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The Effect of Economic Factors on Household Demand for Malarial Drugs in Ife Central Local Government Area, Osun State, Nigeria.

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ABSTRACT
The study aimed to establish the extent to which the demand for anti-malaria drugs by households was subject to economic considerations. The Marshallian demand function was adopted as a framework to examine the demand for anti-malaria drug in Ife Central Local Government Area. The study variables included price of malarial drug, income of the respondents, availability of malarial drug, and advertisement of malarial drug among others. Primary data were collected from a sample of four hundred respondents in the area via multi-stage random sampling procedure and 382 copies were returned, which approximately represented 96%. The data generated were analysed using multiple linear regression model. The study showed that the t-value of income of the respondent was insignificant with 0.726, its P>0.05 and the coefficient value was inelastic with 0.011; the price of malarial drug was significant with t-value to be 4.5, P<0.05, was however not rightly signed and inelastic with coefficient 0.015. It was discovered from the findings that malarial drugs were necessity goods as there was positive relationship between the price of malarial drugs and the quantity of malarial drugs demanded for. Besides, the income of the respondent was found not to be statistically significant. Thus, the malarial drug was not a normal good, but a special commodity which responded to the direction of occurrence of illness of malaria.
"Economics", "Demand", "Malaria", "Drugs"

I. INTRODUCTION

Malaria is one of the most destructive diseases in the world (Emmy, Hinke and Ajay, 2014). According to the World Health Organisation world malaria report, there was a drastic increase in both malaria cases and malaria death in the year 2020. About two-thirds of further deaths by malaria in the year 2020 compared to 2019 were connected to disruption of pandemic (Covid '19) in the delivery and arrangement of malaria prevention, provision of diagnosis and treatment (WHO, 2021). It was estimated in the report that 241 million malaria cases and 627,000 malaria death occurred globally in the year 2020. This indicates approximately 14 million more cases in the year 2020 relative to 2019, and deaths by 69,000 more.

In addition, malaria is one of the major impediments to development of Africa continent.Approximately ninety five percent of African population live in zones that are exposed to the risk of both endemic and epidemic malaria.In actual fact, 90%of the cases emanate from the sub-Saharan African; while about 75% of 650 million reside in malaria prevalent areas (WHO, 2013). In endemic countries, virtually all the deaths are among children younger than five years of age (Parang, 2020). Besides, other high-risk groups consist of pregnant women, non-immune travellers, refugees, and some displaced people of all ages living in areas of unstable malaria transmission (Jammie, Shannon, Christopher and Paul (2011). In highly endemic countries, malaria poses a ravage to pregnant women and the unborn babies. During pregnancy, this disease causes maternal anaemia, miscarriage, low birth-weight and it is one of the major causes of neonatal deaths (Julianna, 2021). Malaria is mostly prevalent among the poor (Sergi, Carlos and Rose, 2019).

Since malaria is a disease of poverty and predominantly rampant in the poorest countries of the world; driving malaria elimination across the globe will enhance sustainable development goals. It will further protect more people from the deadly disease, which is the aim of WHO in ensuring good health and wellbeing for all by the year 2030. However, this is a far-reaching project, and its effect

has not really been felt among the poor who could not afford the cost of treating malaria. In only 2016, the out-of-pocket expenses incurred by people seeking care was estimated to be $556 million, one of which worsen the cycle of poverty (UNOPS, 2020). In considering this obvious challenge, the economic consideration in the choice of treatment for malaria could be very pertinent. Most of the treatments for fever and malaria are through self-medication with anti-malarial drugs bought from untrained drug retailers and some from pharmacy shops. Some percentage of Nigerians relies on traditional medicine, which seems to be cheaper (Murray et al., 2012).

