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Adherence to malaria treatment during pregnancy: Does availability and utilization of medical facilities translate to compliance?

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Abstract

Malaria is a major health issue in sub-Saharan Africa with pregnant women and children at greater risk of exposure to the disease than other population cohorts. Studies on malaria related maternal mortality in Nigeria have focused largely on preventive behaviour and healthcare providers' knowledge of treatment regimen. Negligible attention has been paid to adherence of care seekers to treatment in relevant contexts. Employing the cross-sectional survey method, 927 pregnant women in Ondo state, Southwest Nigeria were selected through a multistage sampling technique. In addition, 12 In-depth Interviews (IDIs) were conducted among relevant stakeholders. Results showed that adherence to malaria treatment among pregnant women was influenced by social, residential and demographic factors in both rural and urban areas of the state. Expectant mothers without formal education reported higher level of adherence to medication ($r=-631$ $p< .034$) than those of higher educational status, indicating that the level of education does not necessarily influence adherence to medication. Policy and national programmes aimed at maternal mortality reduction should recognise the important role that culture plays in people's perception and behaviour and by implication aetiology of diseases. Without a feasible, people-oriented and context-specific intervention, malaria induced maternal morbidity and mortality will remain high not only in Ondo State but Nigeria in general.

Keywords: aetiology of diseases, preventive behaviour, maternal mortality, context-specific intervention.

Background

Malaria is a major health issue in many parts of the world and accounts for about 400 million cases and one million deaths annually (Ashley, McGready, Proux & Nosten, 2006; Molua & Akenji 2009). This makes it an epidemiological threat to humanity particularly in sub-Saharan Africa. Earlier Studies had described malaria as a major obstacle to social and economic development in Africa (Keiser, Utzinger, Caldas De Castro, Smith, Tanner, & Singer, 2004; Agwu, Amadi, Iwuala, Bertram, Nwoke & Mba 2007; Osondu & Jerome, 2009). The World Health Organisation (2006) estimated that the economic losses resulting from malaria are more than US$ 12 billion annually including the cost of prevention, diagnosis and treatment among others. Indeed, contrary to speculations that malaria is exclusive to Africa, studies show that it is

prevalent in over 100 tropical countries including those in Central and South America, Asia, Middle East and Oceania (Ojo, 2005; Anumudu, Adepoju, Adediran Adeoye, Kassim Oyewole & Nwuba ,2006) .

To be sure, the risk of malaria related mortality is higher in less-developed countries where women's lifetime risk of dying from malaria-related morbidity is 1 in 90 as against 1 in 3,600 in more-developed nations (PRB 2011). The Nigerian Demographic and Health Survey (2008) reveals that malaria contributed to about 11 percent of maternal mortality, 25 percent of infant deaths, and 30 percent of under-five mortality statistics in Nigeria (NPC 2009). Apart from the direct health impact of the disease, it also places severe social and economic burden on communities and the country at large (NPC 2009). The high rate of death due to malaria had placed Nigeria third and eleventh, respectively, in infant and maternal mortality ratings in West Africa (World Health Organisation 2010). Hence, the disease has over time been regarded as a major health problem among all segments of the society (Asante and Asanso-Okyere 2003, Molua & Akenji, 2009). The import of these statistics is unmistakable and indicates that despite attempts at malaria prevention and control by governments and agencies the country has made little and slow progress.

Programmes such as adoption of Insecticide Treated Nets (ITNs), Intermittent Preventive Treatments (IPTs), and Case Management have been adopted to eradicate malaria in Nigeria (Adeneye, Jegede, Mafe and Nwokocha 2007) without the disease showing signs of getting abated in the nearest future. This resilient posture has been attributed to both behavioural and non behavioural factors. Behavioural variables relate to some cultural practices which promote breeding and exposure to mosquitoes. In addition, is the failure of potentially vulnerable populations to promptly and appropriately use technologies proven to be effective in preventive treatment and control of the disease (Adeneye *et al.* 2007). The non-behavioural factors include those related to geographical or ecological peculiarities that make the eradication of mosquitoes a big challenge. These obstacles have been broadly disaggregated into socio-cultural and environmental aspects of malaria causation (Federal Ministry of Health, 2005).

