RESEARCH ARTICLE

ADOPTION OF ARTEMISININ COMBINATION THERAPY (ACTs) FOR THE TREATMENT OF MALARIA AMONG MOTHERS IN THREE RURAL COMMUNITIES OF YEWA SOUTH LG. OF NIGERIA

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ARTICLE INFO

ABSTRACT

Malaria is a persistent ailment in tropical Africa and mortality to it has been in million especially among the highly prone group of young children and pregnant women. The study investigated the adoption of Artemisinin Combination Therapy (ACT) as first line drug treatment of malaria among mothers of child bearing age. A minimum sample size of 384 was determined based on a 95% confidence level, 5% margin of error and a reasonable estimate of 50% adopting ACT for malaria treatment. The sample size was however increased to 400 to make room for missing data. The result shows poor adoption of the new drug treatment policy among the respondents. It was concluded that the major barrier to the adoption of the new treatment policy is cost of procuring the drug, less accessibility to it especially in the interior villages and poor knowledge of its efficacy. Therefore the study concluded that government and other stakeholders as a matter of priority should increase the public awareness and make it available at reduced price.

INTRODUCTION

Malaria is a persistent health problem in Africa. Each year, 300-500 million people worldwide suffer from the disease, with 9 out of 10 cases occurring in sub-Saharan Africa (WHO, 1998). Biomedically malaria is a well-defined disease in which parasites of the genus *Plasmodium* are transmitted to human through the bite of female mosquito belonging to the genus *Anopheles*. The disease is known to be associated with fever, headache, chills, shivering, loss of appetite general body weakness and joint pains (Makundi *et al.*, 2006). Malaria kills at least 1 million people each year and the vast majority of the deaths occur among children less than five years of age. In Africa, one out of twenty children is likely to die of a malaria-related illness before his fifth birthday (WHO, 1999). It is estimated that malaria accounts for up to 40% of preventable low birth weight among newborns in endemic areas (Brabin, 1991; UNICEF, 1999).

Prompt and effective treatment of malaria remains a challenge for malaria control programmes (Ajayi *et al.*, 2008). Among the challenges to effective treatment include poor recognition of signs of severe malaria, delay in seeking appropriate treatment and non-adherence to the treatment (Osero *et al.*, 2006). In Africa, the majority of children with fever are treated at home, especially in rural areas; the home management usually opted for is in form of self-treatment after a presumptive diagnosis of malaria is made. This self-treatment usually consists of antimalarials, antipyretics and herbs. Reaching the home and community more effectively with antimalarial treatment is likely to have an impact on malaria control. Increasing the availability and improving the use of effective antimalarials for the treatment of suspected malaria at home has the potential to reduce the time between onset of symptoms and delivery of treatment, and could result in a reduction in malaria morbidity and mortality (Deressa *et al.*, 2008). Chloroquine, sulfadoxine–pyrimethamine or the combination with chloroquine (SP+CQ) or amodiaquine (SP+AQ)

have been the drugs for the treatment of malaria. However, the prevailing high levels of resistance have compromised the efficacy of these combinations and many countries incuding Nigeria have adopted ACT as the first line treatment of malaria (Koram *et al.*, 2008). Despite being recommended by World Health Organization since 2001, overall deployment of ACT has been slow (Mutabingwa 2005). This study aims to examine the factors influencing the adoption of ACTs as first line drug for the treatment of malaria in children by rural women of child bearing age in the local government of study.

METHODOLOGY

Three communities of Iwoye, Iweke and Ipake were purposely selected because of some attributes they have in common like social-economic status, agrarian communities, equal estimated population and finally the three communities are malaria endemic area.The study employed a cross-sectional descriptive design. The target populations are mothers currently caring for child aged 0-5 years. A minimum sample size of 384 was determined based on a 95% confidence level, 5% margin of error and a reasonable estimate of 50% adopting ACT for malaria treatment. The sample size was however increased to 400 to make room for non response. Multistage sampling procedure was adopted as method of data collection. The houses were numbered separately in all the villages and by simple random sampling; the houses were selected using probability proportional to size. From each selected house, one mother-child pair was selected by balloting from all eligible mother pairs residing in the house .Where a selected house has no eligible mother-child pair, a mother-child pair was chosen from the nearest house to the selected one. Data was collected from selected motherr-child pairs with the aid of semi-structured questionnaire. The questionnaire sought information on respondents' socio-demographic variables, knowledge of malaria prevention and treatment, treatment of last malaria episodes in their children, including home use of drugs.

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RESULTS

Table 1 shows the demographic variables of the respondents. Majority of the respondents' (153, 38.2%) are between age range of 10-29years and married (338; 84.5%).Most of the respondents are petty trader (191; 47.8%).

