Determinants of Self-Medication for Malaria among Adults in Lagos, Nigeria

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Abstract

Purpose: To examine the influence of socio-demographic characteristics, anti-malarial drugs advertisement and self-medication for the treatment of malaria among adults in Lagos, Nigeria.
Method: A cross-sectional survey technique was used; data were collected from 188 adult respondents who were randomly selected from households in Lagos. The data were analyzed using simple percentages, chi-square and logistic regression. The independent variables were sex, marital status, employment status, level of education, age, anti-malarial drugs usage based on advertisements, belief in the efficacy of advertised drugs, while the dependent variable was engagement in self-medication.
Result: Twenty percent and forty three percent of the male and female respondents, respectively self-medicated based on anti-malarial drug advertisement. Sex (P<.001), marital status (P<.034), anti-malarial advertisements (P<.000), and belief in the efficacy of advertised anti-malarial drugs (P<0.000) were all significantly related to self-medication for malaria treatment. Sex (Wald- 8.369, df= 1, P<.036) and belief in the efficacy of advertised drugs (Wald= 4.393, df= 1, P<.036) were found to be potent predictors of self-medication for malaria treatment.
Conclusion: There is the need to examine sex beyond the biological connotation to the patriarchal nature of society. It is also necessary to regulate how anti-malarial advertisements are carried out in the mass media.

Keywords: *Efficacy of advertised drugs, Sex, Malaria, Advertisement, marital status*

Introduction

Self-treatment includes both self-medication and home treatment. Self-medication involves treatment of self. According to WHO (2000), it is the use of drugs to treat self-diagnosed disorders or symptoms, the intermittent or continued use of a prescribed drug for chronic or recurrent disease or symptoms, or the treatment of a member of a household by another, be it a child or an adult.

McCombie (2002) defined self-treatment as any treatment that does not involve consulting a health care provider or traditional healer. A modern method of self-treatment is the purchasing and use of orthodox medicine from local markets and pharmacies without the consultation of a health care provider. It, also, includes informal consultations of pharmacists and local medicine sellers, as well as the use of leftover medication from previous consultations at health facilities. Self medication is defined as the use of medications by a patient on his own initiative or on the advice of a pharmacist or a lay person instead of consulting a medical practitioner (WHO 2008). It has been suggested that self-treatment with western medicine can be inappropriate and sub-optimal (Deressa et al. 2003; Muller et al. 2004), leading to the development of drug-resistant parasite strains and adverse health

effects due to inappropriate dosages (WHO 2000; Malaria Knowledge Programme 2005). Self-medication is also associated with risks such as misdiagnosis, use of excessive drug dosage, prolonged duration of use, drug interactions and polypharmacy (Hughes, McElnay, Fleming, 2001).

Studies from countries in sub-Saharan Africa present self-treatment of malaria rates ranging from 4% to 87% (McCombie 1996). Socio-economic and demographic factors are often related to self-treatment, but vary greatly from country to country. Self-treatment with western medicine has been linked to high socio-economic status in Bombay, India (Kamat and Nichter 1998), low socio-economic status in Kerala, India (Saradamma et al.2000), and to males and single people in Nigeria (Brieger et al. 1986). High prevalence of self-treatment with western medicine has also been linked to urban areas in Kenya (Brinkmann and Brinkmann 1991) and Ghana (Agyepong and Manderson 1994). In Burkina Faso, the most common reason for self-treatment was confidence in treating the disease.