In treating malaria, that are various drugs that are made available in the market (whether first-line or second line drugs). The prolonged treatment of malaria which has social, economic and psychological implications and the like remains a real concern at all community levels. Considering the challenges thus highlighted and the need to improve the strategies for malaria cure, the awareness of the factors affecting the demand for drugs at the local levels is crucial in making proper and effective policy. It is, in fact, required for both development and implementation of policies for drug expenditure management. Specifically, it is necessary to find out whether the decision to treat malaria is being influenced by economic factors. Besides, to observe if the nature of demand for this special commodity obeys the law of demand as it applies to other economic goods.

II. LITERATURE REVIEW

Martina Bjorkman-Nyqvist; Jakob Svensson; David Yanagizawa-Drott (2013) studied the determinants of the quality of anti-malaria drugs in developing countries and found that entry by an NGO selling authentic drugs significantly reduced fake drugs among incumbents, with weaker effects in markets where consumer misconceptions were relatively pervasive. Data were collected and analyzed for anti-malaria drugs dispensed for self-medication to patients, treatment by retail outlets and prescription from hospitals. Moreover, Cohen et al. (2012) expressed that only 38 percent of adults who sought treatment for malaria at drug shops in Kenya actually had malaria. Adhvaryu, (2012) revealed that misdiagnosis of malaria has a direct implication on individual or households' health and socio-economic welfare, because if an individual is wrongly diagnosed with malaria, it will unnecessarily expose him/her to the harmful side-effects of the drugs, and the major illness may be treated with delay or not treated at all, leading to prolonged and deteriorating illness. Misdiagnosis has also been revealed to obstruct social learning about the effectiveness of anti-malarial.

Catherine (2007) identifies the consumers' knowledge and belief about fever/malaria, which involve what the consumers of drugs perceive malaria to be. Perceptions of efficacy and resistance have to do with consumers' beliefs towards, which of the malaria drugs among others are more effective and non-resistant to treatment. Azoukaline, Beackgoube and Ibrahim (2022) in their study found that nomads were aware of malaria risks, and they could recognise malaria symptoms. However, usage of mosquito nets was not well known or adopted amongst them. It was also claimed that their financial incapability reduced the rate of net usage for prevention of malaria (Samadi and Homaie, 2014).

Other factors associated to the demand for malaria drugs among people were reviewed by various authors. Tafara (2014) revealed that household size, household income, severity of illness, education of the household head, distance to the nearest health facility and availability of drugs significantly determined the demand for medical products. The author asserted the distance to the health facility and household size were inversely related to the demand for drugs; while availability of drugs and household income were found to be positively related to the demand for medical drugs and services. According to Ikechuckwu, Patrick, and Chika (2022) likewise identified income and age as significant in influencing demand for medical care, whether in terms of drugs or services. It was found that the high-income groups demand more for health products/care than those of the low-income groups. It was further analysed that elderly were more conscious about their health. Therefore, the age category of the elderly had a higher demand for medical care. Similarly, Divya and Alistair (2015) stated that a low-income patient has a lower access to medicine and health care.

Behzad, Saeed, Saeed, Satar, Faramarz, and Ali (2015) claimed that demand for pharmaceutical items was in-elastic and they are considered to be essential products, though the types of pharmaceutical consumption by household members can largely be influenced by substituting the expensive drugs for less expensive drugs, which produce the same advantage with the other type. Laximinarayan et al., (2006) had a contrary opinion that choice for medicine should not just focus on the price consideration but considering the effectiveness of the drugs. The author established that substitute for Artemisinin Combination Therapy (ACTs) are

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welfare improving for drug demand elasticities, evolution of drug resistance and malaria transmission.

In addition, Yeung et al., (2018) conducted a study on price responsiveness in various therapeutic drug categories, it was found that drugs for chronic condition are less price sensitive than drugs for acute conditions. Liu et al., (2012) investigated the drug market in Taiwan using product-level data, it was noted that the demand for brand name drugs was more price sensitive than the demand for generic drugs, however, this was conversely in reality in the United State of America (Ellison et al., 1997). Moreover, Eduardo (2021), while considering the price elasticity of demand established that the demand for a medicine can be inelastic if for instance, a patient requires a life-saving drug, the drug will be bought regardless of the price of the drug. The author further analysed the two major aspects of price elasticity of demand using charges of a pharmaceutical company at different point in time. If the company was to increase the unit price of a medication by 50%, which led to decline in the rate of demand by 5%, it was regarded as being inelastic. In the second case, a pharmaceutical industry decreased the price of a drug by just 7% and led to 87% increase in the demand of the same product, such a drug is elastic in nature.