For various reasons ranging from poverty, ignorance, to male-domination, pregnant women and children are more vulnerable to malaria and also experience greater consequences than other groups (Nwokocha 2012). In Nigeria, malaria treatment among this cohort of women is influenced by multiple socio-cultural, economic, environmental and individual factors

(Nwokocha 2007). Thus, pregnant women's disposition to the thematic treatment is characterised by complex interactions among some of these variables. Utilizing ethnographic and demographic techniques, this study focuses on understanding the treatment seeking behaviour of pregnant women in Ondo state, which until very recently was classified among areas of high maternal mortality prevalence in Nigeria.

The government of Ondo State has demonstrated political will in transforming its health sector in line with global practices through provision of medical facilities which are also available to the people at no cost (Adedeji 2009). Although this gesture solves the problem of inaccessibility particularly among the teeming poor, it does not at the same time deal with the issue of use which is embedded in attitude and behaviour. Moreover, using a facility does not also necessarily translate to adhering to its advice. Examining these contending issues and concomitant complexities enable understanding on the divergence between availability of facilities and optimal use.

Theoretical/Conceptual Framework

The study is anchored on the Health Belief Model (HBM) by Rosenstock (1974) and Becker *et al.* (1978) which explains health-related behaviours by focusing on the attitude and beliefs of individuals. The model is based on the view that a person will take a health-related action such as eating healthy food particularly during pregnancy, using preventive measures including insecticide treated nets, accessing antenatal services regularly and adhering to treatment prescription if it is perceived that: a negative health condition can be avoided; by taking a recommended action, s/he will avoid a negative condition; and that recommended health action could be successfully undertaken (Rosenstock, Strecher and Becker 1988). In addition, Lawal (2012) observed that HBM focuses on the relationship between perceived threat of a disease and the likelihood of individuals adopting health promoting behaviour to avert perceived imminent negative condition.

These perceptions are however modified by an individual's personal characteristics, social settings, taste, fashion and the costs necessary for an action to be undertaken (Lawal, 2012). Equally important as a modifying factor are previous life experiences particularly as they relate to past pregnancies and maternal outcomes. The model supposes that pregnant women are more likely to adhere to malaria treatment if it is perceived that not so doing will result in negative pregnancy outcomes including miscarriage, preterm delivery, anaemia and deaths

(Nwokocha 2012). Indeed, previous pregnancy experiences and/or those of other close relatives, neighbours and colleagues are likely drivers of adequate health seeking. Also, the individuals' present health condition in pregnancy, for example, anaemia, can also influence their susceptibility, which in-turn, can affect their health-seeking behaviour during pregnancy.

The model also relates perception of severity as a critical factor in seeking care and in this case adhering to the treatment regimen prescribed by healthcare providers. The assumption embedded in this construct is that pregnant women who do not perceive malaria as a serious health condition would more likely treat the condition with levity including not following medical specifications that are sensitive to their conditions. An entirely different approach, such as regular check-ups, taking medications as prescribed among others, will be adopted by others who believe that pregnancy-related malaria could lead to death.

The HBM recognizes that perceived benefits of adequate treatment of malaria in pregnancy influences the patterns and processes of health seeking. Thus, due to the close knit relationship that exists in some settings particularly in rural communities, the views of individual pregnant women are influenced by the expectations of others, which most likely derive from cultural beliefs and practices and professional advice as the case may be. Hence, decisions related to health seeking among these women may be influenced by several individuals including husbands, parents, mothers-in-law, peers and community counsellors. This is similar to Weber's *means-ends rationality* which focuses on the expectations of the actor that ordinarily take into account other people in the environment as a condition for attaining rationally calculated ends (Ritzer 2008).

Perceived barriers relate to feelings among individual prospective health-seekers on the likely obstacles to undertaking an action conceived as necessary in alleviating a negative health condition; in this case, adherence to malaria medication as prescribed. Thus, even when other HBM constructs such as perceived vulnerability, severity and benefits have been considered and act as motivators for action, perception of barriers may discourage such action from being taken. The impediments may range from illiteracy and inability to fully understand prescriptions and contraindications, fear of side effects including drowsiness and nausea and perception of non-vulnerability to malaria due to preventive measures adopted by these women including use of Insecticide Treated Nets, environmental sanitation among others. In what follows we present the conceptual framework which synthesizes relevant explanatory variables.