Rohit (2010) reported that prevalence of self-medication is higher in developing countries compared to developed countries. This is because professional health care is relatively expensive and in some cases, not readily available, hence making self-medication an alternative to health care services. Brinkmann and Brinkmann (1991) found the rate of self-treatment ranges from as low as 19% in Guinea to as high as 94% in rural Ghana. Self-treatment includes both self-medication and what is called home treatment. The former involves treatment of self while the later involves treatment of a member of a household by another be a child or an adult. Self-treatment for malaria is usually the rule rather than exemption in Africa (Foster,

1995). Studies have revealed that self-treatment is predicated on time, cost, low severity and short duration of illness (McCombie, 2002). In Togo, 83% of all fever cases were treated with an antimalaria at home (McCombie, 2002) and in Dar es Salaam, Tanzania, 68% of men and 77% of women reported using home reserve drugs for treatment in the past (Mnyika et al., 1995). Foster (1995) argued that self-treatment would remain the main source of treatment for malaria for the foreseeable future, and should be understood and improved. About 80 % of the global malaria burden is restricted to Sub-Saharan Africa (Annon, 2003). National Malaria Control (2005) claimed that initial management and treatment of malaria often begins outside formal service without consulting trained professionals largely because of transportation, finance, and time, social and physical distance. According to Salako (2002), a large number of people do not consult the physician when they have malaria because of the availability and easy access to anti-malarial drugs. In Africa, over 50% of malaria episodes are self-treated at home especially in rural areas (Muller et al., 2003; Hamel et al., 2001; Ruebush et al., 1995). Previous studies examined the prevalence of self-treatment and socio-economic factors of individuals related to self-treatment. Few studies have examined the prevalence, sources, patterns proportion and effects of self-medication for different health conditions in Nigeria (Omolase et al., 2007; Afolabi, 2009; Arikpo et al., 2010; Olayemi et al., 2010; Bello et al., 2011). This confirms study by Prince, Achieng et al., (2000) that most illnesses are treated by self-medication in developing countries.

Although there are no official data on self-medication in Nigeria, daily interactions and conversation indicate that self-medication among Nigerians could be high. Few studies found the prevalence of self- medication to be between 70 to 90 percent among the studied population in Nigeria (Arikpo et al. 2010). There are pharmacies and patent drug stores where these drugs could *be* bought without doctors prescriptions. There are also adverts on anti-malarial drugs in the media that hint that these drugs can be taken without doctors' prescriptions and carry the warning that if symptoms persist after three days, the person should consult his or her doctor. There *is* dearth of information on the roles of socio-demographic characteristics and advertisement in the mass media of anti-malarial drugs and self-medication.

The need to identify and predict factors related with self-medication are imperative, as this may help to reduce self-medication; and the issue of drug resistant parasite. This will help also in the current efforts at malaria control. Therefore, the study addresses the following questions:

- Are there significant relationships among socio-demographic characteristics, self-medicate anti-malarial drugs based on advertisement, belief in the efficacy of advertised anti-malarial drugs and self-medication for malaria treatment?
- To what extent would the mentioned factors predict the practice of self-medication for malaria? and
- What is the relative contribution of these factors to the prediction of the practice of self-medication for malaria treatment?

Methods

The study was conducted among adults randomly selected from households in Mosan-Okunola Local Council Development Area, Lagos, Nigeria. The study location was randomly selected from among the Local Council Development Areas that make up Lagos State. A descriptive cross-sectional design was employed. The total mass area is estimated at 35.55 square kilometers with an estimated population of 500 000 people. The council area has cosmopolitan setting, inhabited predominantly by the Awori, Egba/Egbado and Ijebu and later with diverse ethnic groups from the different geographical zones of Nigeria. Informal businesses predominate and most economic activities are found on major streets of the council. Some of the businesses are those of food stuffs, retailing **of** finished goods, and clothing. Some of the residents commute on daily basis to other parts of Lagos for their means of livelihood. Though government hospitals/clinics exist in the area, many of them are usually privately owned (hospitals, pharmacies, and patent medicine stores).

