

Determinants of the Use of Orthodox Methods of Malaria Treatment among Rural Households for Enhanced Agricultural Production in South-East, Nigeria

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Abstract: *This study determined factors that influence orthodox methods of malaria treatment for enhanced agricultural production among rural households in South-East, Nigeria. The specific objectives were; to describe the socio-economic characteristics of rural households, determine the orthodox methods of malaria treatment employed by respondents and socioeconomic characteristics that influence the use of orthodox methods of malaria treatment. The research was conducted in south-east Nigeria. A sample size of 360 household heads was randomly selected for the study. Data were collected with the use of structured questionnaire mixed Focus Group Discussions (FGD), key informant interview and participant observation. The result of the FGD provided more insight to the study and validated the responses from the interview. Descriptive statistics such as mean, frequency distribution and percentages were used. Inferential statistics such as t-test and multiple regression analysis were also used. Reasonable proportion of the households in south-east utilized orthodox treatment, sometimes after administering traditional treatment. They used drugs prescribed by doctors in the local clinic/hospital to treat malaria, patronized local chemist dealers and sometimes made use of private laboratories. They also administered injection from the hospital and patronized market medicine hawkers. Respondents in Abia and Imo States utilized more of orthodox treatment than those in Ebonyi State. Age, marital status, farming experience, household size, education, contact with community health workers and income, were positive and influenced rural household usage of orthodox treatment. In order for Nigeria to be able to meet up with the 2015 MDG target 6 of combating HIV/AIDS, malaria and other diseases, it becomes germane that orthodox medical personnel and their traditional counterparts collaborate in research on malaria treatment for the benefit of rural communities.*

Key words: *Malaria, Orthodox treatment, Rural Households, Agricultural Production, South-Eastern Nigeria.*

I. Introduction

Agriculture is the mainstay of the economy. It employs about two-thirds of the country's total labour force, contributing about 45 % of GDP and providing the means of livelihood for over 70 % of the population (IFAD, 2009). Agriculture is also a major source of raw materials for agro-allied industries (Obob et al, 2009). It is carried out mainly in the rural areas by rural farmers who play several roles in an agrarian country like Nigeria, given their capacity for job creation and local food production (Asenso-Okyere, 2011a). About 90 % of Nigeria's food is produced by small-scale farmers who cultivate small plots of land and depend mostly on rain-fed agriculture rather than on irrigation systems. They operate at low level of production with labour-intensive production technologies (Chima et al 2003) making it more difficult for them to withstand health challenges associated with their daily farming activities such as improper food harvesting and storage practices which allow mycotoxins to flourish. E coli O157, a farm related micro-organism, which can be transmitted to humans can potentially cause serious illness, especially in young children, in whom symptoms may include bloody diarrhea and kidney failure (Health and Safety Executive, 2011). Recently the Ebola virus disease (EVD) transmitted from wild animals and spreads in the human population through human-to-human transmission and causing serious health issues (WHO, 2014). Agricultural development provides suitable conditions for breeding of anopheles mosquitoes which is the vector of plasmodium parasite (Asenso-Okyere, et al 2011a). Agriculture and health being bi-directionally linked, perpetuate poverty in rural areas, where up to 80 % of the population are farmers and live below the poverty line. Food, social services and infrastructure are limited (IFAD, 2009), they tend to be vulnerable to malnutrition, illiteracy and poor health condition especially in the absence of modern and adequate primary health care facilities.

In Nigeria, malaria is endemic and it occurs throughout the year. According to Federal Ministry of Health (2005), there are over 100 people at risk of malaria. Nigeria has the third highest rate of maternal mortality in the world (1100 per 100,000) after Sudan and Democratic Republic of Congo. The major cause of

this being ill-health of which malaria scourge is distinguished (USAID, 2008). Peoples' Socio-Economic Status (SES) perception of the ease of accessing the various providers of malaria treatment can potentially determine their health-seeking behaviour which may either be orthodox or traditional treatment (Onwujekwe, et al 2008). Orthodox medicines refer to the knowledge, practices, organization and social roles of medicine in westernized cultures (Osemene, 2011). Much of the strategies employed from the 1980s till date in treating malaria with orthodox medicine involve early diagnosis and prompt treatment of affected persons (Oladebo, et al 2010). Inappropriate beliefs and behaviours such as knowledge of vector control, low income level and fear of complications sometimes interfere with the effectiveness of malaria control measures especially in rural areas. Many studies have looked at particular populations when examining health issues, it however becomes important to understand better the relationship between socioeconomic characteristics of rural households and the use of orthodox methods of malaria treatment in the presence of inadequate health care facilities. This study therefore aims to achieve the specific objective of describing the socioeconomic characteristics of respondents, determine the orthodox methods of malaria treatment employed by respondents and factors that influence the use of orthodox methods of malaria treatment. The hypothesis of this study states that there is no significant relationship between socioeconomic characteristics of respondents and the use of orthodox methods of malaria treatment.

