Applied Tropical Agriculture
Volume 21, No.1, 167-174, 2016.

Perceived Psychological Factors Influencing the Adoption of Roll Back Malaria Strategies by Rural Farming Households in Ondo State Nigeria

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ABSTRACT

The study investigated psychological factors influencing adoption of Roll Back Malaria (RBM) among the rural households in Ondo state Nigeria. Multistage and simple random sampling techniques were used to select respondents (household heads). Data from 272 household heads were analysed using descriptive statistics such as frequency counts and percentages. Majority of the respondents (85.7%) were aware of Roll Back Malaria Programme while awareness of specific strategies under the programme varied from low (35.3 % for intermittent preventive treatment) to high (97.1% for Vector control strategies). Inferential tests using Pearson Product Moment Correlation (PPMC) showed that visits by health extension and agricultural extension agents were not significant (r= 0.095 and 0.133 respectively) in influencing acceptance of RBM. The Tobit analysis showed that some psychological variables (perceived convenience, change proneness and knowledge) were significant factors influencing the adoption of RBM whose marginal effects (dy/dx) were 0.0193553, 0.0131631, and 0.0390419 respectively. Regular visits and information dissemination on malaria from both health and agricultural extension agents were recommended. Adequate attention should be given to psychological characteristics of target beneficiaries of any public health programme.

Keywords: Psychological, Roll Back Malaria, rural, public-health, adoption

INTRODUCTION

All over the world in both developing and developed nations, there is continuous introduction of various public health programmes to the people. The aim is often to bring the entire populace to a level where they will live and enjoy healthy and productive life. The productivity of any individual is a function of many factors including health status. This has made stakeholders in the health sector i.e. government, researchers, medical experts, and health extension agents, and non- governmental agencies among others, to keep working together in order to ensure that the entire population of every nation; regardless of sex, race or age, enjoy a state of excellent health. A healthy population makes a productive nation. It has been estimated that about 90 percent of Nigeria's food is produced by small scale farmers who cultivate small plots of land and depend on rainfall rather than irrigation (IFAD, 2014). These rural farming households use locally fabricated farm tools with little or no access to mechanized equipment when compared to their counterparts in the Western nations. More worrisome is the poor access to health care by these peasant farmers who are exposed to unfriendly working conditions. This has serious implication on the agricultural productivity of these farmers. These farmers are the ones responsible for feeding the teeming population and supplying industries with raw materials. Hawkes and Ruel (2006), has a similar view and stated that "in agricultural communities, poor health reduces income and productivity, further decreasing people's ability to address health problems and inhibiting economic development." Poor health has significant negative impacts on the growth of developing countries. Poor health of the agricultural workforce could be regarded as one of the major causes of shortfall in food supply and slow pace of development in sub-Saharan Africa.

According to World Bank, (2007), "illness and death from HIV/AIDS, malaria, tuberculosis and other diseases reduce agricultural productivity through the loss of labour, productive adults' knowledge, and assets to cope with illness." Several studies like Aikins (1995), Ettling (1994) and Ajani and Ashagidigbi (2008) confirmed that health of a farmer will determine his productivity. Study by Ulimwengu (2009) showed that healthy farmers produce more per unit of inputs, earn more income, and supply more labour than farmers affected by sickness. There are several sicknesses and disease inhibiting the performance of a farmer in sub –Saharan Africa but notably is malaria. In Africa, malaria is the disease that has the most widespread impacts on growth and development, malaria costs Africa more than US$12 billion annually, and it has slowed down economic growth in African countries by as much as 1.3 percent per year (Roll Back Malaria, 2003). Malaria kills over a million people each year, mostly in Africa, according to the World Health Organization (2008), more than 90

percent of deaths from malaria in 2007 occurred in Africa, where most of the countries are endemic for the disease. These estimates made malaria the preeminent tropical parasitic disease and one of the top three killers among communicable diseases (Sachs and Malaney, 2002). Malaria also can cause morbidity through fever, weakness, malnutrition, anaemia, spleen diseases, and vulnerability to other diseases.