The study purposively selected Mosan Okunola as it is mostly inhabited by people in the low income level with the assumption that because of their income level they may not be able to afford hospital expenses. The study adopted a multistage sampling method to collect data from a sample of 188 household in Mosan Okunola between June and October 2011. Mosan Okunola has 10 notable estates out of which five were randomly selected for the study. From each of the selected estate, ten households were randomly selected making a total of 200 households. A total of 200 adults' respondents were selected; however only 188 respondents participated in the survey. Data were collected using structured questionnaire comprising closed and open-ended questions. The questionnaire was

divided into different sections comprising socio-demographic variables, anti-malarial drugs advertisements as independent variables and practice of self-medication for malaria treatment as the dependent variable were all measured as categorical variables. Verbal informed consent was obtained from respondents and confidentiality assured. Data were analyzed using SPSS 15.0. Simple percentages, chi-square and logistic regression were used.

Results

A total of 188 respondents were surveyed. Among them 42% were males, 58% were females; 48% were married, and 52% were single. Also, 68% were in regular employment. On education 2% had no formal education; 4% had primary school education; 19% had secondary education; and 74% had one form of post-secondary education or another. Their age range revealed that 30% were aged between 20-29 years; 20% were aged between 30-39 years, 15% between 40-49 years; 9% between 50-59 years, and 5% were 60 years and above. Among them, 78% of the respondents took drugs for malaria treatment without doctor's prescriptions. All the respondents (100.0%) had seen or heard anti-malarial drugs advertisement in the mass media.

Table 1: Relationships between Socio-demographic Characteristics, Advertisement and Self -medication

Socio-Demographic Characteristics	Regularly Self-medicate	Rarely self-medicate	Total	X^2	df	P	Remark
Sex				10.748	1	0.001	Significant
Male	20.3	79.7	100.0				
Female	43.1	56.9	100.0				
Total	33.5	66.5	100.0				
Marital Status				4.476	1	0.034	significant
Married	41.1	58.9	100.0				
Not married	26.5	73.5	100.0				
Total	33.5	66.5	100.0				
Employment Status				1.290	1	0.256	Not significant
Self-employed	36.2	63.8	100.0				
Unemployed	27.9	72.1	100.0				
Total	33.5	66.5	100.0				
Level of Education				0.285	1	.593	Not significant
Formal Education	33.1	66.9	100.0				
No Formal Education	42.9	57.1	100.0				
Total	33.5	66.5	100.0				
Used anti-malaria based on Advertisement				21.124	1	0.000	Significant
Yes	48.0	52.0	100.0				
No	16.3	83.7	100.0				
Total	33.5	66.5	100.0				
Believe in Efficacy of Advertised Anti-malarial Drugs				15.116	1	0.000	Significant
Yes	45.3	54.7	100.0				
No	18.3	81.7	100.0				
total	33.5	66.5	100.0				
Age				2.616	3	0.455	Not significant
20-29	26.8	73.2	100.0				
30-39	34.2	65.8	100.0				
40-49	32.1	67.9	100.0				
50- above	44.4	55.6	100.0				
Total	33.5	66.5	100.0				

Table 1 reveals that 20% of the male respondents self-medicated based on anti-malaria drugs advert heard in the media. Some 43% of the female respondents self-medicated based on advertised anti-malarial drugs. The result shows significant relationship between gender and self-medication for malaria based on advertised anti-malarial drugs in the media, P< .001.

Table 1 also shows that 41 % of those who were married self-medicated. The result shows a significant relationship between marital status and self-medication based on advertised anti-malarial drugs P< .034.

Table 1 further shows that 48% of the respondents who self-medicated had done so based on media advertisements of anti-malarial drugs. Besides, 16% had self-medicated even though it was not as a result of advertisement of anti-malarial drugs. The result shows significant relationship between advertisement on anti-malarial drugs and self- medication, P<000.

It is also evident that 45% of those who believed in the efficacy of advertised anti-malarial drugs self-medicated. In addition, 18% of those who did not believe in the efficacy of the advertised anti-malarial drugs self-medicated. The result shows a significant relationship between belief in the efficacy of advertised anti-malarial drugs and engagement in self-medication P<.000.