II. Methodology

This study area was South-east Nigeria, situated east of River Niger and covering an area of 29,908 square kilometers, with a population of about 16'381,729. It lies on latitude 5° and 7° 75' north and longitude 6° 85' and 8° 46' east. It comprises five States namely: Imo, Enugu, Anambra, Ebonyi and Abia. The States in the zone share essentially similar characteristics (NPC, 2006). The zone covers the bulk of the Igbo-speaking ethnic territory, the remainder of which extends westwards into Delta State and southwards into Rivers State. By territorial size, the South East zone is by far the smallest in Nigeria, accounting for a mere 3.2 % of the national space. However, the 2006 census data credited it with 11.7 % of the population, giving it a population density nearly four times the national average. High population pressure is indeed one of the basic facts of life in the zone. Generally, the State is rural with majority of the population engaging in subsistence farming as a means of livelihood. Major crops grown are yam, cassava, maize, cocoyam, melon, plantain, banana, garden egg, and vegetable, livestock (poultry, sheep, goat, and rabbit).

South-east zone performs relatively poorly in physical infrastructure (roads, water and electricity), regulatory efficiency and overall business environment. As a result, the zone lags behind in critical economic investments and organized industrial development. The zone contributes significantly to the populations of all the major cities, industrial and market centres in Nigeria. The study population [16'381,729 (NPC, 2006)] consists of of all the rural resource-poor households in south-east Nigeria.

Sampling procedure and sample size

This study employed multi-stage random sampling technique. First stage was randomly selecting three States out of the five States that make up south-east zone of Nigeria. This included: Imo, Abia and Ebonyi States. The second stage was randomly selecting two Agricultural zones from each of the selected States. This gave a total of six Agricultural zones. The third stage of the sampling was the random selection of two Local Government Areas from each of the zones giving a total of twelve Local Government Areas. The fourth stage was the random selection of three communities from each Local Government Area, giving a total of thirty-six communities. The fifth stage was the random selection of one village from each community selected. The sixth stage was the random selection of ten household heads from each of the selected villages which gave a sample size of 360 household heads for the study. Data collections were both primary and secondary. The primary data were collected with the use of a structured questionnaire, mixed Focus Group Discussions (FGD) and participant observation. The result of the FGD provided more insight to the study and validated the responses from the interview. The data generated were descriptively analyzed. The dependent variables were the use of orthodox methods of malaria treatment by household heads, while the independent variables were the selected socio-economic characteristics of household heads.

Level of usage of orthodox methods of malaria treatment was measured using a four point likert-type scale of -highly used=4, moderately used = 3, partially used=2, and not used=1. This was used over a set of 7 usage indicators or statements. The individual scores were pooled together and the raw scores obtained were used as the index of usage level. To determine the mean response of each item, a mid-point of 2.5 was obtained thus $(1 + 2 + 3 + 4 = 10 \div 4 = 2.50)$ Decision was taken based on mean response that is less than or equal to 2.50 suggests that respondents' usage level of the treatment method is low, while any mean score that is greater than 2.50 suggests that respondents' usage level of the treatment method is high.

The hypothesis of this study is that there is no significant relationship between socio-economic characteristics of respondents and the use of orthodox method of malaria treatment in the study area.

Hypothesis: There is no significant relationship between socio-economic characteristics of respondents and use of orthodox method of malaria treatment.

The OLS multiple regression model is implicitly specified as;

$$Y_1 = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, e)$$

Where Y_1 = Index of orthodox method of malaria treatment.

X_1 = Age (years)

X_2 = Marital Status (Dummy: 1 = married, 0 otherwise)

X_3 = Farming experience (years)

X_4 = Farm size (hectares)

X_5 = Household size (number of persons)

X_6 = Education level (years in school)

X_7 = Contact with healthcare workers (number of visits in a year)

X_8 = Monthly income (Naira)

X_9 = Membership in other organizations, dummy

variable, membership = 1, non-membership = 0

e = error term

Four functional forms of the OLS model; linear, semi log, double log and exponential were tried. Lead equation was chosen based on the magnitude of coefficient of multiple determination (R^2), number of significant variables and conformity to a priori theoretical expectations.

