *Plasmodium falciparum* malaria cases in endemic areas do not present with measurable temperature elevations as observed by Smith *et al*, (1995).

Investigations carried out in tropical Africa also confirm this. Only about 40% of patients diagnosed to have malaria infection actually had parasitaemia. In addition, some 15% of patients clinically diagnosed as suffering from fevers due to other diseases were in fact proved to have Plasmodial infection (WHO, 1994). In a field study, malaria morbidity was defined to be any current self or parentally reported illness associated with malaria parasite densities higher than those in healthy individuals (Smith *et al*, 1995). Some surveys in Africa by WHO for the period of 1993-2000, have shown that malaria is considered the most important of all diseases by the populace but, there is a large discrepancy between the diseases they perceive as "malaria" and malaria as determined by physicians (WHO, 1997). 74.3% of the mothers sampled in this study had knowledge of malaria even though they were ignorant of the possible fatal consequences of it. Although most of them associated mosquito with the bite and

fever in malaria, they do not always associate this with cerebral malaria which some thought to be of supernatural origin. They see the advantages of bed nets in terms of protection against bites far more often than protection against the disease. They considered insecticide treated bed nets as very useful even when they have not actually used them. This is worrisome and shows that people may accept a concept and yet their attitude towards such concept may not change. The Global Malaria Action plan, 2008 observed that universal coverage with effective tools is pre-requisite for malaria elimination. Home management of childhood malaria should therefore not be an alternative but part of overall malaria case management policy.

From this study, it is clear that disease prevention and control cannot be adequately achieved without the cooperation and involvement of the community, especially mothers who are more or less the guardians of the children. The mothers' perception of malaria is one of the critical factors in determining whether malaria will be treated effectively. In any setting, the primary aims of the treatment of malaria are to prevent death from the disease and to alleviate symptoms as promptly as possible. The extent to which these can be implemented will depend more or less upon the community and families concerned and the priority they give to these as well as the relationship between government and Local communities to promote a community involvement. Health personnel working within individual communities and those at higher levels will need to understand the communities they are working with, from activities such as diagnosis and treatment of fever cases, dialogue with the community groups. There is also the need for local non-governmental organizations and others working with the same community to get involved. It is important to provide practical guidelines on the management of febrile patients. Simple diagnostic and treatment charts or algorithms are needed to integrate the important, treatable cases of fever. It is also important for government to incorporate malaria control as part of primary health care.

In the developing countries, Nigeria for example, unplanned urbanization has led to the proliferation of breeding sites for mosquitoes. The government and its agencies responsible for these urban planning should take this into consideration when these plans are being undertaken. Inadequate water supply in Nigeria has led to increased storage of water in homes thereby increasing possible breeding of mosquitoes in human habitations. This problem can be overcome by the provision of adequate water supply to the populace so as to discourage the storage of water thereby compounding on the malaria breeding sites. It is also a known fact that malaria repellents are abundant in the market but these need to be cheaply and widely available. Malaria will be conquered when educational and socioeconomic standards have risen sufficiently and in the interim, the aim must be to maintain and consolidate what has already been achieved.

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