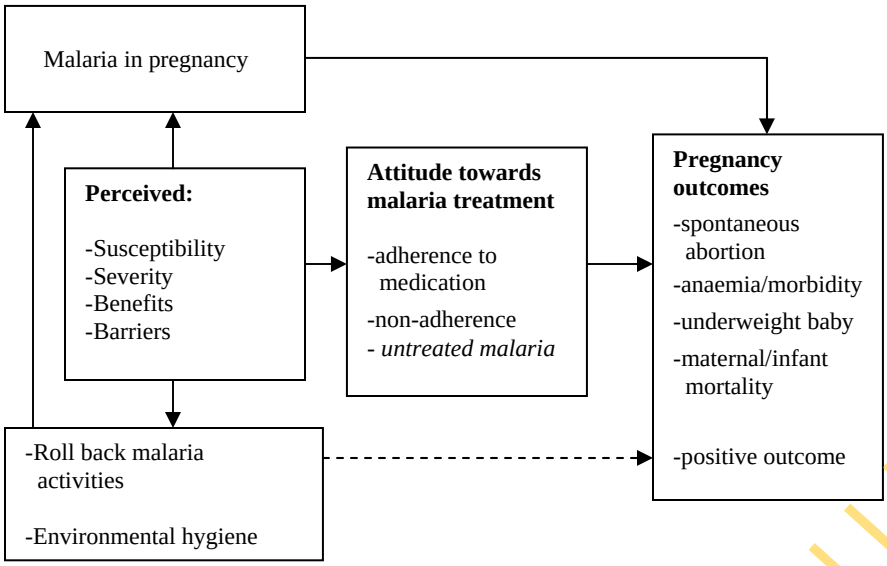

Figure 1: Conceptual Framework
Source: Nwokocha, 2014

The framework shows that a prospective actor's perception of vulnerability, likely severity of malaria during pregnancy, the potential benefits of taking preventive or curative action and the barriers malaria imposes on the health of mothers and their babies will drive health-seeking behaviour. Such perception will likely motivate recourse to Roll Back Malaria activities and environmental hygiene, as well as adherence to medication when the disease occurs. In the latter case, the probability of experiencing positive pregnancy outcome will be high assuming there are no other medical conditions that impinge on maternal health status of these women. Figure 1 also indicates that where pregnant women neither adhere to malaria treatment nor undertake treatment, negative pregnancy outcomes ranging from spontaneous abortion, anaemia and related morbidity, delivery of underweight babies to maternal/infant mortality are common occurrences.

Materials and Methods

The study focused on pregnant women who sought care for malaria treatment in both rural and urban areas of Ondo state. Both qualitative and quantitative methods of data collection were utilized. The specific location in which the study was undertaken were selected randomly and included Akure South, Okitipupa, Ile Oluji\Oke-Igbo, Ose, Odigbo, Ese-ode, Ilaje, Owo, Ondo West and Akoko North East Local Government Areas (LGAs). The respondents were selected from 172 formal and 61 informal Care centres across the listed LGAs. Quantitative data

were generated through a structured questionnaire administered on 1091 purposively selected respondents. However, only 927 copies of the questionnaire were found valid for analysis after a detailed data screening process. This represents a return rate of 85 percent which was considered adequate for analysis. To complement the quantitative data, 11 In-depth interviews (IDIs) were conducted with 3 Medical Doctors, 2 Nurses/Midwives, 2 Religious Leaders, 2 Community Leaders and 2 T/FBAs,

Research Assistants were recruited and trained for one week on both English and Yoruba versions of the research instruments including the questionnaire schedule and IDI Guide to a ensure common understanding and high quality data. Data gathering exercise spanned for a period of eight weeks. Quantitative data were analyzed at univariate, bivariate and multivariate levels using the Statistical Package for the Social Sciences; qualitative data were subjected to manual content analysis and ethnographic summaries. Ethical approval was sought and obtained from the Ondo State ministry of Health and the University of Ibadan Ethical Review Board. We ensured that confidentiality of study subjects was guaranteed to the extent that none of the information given could be traced to any of them. In addition, their consent was both informed and voluntary considering that the subject matter was fully explained prior to their participation. Also, the questions were worded in a way to prevent research subjects from suffering any emotionally or psychological harm due to their participation in the study.