III. Results And Discussion

Results in Table 1 recorded that the mean age of respondents in the study was 44 years implying that respondents were vibrant and able bodied men and women still strong enough to participate in tedious farm activities. About 21.7 % of respondents in Abia were above 51 yrs, while the older farmers made up 14.2 % and 27.5 % in Ebonyi and Imo States respectively. Imo State recorded the highest number of older farmers (27.5 %) suggesting that labour here may be more expensive since older farmers may not be able to indulge in more demanding farm activities. Majority of the respondents in the three States were married, implying that there will more likely be farm hands for available farm activities and more household members to cater for in the event of malaria disease. According to Aydin et al (2008), diseases are more common in females and married people and it is easily obtainable. Majority of the households in Ebonyi and Imo State, were headed by women (55.0 % and 59.2 % respectively) unlike Abia State (49.2%). They may be de jure, i.e. those who had no male partner, such as women who were widowed, divorced or never married or de facto i.e. those in which an adult male partner is working away from the household but remains involved in household activities through remittances and other economic and social ties. Average farming experience in the study was 15 years. Respondents from Imo recorded lower years of farming experience because some of them went into full time farming in the later part of their lives usually close to retirement age as was observed in the field.

Respondents in the three States had an average household farm size of 0.5 ha. Ebonyi State however had the highest per-centage (5.8 %) of respondents having farm size of 3ha and above. The implication is that Ebonyi would likely need more hands to serve as farm labour especially in peak farming periods, upon which its absence may lead to spending more money on hired labour especially in situations where household members are down with malaria and they have to cope with large farm size. This suggests that while the family continues to provide the main source of labour in farm production, there is an upper limit to the amount of land that can be cultivated (Ingawa, 2000). Respondents in Ebonyi State had the largest household size of 8 and above at 33.3 %. The average household size for the study was in the range of 4-7 persons per household.

Reasonable proportion of respondents in the three States attained first school leaving cert and secondary (WAEC) education with higher per-centage of the respondents in Ebonyi State in this category but having fewer respondents (20.0 %) who attained tertiary education when compared with Abia State (23.3 %) and Imo State (29.2 %). This may be so since Ebonyi State being more interested in farming, may possibly not prioritize education since children may likely be withdrawn from school to serve as source of labour for farming activities in order to increase agricultural production and earn more income. Educational opportunities are also a collective set of mechanisms by which socially and economically marginalized children, youths and adults can lift themselves out of poverty (Bello-Bravo et al, 2013). It also becomes important to encourage the youths to embrace education so as to further expose them to more knowledge and information on the importance of mechanized agriculture, all geared towards enhanced agricultural production and better health conditions.

The average income earning in Abia, Ebonyi and Imo State were ₦18,250, ₦ 20,167 and ₦ 21,917 respectively. The average household farm income for the study was ₦20,111. This suggests that the farmers earned poorly, as household members cannot spend up to \$1.25 on feeding in a day. With such an income level it becomes difficult and expensive for farmers to absorb health shocks rather they settle for traditional treatment and less skilled orthodox medical practitioners who would likely ask for less money for their services as was observed in this study. Farming was the major occupation while a few working population were engaged in other non- farming occupation (such as artisanal activities such as mechanic, electronic repairers, vulcanizing, quarry, trading and commercial transporters). A few others work in the cities but reside in the rural areas.

About 50 % of the respondents in South-east Nigeria belonged to one organization or the other.

