

Malaria Prevalence and Coping Strategies among Farming Households in Imo State, Nigeria

Vol.6 (7), pp. 147-151, July 2018

ISSN 2354-4147

DOI: <https://doi.org/10.26765/DRJAFS.2018.3309>

Article Number: DRJA8141753309

Copyright © 2018

Author(s) retain the copyright of this article

Direct Research Journal of Agriculture and Food Science

<http://directresearchpublisher.org/aboutjournal/drjafs>

Ehirim¹, N. C., Osuji,^{2*} E. E., Okwara,¹ M. O., Effiong,³ J. A. L., Tim-Ashama,⁴ A.,
and Anyanwu,¹U. G.

¹Department of Agricultural Economics, Federal University of Technology Owerri, Imo State, Nigeria.

²Department of Agricultural Economics, Michael Okpara University of Agriculture Umudike, Abia State, Nigeria.

³Department of Agricultural Technology, Federal Polytechnic Nekede Owerri Imo State, Nigeria.

⁴Department of Agricultural Science, Alvan Ikoku Federal College of Education Owerri, Imo State, Nigeria.

*Corresponding Author E-mail: osujiemeka2@yahoo.com

Received 12 May 2018; Accepted 3 July, 2018

This study examined malaria prevalence and coping strategies among farming households in Imo State, Nigeria. Multi-stage random sampling technique was used to select 108 respondents who sourced malaria treatment from health care service providers with the aid of a well structured questionnaire. Data were analyzed using descriptive statistics as well as the malaria prevalence and incidence rate model. The socio-economic characteristics of the farmers reveal a mean age of 49 years, 8 persons per household, 8 years educational attainment, and mean household income of N52, 606. Result also shows that majority (43.0%) of the farming households have a low rate of malaria prevalence between 20.1% to 40.0%. The result shows that less than 8% persons per 1000 are likely to have a new case of malaria when the rate of prevalence is

between 60.1-80.0%. The result also shows that 36.2% of the farmers coped by using anti-malaria drugs as against other control measures. The mean cost of coping with malaria incidence in the area is N2, 280 which is relatively low; hence majority of the farmers may not know the likely consequences or implications of malaria incidence on health and food production. Hence, increased awareness on malaria prevention and control strategies such as Roll Back Malaria (RBM) strategies should be invigorated in the rural and urban areas to prevent malaria incidence among farming households in the State.

Keywords: Malaria, prevalence, incidence, coping strategies, farming households

INTRODUCTION

Agriculture accounts for more than over 70% of the labour force and more than 23% of the gross domestic product in Nigeria (World Bank, 2007). Agriculture is the mainstay of majority of the rural dwellers in Imo State, producing major staple food crops. The output of most rural dwellers is drastically deteriorating due to some factors among which health problems such as malaria, which limits labour productivity amongst other consequences. Malaria is a mosquito borne disease caused by a parasite called plasmodium. The parasite is transmitted from human to human through the bite of an infected female anopheles' mosquito, which requires human blood to nurture her eggs to maturity (Federal

Ministry of Health, 2001). There are four plasmodium species known to infect humans. They are *plasmodium vivax*, *plasmodium ovale*, *plasmodium falciparum* and *plasmodium malariae*, with *plasmodium falciparum* as the most virulent specie and accounts for over 90% of human malaria (World Health Organization, 2000a). When malaria parasite enters the blood stream of a person, it infects and destroys the blood cells, the destruction of the essential cells leads to fever and flu-like symptoms such as diarrhea (World Health Organization, 2000b). When not treated, malaria can lead to coma and consequently death. Globally, this disease is increasingly raising concern and owing to the fact that the death caused by

this disease is on the increase especially in developing countries with Nigeria recording the highest occurrence (Ogunniyi *et al.* 2015). Nigeria is known for its high level of malaria prevalence (Federal Ministry of Health, 2001) and it is a leading cause of morbidity among children and pregnant women. Empirical studies have shown that 3.3 billion people (about half the world’s population) are at the risk of malaria. Just as one million people die each year from malaria and every 30 seconds, a child dies of malaria. Again it has been established that about 91% of the death that occur in sub-Saharan Africa is due to malaria, just as observed that 1 in 5 childhood deaths are caused by malaria. Also empirical literature pointed out that children under 5 years of age constituting about 22% of the Nigerian population and pregnant women which accounts for 20% of the Nigerian population are most vulnerable to malaria disease (Gallup and Sachs, 2001). Onwuchekwa, (2005) posited that malaria incidence in food producing States including Imo State, is adversely affecting the quantity and quality of food produced in the State. About 20% of deaths occur due to malaria prevalence during farming seasons and this involves a great number of women leading to a decline in staple food crop production in the State (World Health Organization, 2010). Thereby altering the effort in research and development on food value chain. Also, the production stage suffers great limitations due to malaria incidence among farming households. Malaria incidences reduce the pace of work and benefits derivable from farming activities. One major problem is that government has ploughed a lot of money into the economy to combat this menace. Most of these funds allotted to tackling of this disease were either embezzled or channeled to wrong areas due to the bureaucratic bottle necks. Hence, enough attention has not been given to the farming households in Imo State, who happens to be victims of this disease. World Health Organization (2000a) opined that the level of prevalence of malaria health cases in Imo State is not known and no empirical evidence of its incidence in the area, hence the need for the study.