Results and Discussion

Results show that the changing role of women in Ondo State like other settlements in Nigeria has necessitated their involvement in multiple activities both in urban and rural Ondo State and had affected their health seeking behaviour even in pregnancy. This study reveals that women in both urban and rural areas of the state had at one time or the other not followed prescriptions related to malaria treatment strictly. Table 1 presents data on some background characteristics including place of residence, educational status, and occupation among others.

Table 1: Respondents' adherence to medication by selected background variables (N=927)

	Number of times medications were missed in 72 hrs during

	the most recent malaria treatment						
Variables/Categories	**None**	**1**	**2**	**3**	**4**	**5**	**Total**
Residential Pattern	**%**	**%**	**%**	**%**	**%**	**%**	**%**
Rural	33.3	5.5	2.8	2.1	0.4	0.6	44.8
Urban	39.6	7.5	4.8	1.6	0.9	0.7	55.2
Total	**72.9**	**13.0**	**7.6**	**3.7**	**1.3**	**1.3**	**100**
Education							
No formal Edu.	0.3	0.5	0.2	-	-	-	1.0
Primary	13.4	1.9	1.6	0.5	0.3	0.2	17.9
Secondary	35.5	6.9	4.3	1.8	0.3	0.3	49.1
Tertiary	23.6	3.8	2.1	1.3	0.5	0.8	32.1
Total	**72.8**	**13.1**	**8.1**	**3.5**	**1.1**	**1.3**	**100**
Occupation							
Unemployed	9.6	2.1	1.6	0.7	0.4	0.5	14.9
Artisan	10.0	2.3	0.5	0.5	0.5	-	13.9
Trading	30.4	4.4	3.6	1.6	-	0.7	40.7
Farming	4.8	2.0	0.7	0.5	-	-	8.0
Civil Service	16.7	2.7	1.8	0.7	0.5	-	22.4
Total	**71.5**	**13.5**	**8.2**	**4.1**	**1.4**	**1.2**	**100**
Marital Status							
Single	5.3	0.9	0.6	0.2	0.2	-	7.1
Married	59.4	10.4	6.2	3.2	0.9	1.1	81.1
Cohabitation	5.6	0.9	0.5	0.3	-	0.3	7.5
Separated	1.4	0.3	0.2	-	0.3	-	2.1
Divorced	0.3	0.3	-	0.2	-	-	0.8
Widowed	0.9	0.2	0.3	-	-	-	1.4
Total	**72.9**	**13.0**	**7.6**	**3.7**	**1.3**	**1.3**	**100**
Parity							
0	12.6	1.7	1.9	0.2	0.3	0.3	17.1
1	15.2	3.1	1.0	1.0	0.7	0.3	21.5
2	21.2	2.6	1.4	0.7	-	0.2	26.0
3	12.8	2.8	0.9	0.9	0.2	0.2	17.7
4	8.7	0.9	1.4	0.2	0.2	0.2	11.5
5	3.8	1.2	0.9	-	0.2	-	6.1
Total	**74.3**	**12.4**	**7.5**	**3.0**	**1.6**	**1.2**	**100**

The table shows that even though more urban respondents reported not missing their medication (39.6%) and missing it only once (7.5%), rural respondents did better at other stages of non-adherence. For instance, the table reveals that while respondents in urban centres that missed their medications between 2 and 3 times constituted 6.4 percent of the total, only 4.9 percent of their rural counterparts missed these medications for those numbers of times. Again, rural dwellers did slightly better than urban respondents in terms of missing medication for up to 4-5 times classified as low level of adherence. Clearly, respondents in urban centres were found to have missed more of their medications as prescribed than those in rural areas of the state. This

was perhaps a reflection of multiple roles and challenging economic activities that among most urban dwellers in Nigeria (Nwokocha 2013). This finding corroborates the submission of Nagdeve and Bharati (2003) in a study of Urban-rural differentials in maternal and child health in Andhra Pradesh, India that utilisation of antenatal care vis-à-vis compliance to medical instructions were higher among women in rural areas than their urban counterparts.