Table 4.1 Socio-economic characteristics of the respondents

Variables	Abia (n=120)		Ebonyi (n=120)		Imo (n=120)	
	Frequency	Per-centage	Frequency	Per-centage	Frequency	Per-centage
Age (years)						
≤ 20	1	0.8	2	1.7	5	4.2
21-30	21	17.5	14	11.7	18	15.0
31-40	34	28.3	47	39.2	30	25.0
41-50	38	31.7	40	33.3	34	28.3
51 and Above	56	21.7	17	14.2	33	27.5
Marital status						
Single	18	15.0	5	4.2	15	12.5
Married	102	85.0	115	95.8	105	87.5
Gender						
Male	61	50.8	54	45.0	49	40.8
Female	59	49.2	66	55.0	71	59.2
Farming Experience (years)						
<10	28	23.3	1	0.8	30	25.0
11 – 20	62	51.7	52	43.3	49	40.8
21 – 30	15	12.5	29	24.2	27	22.5
31 and above	15	12.5	38	31.7	14	11.7
Household Farm Size (hectares)						
0.5	40	33.3	36	30.0	62	51.7
1	56	46.7	58	48.3	47	39.2
2	22	18.3	19	15.8	10	8.3
3 and above	22	1.7	17	5.8	1	0.8
Household Size						
1 – 3	23	19.2	20	16.7	11	9.2
4 – 7	73	60.8	60	50.0	78	65.0
8 and above	24	20.0	40	33.3	31	25.8
First School Leaving Cert	35	29.2	33	27.5	29	24.2
Secondary School (WASC)	30	25.0	35	29.2	34	28.3
Tertiary Education	28	23.3	24	20.0	35	29.2
Household Farm Income in Naira(in Thousands)						
10,000 – 20,000	64	53.3	44	36.7	57	47.5
21,000 – 31,000	29	24.2	40	33.3	23	19.2
32,000 – 42,000	18	15.0	20	16.7	25	20.8
43,000 – 53,000	4	3.3	6	5.0	5	4.2
54,000 – 64,000	3	2.5	5	4.2	1	0.8
65,000 and above	2	1.7	5	4.2	9	7.5
Occupation						
Farming	95	79.2	93	83.3	100	77.8
Others	25	20.8	27	16.7	20	22.5
Membership of Organization						
YES	65	54.2	47	39.2	68	56.7
NO	55	45.8	73	60.8	52	43.3
Contact with Healthcare Workers						
Once a week	100	80	340	94.4	340	94.4
Twice a week	120	100	20	5.6	20	5.6

Source: Field Survey Data, 2013.

Orthodox methods of treatment commonly used

Table 2 reveals that respondents in the three States // used drugs prescribed by the doctors in the local clinics with mean score of 3.48 for Abia, 2.93 for Ebonyi and 3.12 for Imo State. They administered injection from the hospital except Ebonyi State (Abia = 3.06, Ebonyi State = 2.18, Imo = State = 2.88) which may be probably because of their strong rooted culture in the use of traditional treatment. They all took drugs from the chemist shops and injections from local chemist shop; this may be because some of them that utilized orthodox treatment believed that injections were more effective compared with drugs. According to Shretta and Malaria Consortium, (2001) rural people frequently choose unqualified private providers, and display a preference for medications in the form of injections and infusions as compared to cheaper oral tablets because there is the belief that an injection is better than an oral medication. They patronized market hawkers and this is because it was cheaper to buy from market sellers. However, majority of respondents in Imo and Abia States patronized private laboratories for test after which they purchased the prescribed drugs from local chemist shops or the local market.

Households were strongly influenced by private providers in their choice of treatment, and there was evidence that many private providers took advantage of their ignorance and prescribe unnecessary and costly treatments. It therefore beholds the government and other health care stakeholders to control this with the use of task force and issuance of license to credible drug dealers. Western medicine is in Nigeria like in most African countries. Doctors, nurses, pharmacists and every category or complement of medical personnel trend in the western world and locally in Nigeria, abound to manage the available government hospital, private clinics, health centres, maternities and dispensaries (Ekong, 2010).

The grand mean score of Abia State is 3.04, Ebonyi State = 2.57 and Imo State = 3.19, shows that respondents in Abia Ebonyi and Imo State, in addition to traditional treatment, also made use of orthodox treatment. This was further confirmed by a respondent in the FGD. He said;

“We go to the closest hospital which is some kilometers from our village or visit some of the chemist shops nearby to buy drugs but that is after we have taken neem boiled with elephant grass and other useful malaria herbs and our condition is still bad.”

According to Shretta and Malaria Consortium, (2001), patients that sought treatment at the market place make up 42 % of the total number of respondents studied, 34 % go to traditional healers and 16 % go to public hospitals while 4 % visit clinics. As a result much of the investment in training and improvement of facilities will not have a direct and immediate impact.

The Roll Back Malaria (RBM) partnership is waxing stronger by the day, proven malaria control interventions are being intensified with resources made available by government and stakeholders with the support of RBM partners (WHO, 2011). It therefore beholds that collaborative research between traditional and orthodox practitioners is timely if rural households must continue to contribute their quota towards National food security.