Ill health from malaria causes reduction in crop output, reduction in use of farm inputs, reduction in area planted by farmers, changes in cropping patterns, and loss of agricultural knowledge. Goodman (2000) stated that impact of malaria on agriculture results in the loss of potential able-bodied adult labour as well as reduction in labour quality; time diverted from agricultural activities toward caring for the sick and attending funerals, and reduced funds to hire seasonal casual labour. In addition, households often sell their capital goods (farm equipment, cattle) to get funds to pay for health and funeral expenses. The malaria situation in Nigeria is of grave concern because Nigeria has the highest incidence of malaria in Africa with an estimated 57 million cases and 225,000 deaths every year. Malaria is endemic throughout Nigeria with more than 90% of the total population at risk of stable endemic malaria (NetMark, 2001). At least 50% of the population suffers from minimum of one episode of malaria each year (Federal Ministry of Health (FMOH), 2001). The disease is the commonest cause of outpatient attendance across all age groups (FMOH, 2001). According to Ajani and Ashagidigbi (2008), 2 days of incapacitation of farmers by malaria is equivalent to loss of N15, 231.50 per day. Effective malaria control measures must be devised if agricultural role in economic development must be revived in Nigeria.

In an effort to combat the menace of malaria scourge, Roll Back Malaria was launched in year 1998 with the goal of halving the world's malaria burden by 2010 (FMOH, 2004). Unfortunately, this target was not met even though there was reduction in the malaria burden over the decade. According to RBM (2013), The Congo and Nigeria account for over 40% of the estimated total of malaria deaths globally. It is then imperative to ask why RBM has not achieved much of the desired goals. It is therefore necessary to research into factors that determines the acceptance of RBM. Rural farming households were chosen because of their prominent role in food production and the massive impact of malaria on them. In addition, most adoption studies on public health programmes focused on socio-economic factors with little or no attention on socio-psychological factors. Hence the need for this study.

It is important to note that regardless of the number of agricultural innovations that the farming household adopts or desire to adopt, it will have little or no positive impact on the farmers' output if the farmer and his household are not healthy. Therefore, for the increased food production drive by the government to be successful, there is need to investigate the factors that determines farming household's acceptance and use of Roll Back Malaria. The study specifically: (1) Determined the awareness level of RBM by rural households in the study area; (2) Determined the adoption level of RBM by rural households in the study area; (3) Examined the rural household's perception of RBM programme strategies; (4) Determined perceived psychological factors influencing the adoption of RBM programme by the respondents.

In order to understand the relationship of some of the variables, the study hypothesized that:

1. There is no significant association between frequency of health extension visit and adoption of Roll Back Malaria
2. There is no significant association between frequency of agricultural extension visit and adoption of roll back malaria.
3. There is no significant relationship between adoption of roll back malaria and selected perceived psychological factors.

METHODOLOGY

The Study Area

The study area is Ondo state which comprises of 18 Local Government Areas. The state spans across the latitudes $5^0 45^1$ and $8^0 15^1$ North of the equator and longitudes 4^0 and 6^0 East of the Greenwich Meridian. It is bounded in the South by the Atlantic Ocean and Delta state, in the East by Edo state, in the West by Ogun, Osun and Ekiti states and in the North by Kwara and Kogi states.

Ondo State is found in the rain forest zone of Nigeria where rainfall is very high for greater part of the year. There are two seasons namely the wet (rainy) season and the dry season. The rainy season often spans over seven months (April to October) of every year. The mean rainfall is 200 cm.The monthly distribution of rainfall indicates that about 75% of this rainfall falls in the month of May to October. The hottest months are February and March when the mean annual temperature is above 80°F

The dominant natural vegetation in the study area is the rain forest with a mixture of tall and short trees. It is therefore very rich in varieties of flora and fauna; much of the vegetation has been altered or even obliterated by cultivation over a long period of time. Dominant tall trees common in this zone include *Iroko, Obeche, white and black Afara*, *Mahogany*, *Opepe*, *Teak*, *Meligna*, just to mention a few. South–Western Nigeria is dominated by the Yoruba tribe of the nation comprising the Ikales, Ondos, Ilajes, Akokos. The other tribes that are found in this zone also include the Hausas and the Ibos who migrated from North and Eastern part of the country often for business purpose.