There is notable difference in the level of adherence to medication particularly between respondents with Secondary education and their counterparts with tertiary education. In fact, Table 1 indicates that while about 36 percent of those with secondary school education did not miss their medication at any time, only approximately 24 percent of respondents with higher education did not miss their medication. In addition, the percentage of respondents that missed their prescribed malaria medications for up to 4 to 5 times were highest among respondents of tertiary education. This finding is at variance with the observation of Spath (2001) that education improves compliance with treatment regimen and also places patients in a better position to self-manage their conditions.

Respondents in other marital status categories other than those married reported higher level of non adherence to drug administration. A closer examination of adherence between married women and their widowed and divorced counterparts suggests that divorced or widowed respondents may have been confronted with higher responsibilities which affect their responses to health seeking behaviour. In line with this finding, it is possible to state that a linkage between perception of severity and choice of care for malaria exits among pregnant women. On parity, defined as the number of children these women already have, the findings show that women across different levels of parity reported various degrees of non-adherence to medication related to treatment of malaria. Table 1 shows that as parity increased from 0 to 2, a higher level of non-adherence was recorded while the same got reduced for women of parity 3-5. Variations in either adherence or none could be linked to factors such as personal experiences among these women, social support system and networks and the level of awareness related to effects of drug abuse particularly during pregnancy when exercising caution is most essential (Nwokocha 2007).

Respondents' level of adherence to medication and their demographic variables are presented in Table 2. In doing this, the number of times when medications were missed were regrouped as follow; 0-1 number-of-times medication was not taken is represented as high level of adherence, missing medication for 2-3 times signify average level of adherence, and 4-5 times

represents low level of adherence to malaria medication. The table reveals that respondents age 40 years and above reported the highest level of adherence given that everybody in the group (1.7%) belong to the high level category. The second best was the age group 35-39 years with all the respondents stating high or average. The least in these categories were those in age groups 25-29 and 30-34 years.

Table 2: Pregnant women's adherence to malaria medication (N=927

Level of Adherence to medication				
Variables/Categories	**High**	**Average**	**Low**	**Total**
Age				
15-19	10.1	1.7	0.5	12.2
20-24	11.6	1.8	-	13.4
25-29	36.6	4.2	1.4	42.2
30-34	21.2	3.2	0.8	25.2
35-39	4.7	0.8	-	5.4
40+	1.7	-	-	1.7
Total	**85.8**	**11.6**	**2.6**	**100**
Religion				
Christianity	68.7	8.6	2.4	79.7
Islam	15.6	2.6	0.2	18.3
Traditional	1.7	0.3	-	2.0
Total	**85.9**	**11.5**	**2.6**	**100**
Residential Pattern				
Rural	38.6	5.1	1.0	44.8
Urban	47.3	6.4	1.5	55.2
Total	**85.9**	**11.5**	**2.5**	**100**
Education				
No formal Educ	0.8	0.2	-	1.0
Primary	15.3	2.1	0.5	17.9
Junior Sec	1.6	0.2	-	1.8
Senior Sec	40.7	5.9	0.6	47.2
Higher	27.6	3.5	1.1	32.2
Total	**86**	**11.8**	**2.2**	**100**
Occupation				
Unemployed	11.7	2.3	0.9	14.9
Artisan	12.3	1.1	0.5	13.9
Trading	34.8	5.3	0.5	40.7
Farming	6.7	1.2	-	8.0
Civil Service	19.5	2.5	0.5	22.6
Total	**85.1**	**12.4**	**2.5**	**100**
Marital Status				
Single	6.3	0.8	0.2	7.2
Married	69.7	9.5	1.8	81.0
Cohabitation	6.5	0.8	0.3	7.5
Separated	1.7	0.2	0.3	2.1
Divorced	0.6	0.2	-	0.8
Widowed	1.1	0.3	-	1.4
Total	**85.8**	**11.6**	**2.6**	**100**