Heterogeneity in price elasticity of demand is associated to types of data usage, various existing coverages of health insurance, analytical methods, diversity in the study areas (Mingyue, Peng, and Jing, 2020). It was also found by the authors that the estimated price elasticities of range of drugs (depending on the type of diseases) differ and the price elasticity of different types of drugs for the same illness were different either. The factors responsible for the demand of drugs vary at different times and places.

Marshallian demand function was used as a theoretical framework; while multiple-linear regression model was used to analyse the factors that influenced the demand for malaria drugs in the study area. The model of household demand for medical drugs, according to Grossman (1972), was used to derive a demand function for malarial drugs.

According to Cropper et al, (1999), the traditional model of demand for health-related goods assumed that a household derived utility from consumption (*C*), leisure time (*L*) and disutility obtained from time spent ill (*S*). The value of each variable to represent each family member was denoted by*i =1, ..., n* and assuming *n* family members, household utility was given by:

$$U = U(C_1...,C_n; L_1...,L_n; S_1...,S_n, Z) \quad (1)$$

The vector *Z* was the family characteristics, which represented any of the demographic variables. Therefore, education would be considered. Also, time spent ill by individual member was sequentially a function of the treatment that individual received by taking malarial drugs (M_i). Level of effectiveness of the drugs (*F*), individual's health characteristics (H_i), endemicity (*E*) were also the determinants of time spent ill and were represented by the stated symbols. The member in the household was symbolised as *'i'* and *'n'* was the total number of members in the household.

$$Si = s(Mi, Hi, F, E), \quad i = 1....n \quad (2)$$

The amounts of money spent on malarial drugs and other goods that each person consumed were constrained by the household's budget. In particular, total expenditure on these goods could not exceed the household's income,

$$I + \sum_{i=1}^{n} Wi(T - Li - Si) = \sum_{i=1}^{n} Ci + Pm \sum_{i=1}^{n} Mi + Pr \sum_{i=1}^{n} R, \quad (3)$$

Where I was household non-earned income, the *Wi*'s were the values of income (per unit time) generated by each family member, and $\sum_{i=1}^{n} Wi(T - Li - Si)$ was the household earned income. (*T* was total time available). The first term on the right-hand side of equation (3) was the household expenditure on non-health goods, whose price was set equal to 1. For the purpose of this study, non-wage income, represented by *I* was not considered separately in the modelling of the demand for anti-malarial drugs to avoid complication. The second term *M*, indicated the drug for treating malaria, its price was$P_{m1}$and the third term, *R* represented preventive measure of malaria attack, the expenditure of which wasP_r. The various preventive measures were: clearing surrounding bushes, applying insecticide, using bed net, draining stagnant water in the surroundings, proper covering of body in the night, among others.

$$Mi = h(P_{m1}, P_{m2}, P_r, W, Z, O) \quad (4)$$

The head of household chose values of *C*, *L*, *M* and *R* to maximise the household utility subject to the budget constraint and to the health production functions. Summing equation (4) over all the members in the household produced a household demand function for malarial drugs. This was expressed as; M*= $\sum_{i=1}^{n} Mi$,

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$M* = g(P_{m1}, P_{m2}, P_r, W, Z, O)$

(5)

M^* was the total number of quantity of malarial drugs the decision maker purchased. It was generally dependent on income, price of prevention of malaria, price of malarial drug, the price of substituting or complementing malaria drug in order to properly cure malaria, household characteristics and other variables (represented by "*O*", which connoted availability of drug in the market, reaction/side effect of the drug, advertisement, effectiveness and numbers of household members that were sick a week preceding the study).