Sampling Method and Sample Size

Multistage and simple random sampling were used. In stage I, Eight (8) Local Government Areas were randomly selected from the existing eighteen local Government Areas in the state. In stage II of the sampling, five communities were randomly selected from each of the 8 selected LGA for convenience, giving a total of 40 communities. In stage III, seven (7) households were randomly selected from each of the selected 40 communities for convenience, giving a total of 280 selected households. A total of 280 copies of questionnaire were distributed but 272 copies were recovered. Data from the recovered 272 copies of the questionnaire were used.

From the list of public health programmes in Nigeria, RBM was purposively selected being the major programme launched to tackle malaria. Malaria accounts for most outpatients in Nigeria hospitals and about 40% of hospital admissions (FMOH, 2001, RBM, 2012) and also because of its high incidence in Nigeria. The data for this study were collected using questionnaire. The household heads were interviewed. Additional information was also gathered through Focus Group Discussion (FGD). The FGD comprises of one group in each community sampled. Each group was made up of 2 adult males, 2adult females and 2 youths.

Measurement of Variables

Socio-economic Status: This was measured by using the standardized scale by Akinbile (2007), the respondents' membership and participation in social group(s), traditional title(s) held and material possessions were items in the scale. Items on the scale were allotted scores which were later converted into weights through zigma scoring.

Knowledge: The knowledge of the respondents on RBM was measured by the ability to respond correctly to questions on main features, characteristics and purpose of the intervention strategies under the programme. Fifteen questions were asked in all and the scores obtained were converted to percentage. The scores were then ranked as low knowledge 0-33% (low), 34-67% (Medium) and 68-100% (High).

Attitude: The attitude of the respondents on the selected health programmes was deduced from scores obtained on a 5 point likert scale scores. Statements on the programmes were constructed. It was measured by awarding scores to the responses of each attitudinal statement over a 5 point likert scale. The scale was SA (Strongly Agree), Agree (A), Undecided (U), Disagree (D) and strongly disagree (SD); assigned scores were: 5, 4, 3, 2, 1, respectively. The scores were reversed for negatively worded statements on the scale.

Dependent Variable (Adoption of RBM): This was measured by scorng each of the strategies adopted under the RBM programme one point and the total score obtained for each respondent was summed and was deflated by the maximum score obtainable on the health programmes to give adoption score of each respondents.

Perceived Effectiveness of RBM

This was measured by asking the respondents to rate their perceived effectiveness of the health strategies under RBM over a 5-point scale of Very Effective, Effective, Don't know, Fairly Effective, Not Effective. Assigned scores were: 5, 4, 3, 2, 1 respectively. Perceived Convenience was measured using this scale i.e Very Convenient, Convenient, Don't know, Inconvenient, Very Inconvenient, 5, 4, 3, 2, 1 were assigned respectively. Perceived Relevance was also measured and scored the same way Perceived Effectiveness was scored. Very Relevant, Relevant, Don't know, Irrelevant and Very Irrelevant, similarly 5, 4, 3, 2, 1 were points allotted respectively. The scores for each strategy was summed to give the perception scores for each perceptional variable.

Data Analysis

The data collected were analyzed with frequencies, percentages and Pearson Product Moment Correlation (PPMC) which was used to test hypotheses 1and 2. Tobit model was used to test the third hypothesis. Tobit model was used because the regrassand had values between 0 and 1. This method estimates the likelihood of adoption and the extent (i.e., intensity) of adoption.

RESULTS AND DISCUSSION

Awareness of RBM and Years of First Contact with the Programme.