Slightly more married pregnant women reported higher level of adherence than their counterparts who are either single, divorced or widowed. Ordinarily, married respondents would

have reported far higher level of adherence due to the usual supported offered by husbands. Ushie (2013) in a study on adherence among HIV and Tuberculosis patients in Cross River, Nigeria found that patients in relationships who received at least one form of support or the other from family members reported higher level of adherence compared to those who did not (see also Isiugo-Abanihe 2003). Relationships between the respondents' adherence to medication and covariates were examined with Ordinal Regression data presented in Table 3.

Table 3: Ordinal Regression on predictors of adherence to treatment

Selected covariates	Estimated coefficient	Significance
Age		
15-19	-1.956	.000
20-24	-1.089	.000
25-29	.205	.452
30-34	.981	.000
35+	1.421	.000
Marital Status		
Single	-2.679	.000
Married	-.658	.026
Widowed	.745	.012
Divorced	.761	.010
Separated	.924	.002
Educational Level		
No formal education	-4.536	.001
Primary	-.873	.005
Secondary	.631	.034
Occupation		
Civil service	-1.154	.001
Farming	-.816	.007
Trading	.291	.322
Unemployed	.715	.015

Table 3 shows that there is a significant relationship between age of the respondents and their adherence level. Apart from respondents in age group 25-29 other age categories reported very high adherence level. Respondents who are single along with those in the separated category had higher odds of being in the higher adherence category (-2.679) and (.924) respectively than those who are either married (-.658) or widowed (.745). Educational status of respondents indicates an inverse relationship with the level of adherence. Thus, the lower respondents' level of education the higher their adherence level. Respondents with primary and no formal education reported a higher coefficient (r = -.873, -4.536) than others in higher educational categories. Although this was not to be expected, literate respondents who erroneously perceive themselves as sufficiently knowledgeable about medication may attempt

using alternatives in the event of perceived non-efficacy of a prescribed therapy. Some of such people may therefore end up not adhering to professional specifications.

Civil servants adhered to medication (P.001) than their counterparts in other occupational categories. Although it could be argued that this category of respondents have more access to, and use formal orthodox facilities more than other groups, as part of fringe benefits enjoyed in most work places in Nigeria, that does not however explain their adherence or non-adherence to medical prescriptions.

Factors Responsible for non-compliance with medications

Factors hindering pregnant women from complying with drug prescriptions are examined in Figure 2 taking into account rural and urban differences.