Regression:

Table 2 reveals a significant contribution of gender, age, marital status, employment status, level of education, used anti-malaria drugs based on advertisement, belief in the efficacy of anti-malarial drugs advertised and predictions of self-medication for malaria treatment based on anti-malarial drug adverts. (X^2 (df=9, N=188) =28.660, P<.001).

The model, when combined, explains 17.5%(Cox & Snell R-square) to 24.4% (Nageikerke R. square) of variation in respondents' engagement for self-medication for malaria, with 75.8% variance in the engagement of self-medication for malaria treatment as a result of anti-malarial drug adverts.

In the prediction of respondents' engagement in self-medication for malaria as a result of anti-malarial adverts, sex and belief in the efficacy of advertised anti-malarial drugs demonstrated the most potent predictors. In other words, the significant coefficients were sex (Wald= 8.369, df=l, P<.004) with odd ratio of .279; belief in the efficacy of advertised drugs (Wald= 4.393, df=l, P<.036), with an odd ratio of 3.416. This implies that the odd for a male to be engaged in self-medication for anti-malarial treatment as a result of anti-malarial adverts is less than 1, which also means that the male respondents were less likely to engage in self-medication, .279 times compared with their female counterparts.

Those who believe in the efficacy of advertised anti-malarial drugs were 3.416 times more likely to engage in self-medication than those who did not believe in the efficacy of the drugs advertised.

However, marital status: (B=.312, wald=1.370, df=l, P>.05), odd ratio 1.367; employment status (B=.136, wald=.083, df=l, P>.05), odd ratio 1.146; and used anti-malarial drugs based on adverts (B=.763, wald=1.825, df=l, P>.05), odd ratio 2.144 were not potent predictors of self-medication for malaria treatment as a result of anti-malarial drugs adverts. The table further reveals that being educated and being in the age group of 20-29 years and 50 years and

above was not potent predictors for engagement in self-medication for malaria as a result of advertised anti-malarial drugs. Education (B=.101, wald=.005, df=l, P>.05) odd ratio .904; age 20-29(B=.199), wald= .122, df=l, P>.05) odd ratio .819; age 50 & above, (B=.423, wald=.473, df=l, P.-05) odd ratio .655.

Table 2: Logistic Regression for the Independent Variables and Self-Medication for Malaria

Predictors	B	Waldx^2	df	P	Odds Ratio
Sex Male Female Ref.	1.276	8.369	1	0.004	0.279
Employment Status	0.136	0.083	1	0.774	1.146
Employed Not employed Ref.					
Marital Status	0.312	0.370	1	0.543	1.367
Married Not married Ref					
Education	0.101	0.005	1	0.944	0.904
Formal education No formal education Ref					
Age Category					
20-29 30-39 40-49 50 & above Ref.	0.199 0.096 0.423	0.122 0.021 0.473	1 1 1	0.727 0.885 0.492	0.819 1.101 0.655
Used Anti-malaria Drugs Based on Adverts	0.763	1.825	1	0.177	2.144
Yes No Ref.					
Belief in the Efficacy of the Advertised Drugs	1.228	4.393	1	0.036	3.416
Yes No Ref.					

Discussion

The role of socio-demographic factors and advertisement in the construction of self-medication for malaria is immense. This study demonstrates that females are more involved in self-medication because of anti-malarial drugs advertisements that they had seen or heard, because 43% of them self- medicated compared to 20% of the male participants. This is further shown in the logistic regression that the likelihood that males would be involved in self-medication as a result of anti-malarial drugs adverts is less than one. This finding demonstrates the cultural and social interpretation of roles, where the man is seen as the breadwinner or head of the family that should be seen as the stronger vessel. Men are believed to be able to suppress pains or illness. In any situation where they engage in self-medication, people around should not be aware that they do so. In addition women might be more engaged in taking care of the family members and highly involved in domestic activities that they may not have the time to visit the hospital as the case may be. This reveals mixed finding as Mnyika et al. 1995 found that 77% of women reported using home reserve compared to 68% of men in Tanzania, while Brieger et al. (1986) found that self-treatment is high among the