Using Cobb Douglas demand function, quantity of anti-malarial drugs demanded could be expressed in terms of variables that influenced the decision in choosing the malarial drugs. M^* depended on P_{m1}, P_{m2}, P_r.

$M* = aP_{m1}^b P_{m2}^c P_r^d W^e Z^f O^g \mu$

(6)

Traditionally, M^* was always expressed in terms of the price (which most time had an inverse relationship with$P$). However, based on the theoretical framework, which was Marshallian Demand Function, income (W) was an important variable. $P_{m1}$was the price of malarial drug, the price of other related product (that is the price of alternate or the substitute) was P_{m2}, while P_r is the price of prevention from malaria attack which was also relevant in the modelling of the demand for anti-malaria drugs. Other variables were also considered in the modelling as determinants of the demand for anti-malaria drugs.

This was expressed in log form as follows.

$lnM* = lna + blnP_{m1} + ClnP_{m2} + dlnP_r + elnW + flnZ + glnO + \mu$ (7)

a= constant variable; *b-g* measured the elasticities of their respective variables, and μ = the error term.

The study relied on primary source of data. It surveyed the urban area of Ife Central Local Government Area which comprises 11 wards which were: Iremo I, Iremo II, Iremo III, Iremo IV, Iremo V, Ilare I, Ilare II, Ilare III, Ilare IV, Akarabata and Moore/Ojaja. The area consists of a total population of 167,204 of the population census conducted in the year 2006 (FRONOG, 2009) and it was projected to be 217,100 in the year 2022. As at 1991, the total number of 22,055 households were recorded in the local government (NPC, 1991). The target population of the study cut across all age groups. However, information was obtained from the household heads.

The questionnaire was designed to analyse the economic factors that influence the demand for malaria drugs among the people of Ife central local government. Four hundred copies of questionnaire were distributed to respondents in the selected area; however, 382 copies were returned which represented 95.5 percent. This sample was believed to adequately represent the study area and to achieve the aim of the study.

A systematic sampling procedure was employed to select 2 streets in each of the wards. From the selected streets, all the constituent houses were listed in the sampling frame. Out of every 3 houses listed, one house was randomly selected. The first house was determined by picking a number between 1 and 3 at random and subsequent houses were chosen by adding 3 to that number.

Data collected were estimated using multiple linear regression analysis to determine the economic factors that influence demand for malaria drugs and the nature of demand of malaria drugs in Ife Central local Government Area of Osun State, Nigeria.

III. RESULTS

Empirical Analysis of the Regression Results for Demand for Anti-malaria Drugs.

The table below represents the result of the demand for malaria drugs in Ife Central Local Government Area of Osun State, Nigeria

Explanatory Variables	Coefficients	t-Statistic	Significant Level
Constant**	0.164	2.364	0.019
Price of malarial Drug*	0.015	4.5	0.000
Total Income	0.011	0.726	0.469
Price of substitutes	0.001	0.334	0.738
Price of complement	-0.002	-1.373	0.172
Price of prevention	0.002	1.125	0.262

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Advertisement	-0.023	-0.663	0.508
Availability*	-0.030	-4.275	0.000

Note: ** means Significant at 5% level and * at 1% level
Adjusted R^2=0.34
F-statistic=46.207*, Durbin-Watson=1.96
Source: Author's Fieldwork, 2021.

Adjusted R^2 gave the proportion of the demand being explained by the log-linear influence of the explanatory variables. It could only report approximately 34% of the total variations in the demand for anti-malaria drugs in the study area. However, the result of the F-statistic, which showed the goodness of fit, was sufficiently high with 46.207 and highly significant at 1%. This showed that it was a reasonable model in analysing the demand for anti-malarial. Also, the Durbin-Watson d-statistic (1.96) indicated that the model had no autocorrelation problem. The explanatory variables and the dependent variable were in log form to measure the elasticity of the variables under consideration. Only the economic factors were explained further as shown below;