Table 1 reveals that 85.6 percent of the respondents sampled in this survey were aware of Roll Back Malaria. This high level of awareness could be attributed to the much drive by the government to reduce the incidence of malaria. There is high level of information dissemination on the need to make Nigeria a malaria free country (especially after RBM launch in the country). This high level of awareness could also be as a result of the fact that malaria has been known to be a serious menace to human and economic development in Nigeria; as a result, efforts are being made towards combating it; in order to keep the family healthy and productive. Malaria has been in Africa for a long time, therefore, any programme that attempts to combat it will be given interest by the people. About 50% of the respondents heard about RBM for the first time between 7-10 years ago. The awareness of the programme became high in Nigeria after year 2000 Abuja summit on malaria by African Heads of State (FMOH, 2005). The campaigns gained momentum from year 2002 which represents about ten years before this survey was conducted.

Table 1: Awareness and years of first contact with programmes by respondents.

	No		Yes	
	Frequency	Percentage	Frequency	Percentage
	39	14.3	233	85.7
Awareness of Roll Back Malaria				
			19	7.0
Years of first Contact with RBM			40	29.0
			137	50.4
<3years			37	13.6
3-6 years				
7-10 years				
< 10 years				

Source: Field Survey, 2012

Table 2: Adoption of roll back malaria strategies by respondents

Roll Back Malaria Strategies	Non- Adopters		Adopters	
	Freq.	Percentage	Freq.	Percentage
Treated Net	214	78.7	58	21.3
Spray	165	60.6	107	39.4
Intermittent Preventive Treatment(IPT)	218	80.2	54	19.8
Vector Control	27	9.9	245	90.1
Prompt Treatment within 24 hours from hospital	36	13.2	236	86.8

Source: Field Survey, 2012; * Multiple Responses

Table 3: Frequency of visit by Health and Agricultural Extension Officers

Frequency of Visits by Health Officers	Frequency	Percentage
Fortnightly	9	3.3
Monthly	13	4.8
Quarterly	33	12.1
During Special Programmes	217	79.8
Total	**272**	**100.0**
Frequency of visit by Agricultural Extension Officers		
Fortnightly	166	61.0
Monthly	52	19.1
Quarterly	30	11.0
During Special Programmes	24	8.9
Total	**272**	**100.0**

Source: Field Survey, 2012

Adoption of Specific RBM Strategies by Respondents

From Table 2, the greatest percentage of the respondents (90.1 percent) claimed to use vector control strategy all the time to combat malaria; the percentage of the respondents that sought medical help within 24 hours of the onset of malaria symptoms was 86.8 percent. This result is at variance with Erhun *et al.* (2005) which put the percentage of rural dwellers in South Western Nigeria seeking medical treatment of malaria from hospital within 24 hours at 27.3 percent. This was contrary to widely held opinion that rural dwellers prefer self-medication using both orthodox and traditional methods (herbs) to treat malaria at home. It is assumed that the rural dwellers visit the hospital only when the sickness becomes unbearable. About 21 percent of the respondents adopted the use of Insecticide Treated Net (ITN) which is consistent with the findings of Adeneye *et al.* (2007) in Ogun state where 22.1 percent of respondents were adopters of ITN.

Table 4: Perceived Effectiveness of Roll Back Malaria Strategies by the Respondents

	Not Effective		Effective		Don't know	
	Freq.	Percent	Freq.	Percentage	Freq.	Percentage
Roll Back Malaria (RBM) Strategies	16	5.9	222	81.6	34	12.5
Treated Net	88	32.4	114	41.9	70	25.7
Spray	35	12.9	67	24.6	170	62.5
Intermittent Preventive Treatment(IPT)	18	6.6	213	78.3	53	19.5
Vector Control						
Prompt Treatment within 24 hours						

Source: Field Survey, 2012

Table 5: Perceived convenience of RBM strategies by the respondents

	Not Convenient		Convenient		Don't know	
Roll Back Malaria (RBM) Strategies	Freq.	Percentage	Freq.	Percent	Freq.	Percentage
Treated Net	139	51.1	97	35.7	36	13.2
Spray	147	54.0	58	21.3	67	24.6
Intermittent Preventive	22	8.1	80	29.4	170	62.5
Treatment(IPT)	16	5.9	249	91.5	7	2.6
Vector Control	168	61.8	95	34.9	50	18.4
Prompt Treatment within 24 hours						

Source: Field Survey, 2012

Osero *et al.* (2005) found that in Nyamira district in Kenyan 20 percent adopted the use of ITN. This level of ITN use is also consistent with Netmark (2009) which reported that 20 percent of household in Lagos state use ITN. But these findings contradict Erhun *et al.* (2005) who reported zero percent use of ITN in South West Nigeria.