Table 1. Social-demographic characteristics of the respondents

Variables	frequency	%
Age group (years)		
10-19	67	16.8
20-29	153	38.2
30-39	130	32.5
40-49	37	9.2
>50	2	0.5
No response	11	2.8
Marital status		
Single	21	5.2
Married	338	84.5
Divorced/separated	21	5.2
Widow	20	5.0
Level Of Education		
None	27	6.8
Primary	128	32.0
Junior secondary	102	25.5
Senior secondary	84	21.0
Tertiary	54	13.5
No response	5	1.2
Respondents' Occupation		
Petty trading	191	47.8
Artisan	79	19.7
Farming	25	6.2
Teaching	22	5.5
Civil servant	39	9.8
No response	44	11.0

Fig. 1 shows various antimalarial drugs the respondents administered to their children for the presumptive treatment of malaria at home. While 10% of the respondents claimed to be administered ACT for the treatment of malaria, the large percentage still administered chloroquine for the malaria treatment.
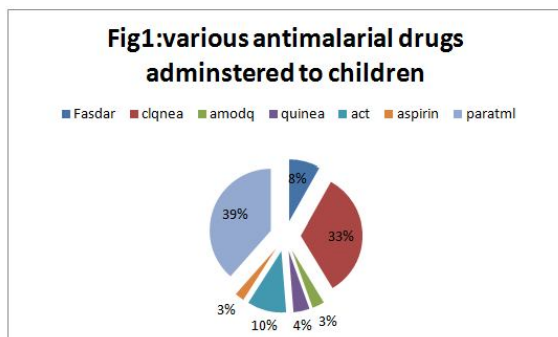

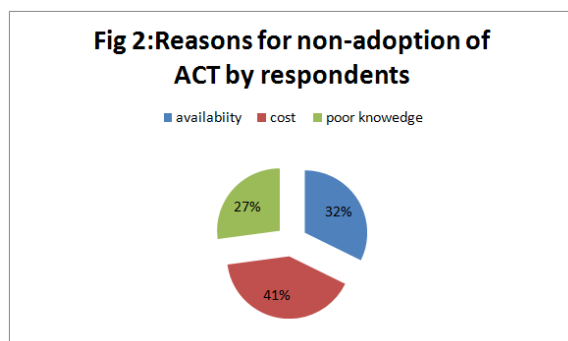**Fig. 1. Various antimalarial drugs adminstered to children**

Fig. 2. Reasons for non-adoption of ACT by respondents

Fig. 2 shows reasons while the respondents failed to administer ACT: The cost of procuring the drug (41%) was mostly mentioned while the non-availability/accessibility (32%) and poor knowledge of its efficacy are other reasons mentioned.

Table 2 shows the association of respondents' demographic characters with the adoption of ACTs for the treatment of malaria. Occupation and age are statistically significant with ACT (p<0.05)

Table 2. Association of some variables with Adoption of ACT

Variables	Use of ACTs		Statistical indices
*Age	No	Yes	
19-29	9(100.0%)	0 (0.0%)	χ^2= 11.910
30-39	107(83.6%)	21(16.4%)	df=5
40-49	130(85.5%)	22(14.5%)	p=0.036
50-59	82(97.6%)	2(2.4%)	
60-69	13(86.7%)	2(13.3%)	
>60	1(100.0%)	0(0.0%)	
Education			
None	23 (85.2%)	4 (14.8%)	
Primary	88 (86.3%)	14 (13.7%)	χ^2= 1.704
Junior Secondary	49(90.75%)	5(9.3%)	df=5
Senior secondary	75 (89.3%)	9(10.7%)	p=0.888
Tertiary	113(88.3%)	15(11.7%)	
No response	5(100%)	0(0%)	
*Income			
Trading	174(91.1%)	17(8.9%)	
Artisan	67(84.8%)	12(15.2%)	
Farming	25(100.0%)	0(0%)	χ^2= 11.77
Teaching	17(77.3%)	5(22.7%)	df=5
Civil servant	31(79.5%)	8(20.5%)	p=0.048
Not employed	39(88.6%)	5(11.4%)	
Marital status			
Single	19 (90.5%)	2(9.5%)	
Married	296 (87.6%)	42(12.4%)	χ^2= 3.249
Divorced	21(100%)	0(0%)	df=3
Widow	17 (85.0%)	3(15.0%)	p=0.355