males and singles in Nigeria. The result also shows that there is a relationship between marital status and self-medication, because the simple percentage shows that those who are married engaged more in self-medication than those who were not married. The logistic regression reveals that the married participants would 1.146 times more likely to engage in self-medication than those who were not married. This is likely to be so since it is assumed that the married would have more responsibility at home and probably at work and so may not have time to visit physicians for prescription. This may also be explained in the context of first line treatment, where self-treatment is the first response to illness in some culture as asserted by Williams and Jones (2004) that some kind of home/self-treatment is generally the first response to illness irrespective of access to good health facilities and traditional practitioners. In addition, Nyamongo (2002) reported that many studies found that people tended to begin with home treatment before proceeding to the official sector, when the home treatment remedies seemed to have failed. Similarly, that there is a significant relationship between use of anti-malaria drugs based on advertisement and self-medication. In essence, advertisement on television and radio, especially in Nigeria, has had significant impact on consumers' behaviour. There are all forms of advertisements on anti-malarial drugs, where people are portrayed as being free to use these drugs in the treatment of the onset of malaria in the first three days after which there is no improvement; they are advised to consult "your doctor". The logistic regression shows that those who self-medicated based on anti-malarial drugs advertised are 2.14 times more likely to self-medicate than those who did not use anti-malaria drugs based on advertisements. This is supported by similar study that found a relationship between watching television and the use of over-the-counter (OTC) analgesics (Bulck, Leemans and Lackeman, 2005). Belief in the efficacy of the advertised anti-malarial drugs was a potent predictor of self-medication for malaria as those who believe in the efficacy of the drugs are 3.416 times more likely to engage in self-medication. The persuasive nature, by way of immediate relief from malaria in some of the adverts, could greatly impact on individuals in deciding to engage in self-medication with such advertised drugs.

Marital status and use of anti-malaria drugs based on adverts were altered in terms of significance when other variables are considered. In other words, they seem irrelevant when appropriate control variables were included. Irrespective of whether an individual is single or married, for an individual to engage in self medication, the individual must be exposed to the drugs and have the belief in the efficacy of the drugs exposed to and must have the means to acquire the drugs before self medication practice can begin. On whether an individual would use anti-malaria drugs based on adverts depends not merely by seeing an anti-malaria drugs adverts but rather for an individual to engage in self medication based on advert, the condition must exist that the individual must have the capability to acquire the drugs to be used.

Unlike previous studies that found long waiting periods in hospital (Major et al. 2007), cost (Sandar, 1990; Conelly, 1993; Habeeb & Gearhart 1993), money and time (Saeed 1988), being single, educational level, being in employment and not having social security that increased self-medication for antibiotics (Ilhan, et al., 2009) as predictors of self-medication, this study found sex and belief in the efficacy of advertised drugs as factors that influence self-medication for malaria among the study population. The finding of sex as a factor in self-medication is supported by Carrasco et al. (2010; 2008), who found that self-medication was higher among women than men.

Conclusion

Sex and belief in the efficacy of the advertised anti-malarial drugs were found to be potent predictors of self-medication in this study. There is the need to examine sex beyond biological definition to include gender dimension of patriarchy.