Price Variables

The coefficient of price elasticity of the demand for malarial drug was positively signed with 0.015; hence it indicated that the result did not support the law of consumer behaviour as maintained by Behzad et al., (2015); and this could be as a result of the fact that it was a special commodity. It also revealed that a change in price of malarial drug by N1 contributed a change of 0.015 to the dependent variable. It was statistically significant at 1% with its t-value of 4.5. This shows that it contributed largely to the dependent variable. The coefficient of the price was however inelastic in nature, indicating that the degree of responsiveness of "change in quantity demanded of anti-malarial" as result of "a change in the price of malarial drug, while other variables were held constant" was relatively very little. Even if price of malaria went up, people needed to treat themselves of malaria, because it was an article of necessity.

The coefficient of price of complementary drug was negatively related, while that of substitutes for malarial drugs was positively signed. These were both cross price-elasticities and they were not statistically significant. By implication, they were not contributing to the dependent variables as in contrast to the claim of Laxminarayan *et al.*, (2006). These were moreover inelastic in nature. This could mean that the degree of responsiveness of the dependent variable as a result of change in each of these variables, when other variables were held constant, was less than 1. Moreover, the coefficient of price of preventing malaria was positively signed and not statistically significant; hence, it did not contribute to the dependent variable.

Income Variable

The coefficient of consumer's income elasticity of demand for malarial drug was found to be 0.011, with t-value of 0.726 was found not to be statistically significant. It was also not elastic in nature as contrary to Ikechukwu et al., (2022). Since the coefficient fell within 0 and 1, it was conceivable that it was a product of necessity. By implication, the demand for malarial drug did not have anything to do with the wealth of the consumer. If a poor was ill of malaria and needed to be treated, he would have to consume this, even without considering his affordability, because health is wealth. Meanwhile, rich did not have to consume this kind of product in excess, or when he was not ill. Therefore, it was not a type of economic good which could be consumed based on wealth.

Advertisement

The coefficient of advertisement was negatively signed. This showed that despite the aggressive marketing towards the increase in the demand for anti-malaria drugs bought in Ife Central local government; there was reduction in the purchase of malarial drugs in the area. Thus, there was an indirect relationship between advertisement and demand for anti-malarial drugs in Ife-Central local government area. This might be as a result of individual taste/preference which was difficult to be changed and the fear of adopting newly introduced drugs. Moreover, it might be as a result of absence of illness of malaria at the period of consideration. It was not elastic and not statistically significant.

Availability of Malarial drug

Considering the availability of malaria drug associated with demand of same drug, there was statistical significance at 1%, which explained that it largely contributed to the demand of malaria drugs. Just as the demand for and consumption of malaria drugs cannot be made until it is available for sale.

However, it was inelastic in nature and there was negative relationship between availability of malaria drugs in the market and quantity demanded of malaria drug. The increase in the availability of the drugs in the market, does not necessarily increase the quantity of malarial drugs demanded for and vice versa. This could be due to the absence of illness during the period or availability of other means of treating malaria.

Generally, the study showed that the t-value of income of the respondent was insignificant with 0.726, its P>0.05 and the coefficient value was inelastic with 0.011; the price of malarial drug was significant with t-value to be 4.5, P<0.05, was however not rightly signed and inelastic with coefficient 0.015. It was discovered from the findings that malarial drugs were necessity goods and the demand for them did not follow economic law of demand. This indicated a positive relationship between the price of malarial drugs and the quantity of malarial drugs demanded for. Besides, the income of the respondent was found not to be statistically significant. Thus, the malarial drug was not a normal good, but a special commodity which did not respond to the direction of price, but the occurrence of illness of malaria.

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QUESTIONNAIRE

Dear Sir/Madam,

This questionnaire is purposed to carry out a research study on economic analysis of demand for anti-malarial drugs in Ife Central LG area. Please fill in correct information. All information will be treated confidentially and used for the research work only. Thank you.

Please tick [√] where appropriate.