Table 4.6 Distribution of respondents according to orthodox methods of treatment commonly used

Indicator (Orthodox)	Abia			Ebonyi			Imo		
	Mean	SD	Remark	Mean	SD	Remark	Mean	SD	Remark
The use of drugs prescribed by the doctor in the local clinic/hospital	3.48	0.99	Agree	2.93	1.02	Agree	3.12	1.08	Agree
The use of injection in the hospital	3.06	1.15	Agree	2.18	0.91	Disagree	2.88	1.08	Agree
The use of Private Labs for test	3.56	0.68	Agree	2.13	1.08	Disagree	3.58	0.63	Agree
The use of drugs bought from the chemist shop	2.82	0.90	Agree	2.69	1.21	Agree	2.90	0.96	Agree
The use of malaria injection given by the chemist attendant	2.13	1.08	Agree	2.72	1.07	Agree	3.11.	0.93	Agree
Purchase of drugs from market sellers	3.18	0.90	Agree	2.78	0.95	Agree	3.53	0.76	Agree
Grand Mean	3.04			2.57			3.19		

Source: Field Survey data, 2013.

NB: Midpoint = 2.50; any mean score less than or equal to 2.50 is Disagree, while any mean score greater than 2.50 is Agree.

Determination of socio-economic factors that influence rural households’ usage of orthodox treatment

The coefficient of age (3.10) was positive and highly significant at 5 % level of probability. This implies that any increase in age will lead to an increase in the usage of orthodox malaria treatment. This is in agreement with apriori expectation probably because being older farmers it is expected that they would know the usefulness of treating malaria with orthodox method. This may be so as a result of post-modernity and societal dynamism, such as accepting new styles of living and thinking. The society is characterized much more by the acceptance of a plurality of different styles of living and thinking. A further development has been an increase in the emphasis on the individual and their right to choose life styles, and this has been expressed through consumerism (Bakx, 1991).

The coefficient of marital status (2.61) was positive and significant at 5 % level which implies that any increase in marital status will lead to an increase in the usage of orthodox treatment. Large household size are more susceptible to malaria and thus have need for routine orthodox treatment. The coefficient for farming experience (2.69) was positive and highly significant at 5 % level of probability. Having worked long in the farm and knowing the importance of health in agricultural production; it is likely that they will appreciate the usefulness of treating malaria fast with orthodox treatment since it is possible that in the course of farming they may have been predisposed to various health situations that may warrant their use of modern malaria treatment coupled with the fact that orthodox drugs seem to be more convenient to use. The coefficient for household size (3.35) was positive and significant at 5 % level of probability. Education (3.35) and income (2.93), were positive and significant at 5 % level indicating that these variables were important factors influencing farmers’ usage of orthodox methods of malaria treatment. The positive relationship between education and household usage of orthodox methods of malaria treatment was expected. The importance of education can never be over emphasized. Education plays an important role in the use of orthodox medicine. Education will enhance their knowledge base of household health related matters. Education is crucial to farmers’ health status in getting information and the kind of treatment that pertain to them (Alade and Kuponiyi, 2010), by so doing farmers will keep abreast with better preventive and several orthodox treatment measures. Membership of organization (2.31), was positive and significant at 5 % level, such people will be abreast with latest information on orthodox treatment that people have tried. According to Ekong (2010), social groups in rural Nigeria aim at effecting specific physical, health or social changes in the environment. Therefore the hypothesis which says that there is no significant relationship between socio-economic characteristics and respondent’s use of orthodox methods of malaria treatment is hereby rejected and we accept the alternative hypothesis which says that there is a significant relationship between socio-economic characteristics of respondents and their usage of orthodox methods of malaria treatment. Health care contact (3.79) had a positive relationship with use of orthodox medicine. This implies that an increased number of visit by community health workers will expose farmers more to new and effective orthodox malaria treatment drugs available for them.