Respondents Reasons for non Compliance with Medications

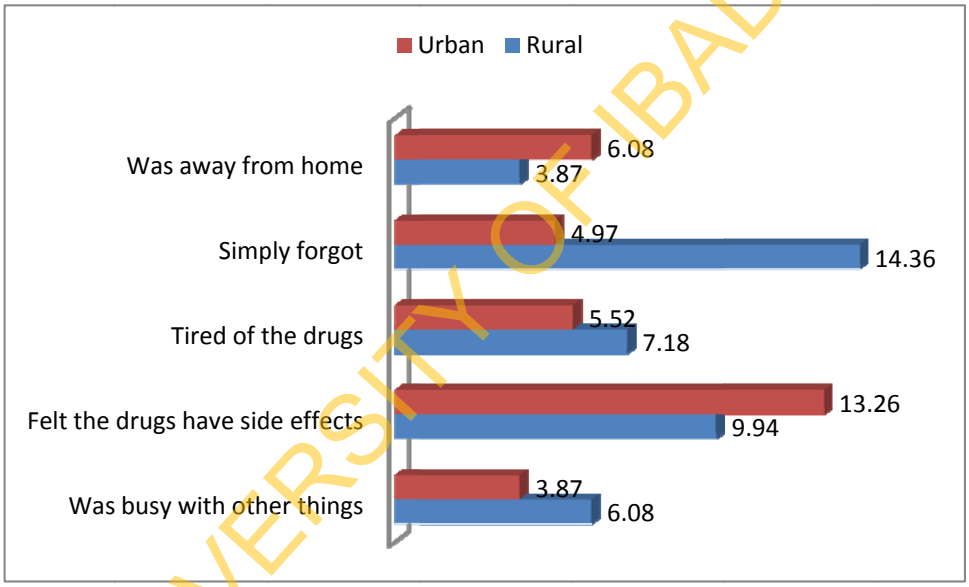

Figure 2: Respondents' reasons for non-compliance

The majority of respondents (14.36%) in rural areas reported forgetfulness as the main reason for not adhering to their medications as directed by their healthcare providers. Such state of mind could be linked to factors such as involvement in several activities that take a toll on these women. This view agrees with the observation of Fawole (2009) that women in rural Nigeria take up non-agriculture based income generating activities such as sales and services including

items and body products, working as casual labourers at building sites, tailoring firms, hair dressing salon and operators of alcoholic bars. These economic activities with other survival strategies coupled with poor conditions of living, have over the years, prevented them from taking adequate care of their health. The factor mostly highlighted by urban respondents (13.26%) was the likely side effects of these drugs. Several reasons could account for why individuals react to drugs differently. In situations of negative reaction, patients are expected to report to their healthcare providers, however findings show that this is not so among several people in Ondo State. One of the IDI respondents gave an insight thus:

> Our women here rarely complain of side effects of drugs; instead many of them will just stop taking the drugs and even stay at home. Before you know what is happening the fever relapses. Most times they would not reveal this to medical personnel until they are probed properly. (Female Medical Doctor, at Akure).

Another IDI respondent buttressed the above observation that:

> In actual fact, some of them react to some of the drugs, but only very few complain about this in the course of treatment for one to have an idea of what to do. Most times, they hardly complete their drug-courses which is an issue when it comes to malaria treatment among these women. What we now do is to introduce some drugs that can reduce likely reactions from incomplete drug administration. (Male KII, Medical Doctor, at Ile Oluji/Oke Igbo).

Implicit in these statements is the issue of non-completion of regimen as prescribed. Another challenge identified by the respondents (7.18% rural, 5.52% urban) was being tired of the drugs. As Barnes and Abdulla (2005) observed, one major reason for non-completion of prescribed dosage is the false sense of security that accompanies resolution of symptoms, which usually occurs within 24 to 48 hours. Whatever the reasons may be, the central issue is that the women that did not follow the treatment regimen as prescribed by healthcare providers were involved in drug abuse whether mild or severe. To be sure, significant reduction in malaria related maternal mortality in Nigeria will translate to a major decrease in maternal deaths generally given that malaria contributes substantially to these statistics (Nwokocha 2012; Adeneye *et al.* 2007; Nwokocha 2007). Table 4 shows that slightly more than 77% of the respondents experienced malaria in their past pregnancies.

Table 4: Respondents' adherence to medical appointments

Respondents' responses to Medical Experience related questions	No of Cases	Have ever missed medical appointment in recent times (%)	Have never missed medical appointments in recent times(%)
Ever had malaria during last pregnancy			
Yes	575	19.5	57.7
No	170	6.8	16.0
Total	**745**	**26.3**	**73.7**
Description of the malaria experience			

About 58% of women who have experienced malaria in their past pregnancies never missed their medical appointments in recent times. Indeed, the negative experiences of respondents that had ever missed their medications as prescribed could have necessitated positive change in behaviour towards adherence. This behaviour modification is likely hinged on perceived re-susceptibility and severity which these respondents tried to forestall. Findings also reveal other non-direct issues that influence adherence to malaria medication among pregnant women in the area such as recourse to other sources of treatment. An IDI respondent highlighted:

> This is my seventeenth years as a nurse in Ondo State Ministry of Health. My experience is that irrespective of the quality of treatment and medical counsel given to pregnant women, most of them at the same time patronise TBAs and FBAs for all manner of diseases (Female, Okitipupa LGA).