Irrespective of biological make up, individuals should be discouraged from self-medication because not married. This is likely to be so since it is assumed that the married would have more responsibility at home and probably at work and so may not have time to visit physicians for prescription. This may also be explained in the context of first line treatment, where self-treatment is the first response to illness in some culture as asserted by Williams and Jones (2004) that some kind of home/self-treatment is generally the first response to illness irrespective of access to good health facilities and traditional practitioners. In addition, Nyamongo (2002) reported that many studies found that people tended to begin with home treatment before proceeding to the official sector, when the home treatment remedies seemed to have failed. Similarly, that there is a significant relationship between use of anti-malaria drugs based on advertisement and self-medication. In essence, advertisement on television and radio, especially in Nigeria, has had significant impact on consumers' behaviour. There are all forms of advertisements on anti-malarial drugs, where people are portrayed as being free to use these drugs in the treatment of the onset of malaria in the first three days after which there is no improvement; they are advised to consult "your doctor". The logistic regression shows that those who self-medicated based on anti-malarial drugs advertised are 2.14 times more likely to self-medicate than those who did not use anti-malaria drugs based on advertisements. This is supported by similar study that found a relationship between watching television and the use of over-the-counter (OTC) analgesics (Bulck, Leemans and Lackeman, 2005). Belief in the efficacy of the advertised anti-malarial drugs was a potent predictor of self-medication for malaria as those who believe in the efficacy of the drugs are 3.416 times more likely to engage in self-medication. The persuasive nature, by way of immediate relief from malaria in some of the adverts, could greatly impact on individuals in deciding to engage in self-medication with such advertised

Drugs

Marital status and use of anti-malaria drugs based on adverts were altered in terms of significance when other variables are considered. In other words, they seem irrelevant when appropriate control variables were included. Irrespective of whether an individual is single or married, for an individual to engage in self medication, the individual must be exposed to the drugs and have the belief in the efficacy of the drugs exposed to and must have the means to acquire the drugs before self medication practice can begin. On whether an individual would use anti-malaria drugs based on adverts depends not merely by seeing an anti-malaria drugs adverts but rather for an individual to engage in self medication based on advert, the condition must exist that the individual must have the capability to acquire the drugs to be used.

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Conclusion

Sex and belief in the efficacy of the advertised anti-malarial drugs were found to be potent predictors of self-medication in this study. There is the need to examine sex beyond biological definition to include gender dimension of patriarchy. Irrespective of biological make up, individuals should be discouraged from self-medication because cultural dictates stipulate that men are the stronger vessel and so when they are ill, it is expected that

they keep it to themselves and in the process go into self-medication. However, women could also engage in self medication, if they are over burden with either domestic work or work in the public space. There is also the need to regulate the way anti-malarial drugs are being advertised by pharmaceutical industries and distributors of such drugs. This is important as anti-malarial drugs are advertised on the television, radio, bill board, newspapers and even on the internet witaout proper regulation. Access to these drags is easy, hence people could take these drugs without prescription and this has implication for the individuals who engage in self-medication. However, it should be noted that the data that resulted in these findings are self-reported data from the respondents and so should be treated with caution. For this finding to be generalized there is a need for a larger survey.

References

Afolabi, A.O. (2009). Factors influencing the pattern of self-medication in an adult Nigerian population. Annals of African Medicine, 7(3): 120-127.

Afolabi, A.O., Akinmoladun, V.I., Adebose, JJ., Elekwachi, G. (2010). Self-medication profile of dental patients in Ondo State, Nigeria. Niger J Med., 19:96-103.

Agyepong IA, Manderson L. (1994). The diagnosis and management of fever at household level in the Greater Accra Region, Ghana. Acta Tropica 58: 317-30.

Akanbi, O.M., Odaibo, A.B., Afolabi, K.A., Ademowo, O.G. (2005). Effect of self medication with antimalarial drugs on malaria infection in pregnant women in south-western Nigeria. Med Princ

Pract., 14:6-9 (DID: 10.1159/000^f915) Annon. Africa malaria reports Executive summary, http://www.rbm.who.int. 2003.

Arikpo, G.E., Eja, M.E., Enyi-Idoh, K.H. (2010). Self Medication in Rural Africa: The Nigerian Experience. *The Internet Journal of Health,* 11 (1) DOI: 10.5580/7d5

Bello, F.A., Morhason-Bello, I.O., Olayemi, O., Adekunle, A.O. (2011). Patterns and predictors of self-medication amongst antenatal clients in Ibadan, Nigeria. Medical Journal, 52 : 3 : 153-157 DOI: 10.4103/0300-1652.86124

Brieger WR, Ramakrishna J, Adeniyi JD. (1986). Self-treatment in rural Nigeria: a community health education diagnosis. Hygiene 5:41-6

Brinkmann U, Brinkmann A. (1991). Malaria and health in Africa: the present situation and epidemiological trends. Tropical Medicine & Parasitology 42:204-13.