Table 4.13: Determination of socio-economic factors that influence rural households’ usage of orthodox treatment

Variables	Double Log+	Exponential	Linear	Semi Log
Constant	-2.833 (-0.166)	0.178 (0.245)	349.6826 (1.260)	-5.984 (-1.209)
Age(X1)	0.0675 (3.0963) **	0.0082 (1.1389)	17.0213 (2.4276)ns	2.6093 (1.2048)**
Marital (X2)	0.0799 2.6111)**	0.0067 (3.1905)**	16.1107 (1.0753)ns	3.8455 (1.2762)ns
Farming Exp (X3)	0.0524 (2.6872)**	0.0083 (2.9643)**	10.3314 (1.1445)**	2.5054 (3.0494)**
Farm size(X4)	0.882 (0.2371)	0.0072 (1.2203)ns	16.0398 (1.0061)**	7.9216 (1.3225)**
HH. size (X5)	0.0683 (3.3481)**	0.0059 (1.4391)	13.0829 (1.0928)**	3.7144 (3.4999)ns
Education (X6)	0.0679 (3.3448)**	0.0091 (2.1163)*	17.1904 (2.4446) ns	3.1167 (1.1671)**
Comm. Health (X7)	0.0821 (3.7834)**	0.0073 (2.6071)ns	16.9941 (1.1313)**	3.8702 (1.5109)**
Income (X8)	0.0665 (2.9295)**	0.0067 (2.7317)**	16.0529 (3.8862)ns	4.1003 (1.0465)ns
Membership Of Organization(X9)	0.0721 (2.3108)**	0.0068 (1.3077)ns	17.4103 (2.1753)ns	1.5526 (1.2024) ns
R ²	0.7842	0.6528	0.4816	0.4047
F-value	9.146	65.6091	32.1067	23.8059

Source: Field survey data, 2013

** = Significant at 5 % + , = Lead Equation, Values in Parentheses are t values

IV. Conclusion

Households in south-east utilized orthodox methods of malaria treatment They used drugs prescribed by doctors in the local clinic/ hospital to treat malaria, patronized local chemist dealers and sometimes made use of private laboratories. They also administered injection from the hospital (except Ebonyi State) and patronized market medicine hawkers. A higher proportion of respondents in Imo and Abia State patronized private laboratories for test after which they bought recommended drugs from local chemist operators and / or medicine shops in the local market. Respondents in Abia and Imo States utilized more of orthodox treatment than those in Ebonyi State. The usage of orthodox methods of malaria treatment was informed by respondents' age, marital status, household size, education, health care contact, income and membership of organization. There should be advocacy for TCAM and traditional medicine practitioners should be encouraged to improve hygienic conditions in the preparation, packaging and handling of traditional medicine, to encourage NAFDAC approval to encourage their patronage. There should be more advocacy for more decentralized health care/centres in the rural areas. And supply of drugs with adequate number of health personnel is important to make orthodox treatment more accessible to poorer and less educated households who consume them. This can be done collaboratively between Public Private Partnership (PPP), the government, communities and international assistance. Orthodox medical personnel and their traditional counterparts should collaborate in research on malaria treatment for the benefit of rural communities.