DISCUSSION

The advantage of prompt treatment of malaria at home by mothers cannot be overemphasized as several studies have shown such treatment to be very effective in reducing the burden of malaria. Artemisinnin based combination therapy has been proved to be very effective and generally accepted has drug treatment for uncomplicated malaria with effectiveness depending on the drug partnering it. One of the challenges facing adoption of ACTs for the treatment of malaria is the cost of procuring the drug by already poverty ravaged societies where the diseases is endemic. Several authors has linked malaria burden with poverty where the two determine the others (Gallup and Sachs 2001). Health seeking behavior of family may be determined by the economic strength of such. In a study conducted by Jimoh *et al*. (2007) the authors concluded that; Reducing the burden of malaria in Nigeria will help to contribute to the economic well-being of communities; and poverty-reduction will be an essential input into improving health. The influence of the prices as a factor and accessibility that determine that adoption of ACT for malaria treatment has earlier been reported by Wasunna *et al*. (2008). Also, in another study by Mutabingwa (2005) the author was of opinion that limiting factors to the adoption of ACT for malaria treatment especially among mothers that practices home management of malaria are high cost, limited knowledge and poor public awareness. In this present study, majority of mothers that administered malaria had poor knowledge of the drug efficacy (27%) while 32% and 41% ascribed it to non-availability and cost respectively. The result of bivarate analysis in this studies shows the relationship between economic indices to be statistically significant (p<0.05). Therefore, this corroborate the claim of earlier authors that the cost of procuring the drug is among the factors that determine the adoption. Several studies have shown that many mothers still prefer chloroquine, a failed malaria drug, for the treatment of malaria

despite the change in treatment policy to ACT. This is largely in agreement with this finding. In this study 33% of mothers that practices home treatment with drugs administered chloroquine for the treatment of malaria while only 10% claim to be administering ACT. This is similar to the study conducted by Tipke *et al*., 2009 in Burkina Faso. The persistence use of chloroquine might not be unconnected to the price, poor public awareness of its therapeutic failure and it easy accessibility. This opinion has also been reported by Malik *et al*., (2006), Nosten and White (2007). Pubic awareness in form of Health Education on the currently recommended antimalaria drug ACT, the ineffectiveness of chloroquine as antimalarial drug and making the ACT available at subsidise price by government and others stakeholders will assist in the adoption of the new drug policy.

REFERENCES

Ajayi I.O, Catherine O, Falade E, Afolabi B, Oduola A.M.J and Kale O.O (2008). Assessment of a treatment guideline to improve home management of malaria in children in rural south-west Nigeria, Malaria Journal 7-24.

Brabin, B (1991). An assessment of low birth weight risk in primiparae as an indicator of malaria control in pregnancy. *International Journal of Epidemiology*, 20*(1)*, 276-83.

Deressa W, Ahmed A, Enquoselassie F(2000). Knowledge, Attitude and Practices About Malaria, the mosquito and Antimalarial Drugs in a rural Community. *Ethiopian Journal of Health Development ;*17(2)99-104.

Gallup JD and Sachs JL (2001) *The Economic Burden of Malaria*. Cambridge, MA: center for international Development Working; 20:52.

Jimoh A, Oluyemi S, Amos P, and Tuoyo O (2007) Quantifying the economic burden of malaria in Nigeria using the willingness to pay approach *Biomed central* 5: 6.

Koram KA, Quaye L, and Abuaku (2008). Efficacy of Amodiaquine/Artesunate Combination Therapy for uncomplicated Malaria in Children under Five years in Ghana. GMJ-*Ghana Medical Journal; 42(2):55-60.*

Makundi E.A, Malebo H.M, Paulo M, Kitua A.Y and Warsame M.(2006).Role of Traditional Healers in the management of severe malaria among Children below five years of age,the case of kilosa and Handeni Disticts, Tanzania. *Malaria journal;* 5:58

Malik EM, TA Mohamed, KA Elmardi, RM Mowien, AH Elhassan, SB Elamin, AA Mannan, and ES Ahmed (2006). From chloroquine to artemisinin-based combination therapy: The Sudanese experience. Malarial journal; 5:65.

Mutabingwa T.K. (2005). Artemisinin-based combination therapies (ACTs): Best hope for malaria treatment but inaccessible to the needy! Acta Tropical 95; 3.

Nosten F, White NJ (2007). Artemisinin-Based Combination Treatment of f*alciparum* Malaria. *Am. J. Trop. Med. Hyg,*;77(6): 181–192.

Osero JS, Otieno MF, Orayo AS (2006). Mothers knowledge on malaria and vectors management strategies in Nyiama District, Kenya. *East Afr. Med. Journal 83(9) 507-514.*

Tipke M., ValerieR Louis, MauriceYe, Manuela De Allergi, Claudia Beiersmann,Alisie,Olaf Mueller And Albrecht Jahn (2000). Access to Malaria treatment in young Children of Rural Burkinafaso. *Malaria Journal;* 8:226.

UNICEF (2003) Africa malaria report, WHO/CDS/MAL/2003,1093 Geneva.

Wasuna B (2008). Why don't health workers prescribe ACT?A qualitative study of factors affecting the prescription of artmether-lumefantrine. *Malaria Journal;*7:29.

WHO (1998). *Malaria.* Fact Sheet No. 94; Geneva, Switzerland: World Health Organization.

WHO (1999). *The World Health Report 1999.* Geneva, Switzerland: World Health Organization.

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