Bulk, J.V.D., Leemans, L., Laekeman, G.M. (2005). Television and Adolescent use of Over-The-Counter analgesic agents. Annals of Pharmacotheray, 39,1,58-62.

Carrasco-Garrido, P., Hernandez-Barrera, V., Andres, A.L.D., Jimenez-Trujillo, L, Jimenez-Garcia, R. (2010). Sex-Differences on self-medication in Spain. Pharmacoepidemiology and drug safety, 19: 1293-1299 DOI: 10.1002/PDS.2034.

Carrasco-Garrido, P., Hernandez-Barrera, V., Jimenez-Garcia, R., Miguel, A.G.D. (2008). Predictive factors of self-medicated drug use among the Spanish adult population. Pharmacoepidemiology and drug safety, 17: 193-199 10.1002/PDS.1455. DOT

Conelly, C.E. (1993). An empirical study of a model of self care in chronic illness. Clin Nurse Spec., 7:247-253. Medline:8221532

Deressa W, Ali A, Enqusellassie F. (2003). Self-treatment of malaria in rural

communities, Butajira, southern Ethiopia. Bulletin of the World Health Organization 81:261-8.

Foster S. (1995). Treatment of malaria outside the formal health services. Journal of Tropical Medicine & Hygiene 98:29-34.

Habeeb, G.E. Jr., Gearhart, J.G. (1993). Common patient symptoms: patterns of self treatment and prevention. J Miss State Med Assoc., 34:179-181. Medline: 8326519.

Hamel, M.J., Odhacha, A., Roberts, J.M., Deming, M.S. (2001). Malaria control in Bungoma District, Kenya: a survey of home treatment of children with fever, bednet use and attendance at antenatal clinics. *Bull World Health Organ,* . 79:1014-1023

Hughes, C.M., McElnay, J.C., Fleming, G.F. (2001). Benefits and risks of self-medication. Drug safety, 24, 14, 1027-1037(11).

Ilahan, M.N., Durukan, E., Ilhan, S.O., Aksakal, F.N., Ozkan, S., Bumin, M.A. (2009). Self-medication with antibiotics: questionnaire survey among primary care centre attendants. : Pharmacoepidemiology and drug safety, 18: 1150-1157. DOT 10.1002/PDS.1829.

Kamat V, Nichter M. (1998). Pharmacies, self-medication and pharmaceutical marketing in Bombay, India. Social Science and Medicine47:779-94.

Lam, C.L., Catarivas, M.G., Munro, C., Lauder, I.J. (1994). Self-medication among Hong Kong Chinese. Soc Sci Med., 39: 1641-1647.

Major, C., Vincze, Z., Mesko, A., et al. (2007). Medicating outside the consulting room. Orv Hetil, 148:291-298. Medline: 17344148.

Malaria Control in Nigeria, Annual Report (2005). National Malaria Control Programme, Federal Ministry of Health, Abuja, Nigeria.

Malaria Knowledge Programme. (2005). Improving the quality of malaria diagnosis and laboratory services in resource-poor countries. MKP Policy Brief. Malaria Knowledge Programme, Liverpool School of Tropical Medicine. Online at: http://www.liv.ac.uk/lstm/rnajorpro gs/malaria/ outputs.htm, accessed 27 February 2009.

Martins, A.P., Miranda, A.D.C., Mendes, Z., Sores, M.A., Ferreira, P., Nogueira, A. (2002). Self-medication in a Portuguese urban population: a prevalence study. Pharmacoepidemiology and drug safety, 11:409-414 DOT: 10.1002/PDS.711

McCombie S. (1996). Treatment seeking for malaria: a review of recent research. Social Science & Medicine43:933-45.