Frequency of Visit by Health and Agricultural Extension Officers

In Table 3, almost 80 percent of the respondents were visited by health officials during special health programmes particularly during the national immunization day when health rangers (health extension workers) move from house to house to immunize children. This is a reflection of health extension services for health delivery that is not as organized as that of the agricultural extension system; where every farmer is expected to be visited fortnightly. In addition, 61 percent of the respondents were visited every fortnight by agricultural extension officers. The extension delivery system of the Agricultural Development Project expects that farmers are visited at least once every fortnight but the shortfall of about 40 percent of farmers who were not visited by the agricultural extension workers is as reflection of obvious challenges which has caused inefficiency in the Training and visit system (T&V) used by Ondo state Agricultural Development Project.

Perceived Effectiveness Scores of RBM Strategies

In Table 4, treated net was perceived to be effective for malaria control by 81.6 percent of the respondents despite being perceived as not convenient by over 50 percent of the respondents. The perceived effectiveness of treated net by most of the respondents could be attributed to their experience with the use of the non-treated old type of mosquito net which they said was effective (during FGD); Vector control and prompt treatment were perceived to be effective by 63.2% percent and 78.3 percent, respectively. The perceived effectiveness of these two strategies by high proportion of the respondents could be attributed to the respondents' experience over the years with these strategies since most of the respondents adopted the use of these strategies.

In Table 5, about 51 percent of the respondents regarded treated net as a strategy that is not convenient. The stress of putting down the mosquito net every night before sleeping was a factor which made the respondents refer to the treated net as a strategy not convenient as stated during focus group discussion. Fifty-four percent also regarded spray as a strategy that was not convenient at combating malaria; this could possibly be as a result of the fumes which the respondents claimed causes catarrh when used and also because of its high cost as ascertained during Focus Group Discussion (FGD)

Despite the high adoption level of "prompt treatment" by greater proportion of the respondents almost 62 percent said it was not a convenient strategy but though they adopted it. "Prompt treatment" being regarded as non-convenient strategy could be attributed to the constraints mentioned in the FGD by the respondents i.e. the long distance of the hospitals to their homes. Vector control in terms of sanitation was perceived to be convenient by 91.5 percent of the respondents; activities like clearing of the bushes around their houses, washing of drainage and avoidance of stagnant water was already part of their lives, therefore they do not see it as inconvenient or a difficult task.

Knowledge of RBM

Almost all the respondents in Table 6 had high knowledge of RBM; 72.8 percent of the respondents scored above 67% in the knowledge test conducted on them. Only negligible 0.7 percent of the respondents were in the category of low knowledge. In addition, the massive campaign by governmental and non -governmental agencies, on combating malaria using different strategies also, could have contributed to the high knowledge score among the respondents. The people could also be said to be highly knowledgeable because of the endemic nature of malaria in Africa and because of the economic losses as a result of malaria; this therefore calls for everyone to have knowledge on how to combat the sickness. The mean score was 80.3 percent; this reflects high level of knowledge of RBM strategies among the respondents.

Table 6: Knowledge score categories of RBM

Knowledge Categories	Score	Frequency	Percentage
Roll Back Malaria			
0-33%	[low]	2	0.7
34-67%	[Medium]	72	26.5
68-100%	[High]	198	72.8
Total		**272**	**100.0**
Mean Score: 80.3%			

Source: Field Survey, 2012

According to Table 7, the result of the first hypothesis revealed that the adoption of roll back malaria was not significant ($p>0.05$) with frequency of visit by health extension worker. This might be as a result of the low frequency of visit by health extension agents which is often during special programmes.