Several issues arise from the views of the above medical personnel. For instance patronizing unorthodox facilities while also seeking treatment from hospitals is not only a contradiction to the principle of adherence but also an indication of lack of confidence in either the orthodox or traditional or faith based healthcare delivery systems. Although Nwokocha (2008) had advocated the integration of traditional medicine with introduced healthcare delivery systems (western component), such collaboration was suggested to the extent that one system extends the other, not necessarily a simultaneous fusion of treatments that would inevitably engender a therapeutic clash.

> The necessary social interaction that should, often, take place between orthodox medical officers and their patients does not, due to heavy workload on the part of these officers. So there exists a wide relational gap between us (orthodox health providers) and our patients. Most TBAs, FBAs and patent medicine Vendors however have more time to interact with patients thereby bridging that gap. That explains why most of these pregnant women still patronise them. (Male Doctor, IDI - Owo LGA).

Such gap is particularly dangerous in rural communities where patients often lack credible sources of health information. It is therefore essential for medical officers in these locations to make extra efforts toward health education of the people as a necessary step at ensuring predisposition to treatment of ailments and adherence to prescriptions.

Conclusion and Recommendations

This study identified socio-demographic and communal factors affecting care-seeking for malaria particularly during pregnancy to establish that maternal mortality rate in Ondo State will reduce significantly with strict adherence to treatment regimen prescribed by appropriate facilities. This position is largely valid in view of the renaissance that is taking place in the health sector wherein medical facilities are available to residents of the state particularly pregnant women. Thus, ordinarily, apart from issues related to non-adherence to medication which is antithetical to healthcare provisioning, the state should rank high among areas with enviable maternal and general health outcomes statistics not only in Nigeria but sub-Saharan Africa.

Although socio-cultural beliefs and practices and demographic variables are major influencers of perception and behaviour of individuals in a given context, including characterization of disease aetiology, exposure to morbid conditions, trends and patterns of prevention and pathways to treatment, this research revealed that social statuses such as educational qualification and place of residence among others do not necessarily affect an individual's adherence behaviour. It therefore suggests that other underlying factors are critical to achieving high level of medical compliance which impact health outcomes positively.

Frustrations arising from drug administration and use are experienced by both health personnel and patients respectively. Non-reporting of a drug reactive situation to appropriate health authorities for further necessary action is the main cause of relapse, which for the most part is occasioned by drug abuse in form of patient's personal reconstruction of regimen based on instinct usually embedded in the *trial-and-error* principle or pedestrian knowledge of what worked in some previous situations or hearsay. Such situation is certainly more dangerous in pregnancy when caution is meant to be clearly emphasized in women's physical activities, food intake and drug use due to their delicate nature within the maternal period, which terminates at the end of the postnatal period.

We also note with persuasion that a large majority of poor women, both in urban and rural settings, are involved in laborious socioeconomic activities and are hardly able to deal appropriately with personal and household activities. The immediate consequence is that even when they are aware of the dangers in abusing medication, most of them are engrossed in these activities to the extent of not adhering strictly to prescription. To be sure, feminization of poverty holds grave implications for behaviour of women even in the most sensitive situations and should be discouraged if they must realise their inherent potentials in society. Hence, for healthcare provisioning to align with the vision of improved health among the people, looking beyond infrastructures to understanding the factors that discourage adequate exposure and use of these facilities and their products is central to achieving health not only for pregnant women but the entire citizenry.

The next step in exercising its Political-Will is for the Ondo State government to undertake a Needs-Assessment among the people of the state as a way of understanding the peculiarities of its communities and how specific norms, values, beliefs and practices impact behaviour at locations. With that done, informed advocacy and sensitization for attitudinal and behavioural change towards positive health action would most likely succeed. That way, the state will be carving out a niche for itself as an enclave of healthy people characterized by vastly improved health statistics which have remained elusive in Nigeria. Our observation is that a careful consideration and application of such framework will not only make the state a model of healthcare transformation but also a reference that will represent the threshold for attainment of the Millennium Development Goals post 2015. Although it is certain that most countries in sub-Saharan Africa particularly Nigeria would not achieve these MDG-targets by the thematic year, however, just like Kerala State in India, Ondo State could also liberate itself from these uncertainties and thus measure up with other progressives outside Nigeria sooner than imagined.

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