McCombie S. (2002). Self-treatment for malaria: the evidence and methodological issues. Health Policy & Planningl 7: 333-44.

McCombie, S.C. (1996). Treatment seeking for malaria: a review of recent research *Soc Sri Med.,* 43:933-945

Mnyinka, K. S., Killewo, J. Z. J. and Kabalimu T K- (1995). Self-medication with antimalarial drug in Dares Salaam, Tanzania. Tropical and Geographical Medicine, 47: 32-34

Montastruc, J.L., Bagheri, H., Geraud, T., Lapeyre-Mestre, M. (1997). Pharmacovigilance of self-medication. Therapie, 52: 105-10

Muller O, Razum O, Traore C, Kouyate B. (2004). Community effectiveness of chloroquine and traditional remedies in the treatment of young children with falciparum malaria in rural Burkina Faso. Malaria JournaB: 36.

Muller, O., Traore, C., Becher, H., Kouyate, B. (2003). Malaria morbidity, treatment-seeking behaviour, and mortality in a cohort of young children in rural Burkina Faso. Tropical Medicine & International Health, 8 (4) 290-296.

Nyamongo, I. K. (2002). Healthcare switching behaviour of malaria patients in a Kenyan rural community. Soc Sci Med 54: 377-86.Okonko, *I.O., Ijandipe, I. A., llusanya, O.A.,* Donbraye-Emmanuel, O.B., Ejembi, J., Udeze, A.O. *etal.(2009).* Incidence of urinary tract infection (UTI) among pregnant women in Ibadan, South-Western Nigeria. African Journal of Biotechnology, 8:664-6657.

Olayemi, O.J., Olayinka, B.O. and Musa, A.I. (2010). Evaluation of Antibiotic Self-Medication Pattern Amongst Undergraduate Students of Ahmadu

Bello University (Main Campus), Zaria. Research Journal of Applied Sciences Engineering and Technology, 2(1): 35-38.

Omolase, C.O., Adeleke, O.E., Afolabi, A.O., Afolabi, O.T. (2007). Self-medication amongst general outpatients in a Nigerian community hospital. Annals of Ibadan Postgraduate Medicine, 5:2

Rohit, K.V., Lahit, M. & Manisha, P. (2010). Evaluation of self medication among professional students in North India. Proper statutory drug control must be implemented. Asian Journal of Pharmaceutical and Clinical Research, Vol. 3 pp 60-63.

Ruebush, T.K., Kern, M.K., Campbell, C.C., and Olo, A.J. (1995). Self-treatment of malaria in a rural area of western Kenya. Bull World Health Organ., 73 (2): 229-236.

Saeed, A. (1988). Self medication among primary care patients in Faradak clinic in Riyadh. Soc Sci. Med., 27:119. Medline: 3051416.

Salako, L.A. (2002). National Malaria day: Malaria awareness walk 2002, Abuja, Nigeria. Text of an address.

Sandier, G. (1990). South Africa: self-medication. Lancet, 335:1149. Medline: 1971877.

Saradamma RD, Higginbotham N, Nichter M. (2000). Social factors influencing the acquisition of antibiotics without prescription in Kerala State, south India. Social Science & Medicine5O: 891-903.

Verhoef, H. Hodgins E. and Eggette,T.A. (1999) Antimalarial drug use among preschool children in an area of seasonal malarial transmission in Kenya. American Journal Tropical Medicine and Hygiene 61:770775

WHO (2008). Self-medication among university students of Islamabad, Pakistan. A preliminary study

Williams, H. A., and C.O. Jones (2004). A critical review of behavioural issues related to malaria control in sub-Saharan Africa: What contributions have social scientists made? Soc Sci Med 59.501-23

World Health Organization (WHO) (2000). WHO Expert Committee on Malaria, Twentieth Report. WHO Technical Report Series 892. Geneva: World Health Organization