(1) Gender of the respondent? (a)Male [ ] (b) Female [ ]

(2) Age of the respondent?(a) btw 21-30yrs [ ](b) 31-40yrs [ ] (c) 41-50yrs [ ] (d) 51-60yrs [ ] (e) 61yrs and above [ ]

(3) Educational Status of respondent? (a) No education [ ](b) Primary school [ ] (c) Secondary school [ ] (d) Tertiary institution [ ]

(4) Religion of Household Head: (a) Christian [ ](b) Muslim [ ] (c) Traditional [ ]

(5) Occupation of respondent? (a) Civil servant [ ] (b) Private worker [ ] (c) Self-employed [ ] (d) others [ ]

(6)How much do you earn monthly (wage & non-wage)? (a) Less than N10,000 [ ] (b) btw N10,000 and N39,000 [ ] (c) btw N40,000 and N69,000 [ ] (d) btw 70,000 and N99,000 [ ] (e) btw N100,000 and 129,000 [ ] (f) btw 130,000 and above [ ].

(7) Number of members in the family? (a) btw 2 and 3 members [ ] (b)btw 4 and 5 members [ ] (c) btw 6 and 7 members [ ] (d) 8 members and above [ ].

(8) How many children of 11years or younger are in your household? (a) None [ ] (b) 1-2 members [ ] (c) 3-4 members [ ] (d) 5-6 members [ ] (e) 6 members and above [ ].

(9) How many teenagers (12-18years) live in your household? (a) None [ ] (b) 1-2 members [ ] (c) 3-4 members [ ] (d) 5-6 members [ ] (e) 6 members and above [ ].

(10) Adults (greater than or equal to 19 years) live in your household? (a) 1-2 members [ ] (b) 3-4 members [ ] (c) 5-6 members [ ] (d) 7 members and above [ ].

(11) Members in your household that are working? (a) None [ ] (b) only 1 member [ ] (c) 2 members [ ] (d) 3 members and above [ ]

(12) Range of total income earned by those that are working in your household? (a) Less than N10,000 [ ] (b) btw N10,000 and N39,000 [ ] (c) btw N40,000 and N69,000 [ ] (d) btw 70,000 and N99,000 [ ] (e) btw N100,000 and 129,000 [ ] (f) btw 130,000 and above [ ].

(13) Have you ever had malaria? (a)Yes (b) No (c) Had fever, but don't know if it's malaria

(14) Describe your health with the health status of other people of your age? (a) Much better [ ] (b) Better [ ] (c) Almost the same [ ] (d) Worse [ ] (e) Much worse [ ]

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(15) Does any member of your family often fall sick? (a)Yes [ ] (b) No [ ] (c) Much better [ ]
(16) Any member of your family has prolonged illness? (a) Yes [ ] (b) No [ ] (c) Not sure [ ]
(17) Malaria is a common disease in your environment? (a) Strongly agree [ ](b) Agree [ ](c) Undecided [ ](d) Strongly disagree [ ](e) Disagree [ ]
(18) Family member gets malaria in this area or somewhere else? (a)In this environment [ ] (b) Outside this environment [ ] (c) Not sure [ ]
(19) Malaria symptom that manifest in your body (a) Fever [ ] (b) Shivering [ ] (c) Convulsion [ ] (d) Head ache [ ] (e) Backache [ ] (f) Stomach ache [ ] (g) Vomiting [ ] (h) Diarrhoea [ ] (i) Joint pain [ ] (j) Loss of appetite [ ] (k) others [ ]
(20) If someone is sick of malaria in your family, what is your major approach to cure this person?(a) No treatment is necessary [ ] (b) Taking malarial drug [ ] (c) Believing God for healing [ ] (d) Taking much rest [ ] (e) Herbal treatment/traditional medicine [ ] (f) others [ ]
(21) Apply any means of prevention to malaria? (a) Yes [ ] (b) No [ ] (c) Not sure []
(22) If 'yes', what are the means of preventing malaria that you apply/engage in? (a) Fumigation/Spraying insecticides [ ](b) Clearing bushy environment [ ](c) Sleeping under a bed net [ ](d) Herbal medicine [ ](e) Draining stagnant water& cleaning of environment [ ](f) others [ ]
(23) How much do you spend to prevent malaria attack for the past one week in your household? (a) None [ ](b) Less than N100 [ ] (c) btw N100 and N499 [ ] (d) btw N500 and N999 [ ] (e) btw N1000 and above [ ]
(24) Have any member of the household had malaria for the past one week? (a) Yes [ ] (b) No [ ] (c) Not sure [ ]
(25) Number of members in your household fell ill of malaria within the last one week? (a)None [ ] (b) 1-2 member(s) [ ] (c) 3-4 members [ ] (d) 5 members and above [ ]
(26) Name the malarial drug usually taken by the household? ----------
(27) What drug was used at the last episode of fever/malaria? ----------