The result of the second hypothesis as indicated in Table 8 shows that there is no significant association ($p>0.05$) between agricultural extension visits and Roll Back Malaria. This finding could be attributed to the fact that the agricultural extension workers' visits, most of the time, is meant for agricultural innovation information delivery to the respondents not health programme information delivery. The primary assignment of the agricultural extension worker is information delivery to the farmers on agricultural related matters, though sometimes they may also deliver health related messages as situation demands.

Table 7: Correlation analysis between frequency of Health Extension visit and adoption of selected Health Programmes

Variables	r- values	P values	Decision
Roll Back malaria	.095	.119	NS

Source: Field Survey, 2012; NS =Not Significant

Table 8: Correlation analysis between frequency of Agricultural Extension visit and adoption of selected Health Programmes

Variables	r- values	P values	Decision
Roll Back malaria	.133	.072	NS

Source: Field Survey, 2012; NS =Not Significant

Table 8 shows the result of maximum likelihood of Tobit regression for Roll Back Malaria (RBM). The Likelihood Ratio (LR) and the chi^2 value shows that the model is fit with 7 degrees of freedom and the probability chi^2 shows that the model is fit at 5% significant level. The result in the table further reveals that three of the explanatory variables were significant, namely: perceived convenience, change proneness and knowledge. They were appropriately signed in accordance with our apriori expectation. Perceived convenience, change proneness and knowledge were significant at 5%, 10% and 5% percent levels respectively. An increase in the perceived convenience of RBM by the respondents will lead to increase in adoption of RBM in accordance with the sign of the coefficient. The marginal effect shows that a unit increase in perceived convenience will increase the probability of RBM adoption by 1.9 %. This could be explained by the nature of the RBM strategies, for example the stress of bringing down treated nets every night, the cough/catarrh respondents claimed results from use of spray, the more convenient a respondent perceived a strategy, the higher the likelihood of adoption of such RBM strategy.

An increase in the knowledge of respondents about RBM will lead to increase in the likelihood of adoption of RBM. The marginal effect value reveals that for every unit increase in the respondent's knowledge about RBM there will be an increase in the probability of RBM adoption by 3.9%. This result has shown the significance of knowledge on adoption. A unit increase in the change proneness of a farmer will increase the probability of adoption of RBM by 1.3%. Change proneness is the propensity of a farmer to accept change therefore any farmer that has increasing tendencies to accept change also has increasing tendencies to accept RBM.

Table 9: Result of Tobit Regression for Roll Back Malaria (RBM)

Explanatory variables	Coefficients	S.E	t-statistic	Marginal effects (dy/dx)
Socio-economic Status	.0000999	.0014847	.946	.0000999
Perceived Convenience	.0193553	.0086426	0.026**	.0193553
Perceived Effectiveness	.0062461	.0079284	0.432	.0062461
Perceived Relevance	.0064897	.0068043	0.341	.0064897
Change proneness	.0131631	.0077706	0.091*	.0131631
Knowledge	.0390419	.0196476	0.048**	.0390419
Attitude	-.0000544	.0044102	-0.990	. 0000544

Source: Field Survey, 2012; Note: *** = significant at 1% level; ** = significant at 5% level; * = significant at 10%
Number of Observation= 272; Likelihood Ratio (7 DF) = 15.35; Probability Chi^2 =0.0318; Log likelihood =-31.06571

CONCLUSION AND RECOMMENDATION

The study has revealed that most farming households were aware of RBM and three out of the five strategies under the programme has adoption levels below 50 percent. This implies that awareness does not necessarily leads to adoption. The respondents were aware but were not adopting many of the Roll Back malaria strategies. The adoption of the programme (RBM) was determined by some perceived psychological variables on the programme. Therefore, perceived psychological variables of the respondents are important factor influencing the adoption of RBM strategies. The frequency of visit from both health and agricultural extension agents were low and not significant in determining adoption. It is therefore recommended that any public health programme being introduced should take into consideration various psychological characteristics of the targeted beneficiaries in order to have optimum acceptance, especially in the rural areas. There is also the need to improve visits to households by health extension agents for the purpose of enlightenment on malaria.