References

- [1]. Alade, O.A. & Kuponiyi, F.A. (2010). Perceived health status of rural women in Oyo State, Nigeria. *Nigerian Journal of Rural Sociology*, 11(2): 78-85.
- [2]. Asenso-Okyere, K., Chiang, C., Thangata, P., Andam, K. and Mekonnen, A. D. (2011a). Understanding the interaction between farm labour productivity and health and nutrition: A survey of the evidence. *Journal of Development and Agricultural Economics*, 3(3): 80-90.
- [3]. Asenso-Okyere, K., Chiang, C., Thangata, P., & Andam, K. S. (2011b). Interactions between health and farm-labour productivity. Food policy report 23. Washington, D.C.: International Food Policy Research Institute (IFPRI).
- [4]. Aydin, S., Bozkaya, A. O., Mazicioglu, M., Gemalmaz, A. Ozcakil, A., & Ozturk, A. (2008). What influences herbal medicine use? - Prevalence and related factors. *Turk J. Medical Science*, 38 (5): 455-463.
- [5]. Bakx, K. (1991). The "eclipse" of folk medicine in western society. *Sociology of health and illness*. 13(1): 20-28.
- [6]. Bello-Bravo, J., Nwakwasi, R.N, Tolulope, A., Agunbiade and Barry, R.P., (2013) Perceptions of Cell Phone Animation as an Educational Tool . A case study in south eastern -Nigeria, *International Journal of Information and Communication Technology Research*, 3(12): 2223-4985
- [7]. Bourne, P & Rhule, J. (2009). Good Health Status of Rural Women in the Reproductive ages, *International Journal of Collaborative Research on Internal Medicine and Public Health*, 1(5) : 132-155.
- [8]. Ekong, E. (2010). *Rural Sociology: An introduction and Analysis of Rural Nigeria*. (3rd ed.). Uyo, Nigeria: Dove Educational Publishers.
- [9]. Health Safety Executive, (2011). Preventing or controlling ill health from animal contact visitor attractions. Includes a supplement for teachers and others who organize visits for children. *Agriculture Information Sheet No 23(rev2)*.
- [10]. Ingawa, S.A. (2000). Socio-economic aspects of abet farming households. FAO comparative documentary repository livestock system. Retrieved from <http://www.fao.org/wairdocs/ilri/x5463e/x5463e0i.htm>
- [11]. International Fund for Agricultural Development. (2009). Enabling poor rural people to overcome poverty in Nigeria. Author.
- [12]. Kumar, S. (2011). Measuring food security throughout the world. Inc. Third class postage paid in New Haven :Yale Scientific Publications, Retrieved from <http://www.yalescientific.org/2011/04/measuring-food-security-throughout-the-world/>
- [13]. National Population Commission (NPC) & ICF Macro. (2006). *Nigeria demographic and health survey 2008*. Abuja, Nigeria: Author.
- [14]. Nkonya, E., Pender, J., Kato, E., Omobowale, O., Phillip, D. & Ehui S. (2010). Enhancing agricultural Productivity and profitability in Nigeria. Nigeria Strategy support Programme. Brief No 19. International Food Policy Research Institute. Abuja: Author.
- [15]. Oboh, V.U. Sani, R.M. & Biam, C.K. (2009). Rural farmers' involvement in multilateral initiative of malaria: The identification and prioritization of their infrastructure needs in Oju Local Government Area of Benue State. *International Journal of Rural Studies (IJRS)*, 16(4).
- [16]. Oladepo, O.,Tona, G.O., Oshiname, F.O., Musibau, A. & Titiloye, M.A. (2010). Malaria knowledge and agricultural practices that promote mosquito breeding in two rural farming communities in Oyo State, Nigeria. *Malaria Journal*, 9(91): 1475-2875.
- [17]. Onwujekwe, O., Uzochukwu, B., Eze, S., Obikeze, E., Okoli, C. & Ochonma, O. (2008). Improving equity in malaria treatment: Relationship of socio-economic status with health seeking as well as with perceptions of ease of using the services of different providers for the treatment of malaria in Nigeria. *Malaria Journal*, 7(5): 1186-1196.
- [18]. Opiyo, P., Mukabana, W. P., Kiche, I., Mathenge ,E. , Killeen, G.F., & Fillinger, U. (2007). An exploratory study of community factors relevant for participatory malaria control on Rusinga Island, western Kenya. *Malaria Journal*, 6:48 doi:10.1186/1475-2875-6-48
- [19]. Oreagba, I. A., Oshikoya, K. A. & Amachru, M. (2011). Herbal medicine use among urban Residents in Lagos, Nigeria. *Journal of BioMed Central Complemt and Alternative Medicine*. Doi 10. 1186/1472-6882/11/117
- [20]. Osemene, K.P., Elujoba, A.A., & Ilorin, M.O. (2011). A Comparative assessment of herbal and orthodox medicine in Nigeria. *Research Journal of Medical Sciences*, 5(5):280-285.
- [21]. Sherbinin, A., Van-Wey, L., Mc Sweeney, K. Aggarwal, R. Barbieri, A. Henry, S., Hunter, L.M., and Twine, W. (2008). Rural household demographics livelihoods and the environment. *National Institute of Health Public Access*, 18 (1):38-53.
- [22]. Shretta, R., Gandaho, T. & Malenga, G. (2001). How the Roll Back Malaria Partnership can promote universal access to effective anti malarial drugs: Examples of anti malarial drug policy and drug management systems from Malawi, Kenya, Cambodia and Senegal: A background paper for the Fourth RBM Global Partners Meeting 18-19 April 2001, Washington D.C.:Malaria Consortium.
- [23]. World Health Organization (2014). Ebola virus disease. WHO Fact Sheet number 103. WHO Medicare. Geneva, Switzerland. retrieved from <http://www.who.int/mediacare/factsheets/fs103/en/>
- [24]. World Health Organization,(2011). WHO African Region: Nigeria Retrieved from http://en.wikipedia.org/wiki/World_Health_Organization#2009_influenza_pandemic