What are the factors that are responsible for your decision in buying malarial drug over other means of curing malaria attack

		Strongly agree	Agree	Undecided	Disagree	Strongly disagree
28	The price of the drug is cheaper?					
29	Availability of the particular drug in the market?					
30	Awareness of the particular drug through advertisement, relatives or friends?					
31	Early recovery any time you take the particular drug?					
32	It has least/no side effect (like itching, feeling dizzy e.t.c.) to your health over other means of curing malaria?					
33	The one respondent can easily afford with his/her income?					
34	As a result of doctor and pharmacist's prescription?					
35	Because of the preference &reliability you have for drugs over other means of curing malaria?					

(36) If the respondent bought the drug in the last one month, how much was it bought? (a) Less than N300 [ ](b) btw N300 and N599 [ ] (c) btw N600 and N899 [ ] (d) btw N900 & above [ ]
(37) How much did the respondent buy the same drug in the last one week to treat the member? (a) Less than N300 [ ](b) btw N300 and N599 [ ] (c) btw N600 and N899 [ ] (d) btw N900 & above [ ]
(38) If "No", did you take alternative drug for the past one week? (a) Yes [ ] (b) No [] (c) Not sure [ ]

If answer to Question 38 is "yes", kindly answer No 39-42
(39) If you are sick of malaria for the one week, what is the name of the drug that the member of the household takes in replacement of the previous drug? ----------
(40) Price of the alternate/substitute in the last one week? (a) Less than N300 [ ](b) btw N300 and N599 [ ] (c) btw N600 and N899 [ ] (d) btw N900 & above [ ]
(41) The substitute drug is cheaper than the former drug for treating malaria? (a) Strongly agree [ ](b) Agree [ ](c) Undecided [ ](d) Strongly disagree [ ](e) Disagree [ ]
(42) The substitute drug could cure better than the former drug for treating malaria? (a) Strongly agree [ ](b) Agree [ ](c) Undecided [ ](d) Strongly disagree [ ](e) Disagree [ ]
(43) You combine other malarial drug with the earlier mentioned drug for the past one week? (a) Yes [ ] (b) No [ ] (c) Not sure [ ]
If answer to Question 43 is "yes, kindly answer No 44-46
(44) If you have malaria attack within the past one week, mention the name of the drug the household member combines with the previous drug? ----------
(45) You became better with the combined drug than when single drug was used (a) Strongly agree [ ](b) Agree[ ](c) Undecided[ ](d) Strongly disagree[ ](e) Disagree [ ]
(46) You recover three days after taking the drug? (a) Strongly agree [ ](b) Agree [ ](c) Undecided [ ](d) Strongly disagree [ ](e) Disagree [ ]
(47) You already had the drug at home when you became ill? (a) Strongly agree [ ](b) Agree [ ](c) Undecided [ ](d) Strongly disagree [ ](e) Disagree [ ]
(48) Average number of malaria attacks you experience in a year? (a) No attack (b) Just once [ ](c) Twice[ ] (d) Thrice [ ] (e) Four times [ ] (f) More than four times [ ].