REFERENCES

Adeneye A.K ,Mafe M.A ,Nwokocha E.E (2007):A Pilot Study to Evaluate Malaria Control Strategies in Ogun State, Nigeria. *World Health Population,* 9 (2): 83-94.

Aikins MKS (1995): "Cost-effectiveness Analysis of Insecticide-impregnated Mosquito nets (Bed nets) used as a Malaria Control Measure: a Study from the Gambia". Ph.D Thesis, Department of Public Health and Policy, London School of Hygiene and Tropical Medicine, University of London, 1995.

Ajani,O.I.Y and Ashagidigbi, W.M (2008): Effect of Malaria on Rural Households' Farm Income in Oyo State, Nigeria. *African Journal of Biomedical Research,* 11(3): 259-266

Babalola , D.A., Olarewaju, M., Omeonu, P.E , Adefelu, A. O and Okeowo, R. (2013): Assessing the Adoption of Roll Back malaria Programme (RBMP) among Women Farmers in Ikorodu Local Government Area of Lagos State. *Canadian Journal of Pure and Applied Sciences*. 7(2), pp. 2375-2379

Erhun,W.O, Agbani E.O , Adesanya S.O (2005): ''Malaria Prevention: Knowledge, Attitude and Practicein a South Western Nigeria Community''. *African Journal of Biomedical Research,* 8: 25-29.

Ettling, M.B., McFarland DA, Schultz LJ, Chitsulo L (1994). Economic Impact of Malaria in Malawian Households. *Tropical Medicine and Parasitology.*45 (1): 74-9.

FMOH, (2001): *Strategic Plan for Roll Back Malaria in Nigeria*. Federal Ministry of Health ,Abuja.

FMOH, (2004): *Malaria Control in Nigeria: A strategy for Behaviour Change Communication.* Abuja Roll Back Malaria Secretariat, National Malaria Control Programme, Department of Public Health, Federal Ministry of Health, Nigeria 6P

FMOH (2005): *Guidelines for the Participation of N.G.O in Roll Back Malaria Initiative in Nigeria.* Abuja *Federal* Ministry of Health.

FMOH, (2007) "Free Africa from Malaria Now" Roll back Malaria Leadership and Partnership for Results: *Paper Presented at 2007Africa Malaria Day Commemoration in Nigeria*.

Goodman, C. 2000. *An Overview of Economics of Malaria: Malaria control in Africa.* Copenhagen: The ENRECA Health Network, Institute of Public Health,. pp. 122–126

IFAD (2014): Rural Poverty in Nigeria. Retrieved from www.ruralpoveryportal.org/country/home/tags/nigeria. website last updated in 2014.

Malaria Consortium (2011): ''Tropical Diseases'' Retrieved Nov. 2011 from http://www.malariaconsortium.org

NetMark (2001): *Netmark Regional Africa Programme Briefing Book*, Insecticide Treated Materials in Nigeria. NetMark publishing.

NetMark (2009): Nigeria 2008 Household Survey Report. Retrieved July 2009 from http://www.netmarkafrica.org/nigeria

Osero J.S, Otieno M.F, Orago A.S (2005): "Maternal Use of Insecticide Treated Nets in The Prevention of Malaria among Children under 5 years in Nyamira

District, Kenya". *East Africa Medical Journal,* 82(10): 495-500.

Roll Back Malaria (RBM) (2013): Malaria Key Facts. Accessed in April 2013 from www.rollbackmalaria.org/keyfacts.html

Sachs, J., and Malaney, P. (2002): The Economic and Social Burden of Malaria. *Nature*, 415:680– 685.

Ulimwengu, J.M. (2009): Farmers' Health and Agricultural Productivity in Rural Ethiopia. *AFJARE,* 3(2).

International Food Policy Research Institute (IFPRI), Washington, DC.

WHO/World Bank (2008) *2008 World Development Indicators*: World Bank Washington, DC. 35p

World Bank, (2007): *World Development Report: Agriculture for Development.* The World Bank,Washington, DC.

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