MATERIALS AND METHODS

This study was carried out in Imo State, Nigeria. The state is located in the South-Eastern rainforest belt of Nigeria. Imo State has a total of 27 local government areas which is divided into 3 Agricultural Zones namely; Owerri, Orlu and Okigwe. Across these zones, agriculture is a major economic activity predominant amongst the people of the State. A multi-stage sampling technique was employed in selecting the respondents. This was to enable the survey cover the entire State. In the first stage, one local government area was purposively selected from each of the three Agricultural Zones of Owerri, Orlu and Okigwe respectively. The areas selected

are noted for their predominant agricultural activities especially on staple food production. The local government areas are (Ohaji-Egbema in Owerri, Nwangele in Orlu and Okigwe in Okigwe zone thereby giving a total of three local government areas. Secondly, from each of the local government areas, one Autonomous Community was selected making a total of three communities from which three villages were randomly selected. The presence of health care service providers consisting of primary health care centers; private clinic/pharmacy/drug dispensary centers and traditional healers located in the selected villages provided the sampling frame. The list of all in-patients and out-patients that patronized these health care service providers over the past six months was collected. The last stage involved a random selection of 12 households in each village based on the sample frame as obtained from the health care service providers, to give a total of one hundred and eight (108) households for the study. Data for this study were collected through secondary and primary sources using a set of structured questionnaire. Data were analyzed using descriptive statistics, and malaria incidence and prevalence rate model. The malaria incidence and prevalence rate models as specified by World Health Organization (2013) are given as:

Malaria Incidence rate
 $(MI) = \left(\frac{x}{y}\right) * k$ eqn. 1

Where *x* is the number of new cases of malaria in the defined population which had its onset during a specified period of time; *y* is the person time at risk which is defined as population of a defined geographic area under study and *k* is a constant usually an expression of 1000.

However, Malaria Prevalence rate
 $(MP) = \left(\frac{x-z}{y}\right) * 100\%$, eqn. 2

x is the number of existing cases, new and old, in a defined population during a specified period, *z* is the number of treated cases of malaria at that period of time expressed in percentage.

RESULTS AND DISCUSSION

Socio-economic characteristics of the farming household in the area

Table 1 shows that majority 78.7% of farmers were males while only 21.3% were females who owned and engaged in farming. This implies that the male folk dominated the production of staple food in the area (Osuji, 2017). The presence of female-headed households in farming was due to death of male heads, migration, divorce and economic reasons. The frequency of the respondents

Table 1. Socio-economic characteristics of the farming household.

Variables	Frequency	Percentage	Mean
Sex			
Male	85	78.7	
Female	23	21.3	
Marital Status			
Married	104	96.3	
Single	4	3.7	
Age			
31-40	20	18.5	49
41-50	31	28.7	
51-60	46	42.6	
>61	11	10.2	
Household Size			
1-4	18	16.7	8
5-8	41	37.9	
9-12	49	45.7	
Education			
0-6	38	35.2	8
7-13	63	58.3	
>13	7	7.0	
Household Income			
10000-50000	64	59.3	52606
50001-90000	36	33.3	
90001-130000	1	0.9	
130001-170000	0	0	
170001 >	7	6.5	
Total	108	100	

Source: Field survey data, (2016).

portrayed more married households than unmarried with a percentage of 96.3 which implies more households' members as well as more responsibility among the farmers (Osuji, 2017). The mean age of the respondents was 49 years. The implication of this is that the majority of the respondents fell above the active and productive age category. Age classification is relevant to this study in that physical ability and productivity depend on age and this will influence land productivity positively or negatively (Osuji *et al.* 2012). The mean household size for the farmers in the study area was 8 persons. The high percentage of household size implies that less hired labour is utilized in the course of production, hence reducing labour cost of production. The mean years spent in school was 8 years. This implies that majority of the household attended formal education. Education play a major role in creating awareness among the farmers and influence the adoption of techniques that will improve productivity (Osuji, 2017). The mean income size of the respondents was ₦52606. Income is a vital part of the productivity level of farmers (Nwaru, 2004), an increased level of income implies a reduce level of malaria prevalence.

Malaria prevalence and incidence rate per 1000

The result in (Table 2) shows the distribution of farming households based on the rate of malaria prevalence (RMP) with the corresponding malaria incidence (MI) in the area. It could be seen from the result that majority (43.0 %) of the farming households has a low rate of malaria prevalence between 20.1% to 40.0%. Again 22.2% of them have between 40.1 to 60.0 RMP while 19.4% has less than 20.0% RMP. It could be deduced from this result that there is low rate of malaria prevalence among farmers in the area. This suggests that the rate of treatment of malaria relative to new cases is on the increase. It could also be spotted out that farmers prefer treatment of malaria than not allowing its attack in the first place; hence majority the households are at risk of malaria parasite. This finding collaborates with the findings of Achwai, (2016) and Asenso-Okyere *et al.* (2009) opined that households are more at risk because they lack preventive measures of malaria. The study of Achwai, (2016) observed that cases of control of malaria by persons are very high while the rate of malaria prevalence is also very high. The result shows that 415

Table 2. Malaria prevalence and incidence rate per 1000.

RMP (%)	M.I per 1000	Frequency	Relative frequency
0-20.0	407	21	19.4
20.1-40.0	391	46	42.6
40.1-60.0	329	24	22.2
60.1-80.0	415	8	7.4
80.1-100	369	9	8.3
Total	1000	108	100

Source: Field survey data, (2016) M.I. means; Malaria Incidence

Table 3. Coping strategies of malaria prevalence and incidence of farming households.

Coping Strategy	**Frequency	Percentage
Mosquito net	62	31.1
Anti-malaria Drugs	72	36.2
Insecticide	65	32.7

Source. Field survey data, (2016), ** Multiple responses.

persons per 1000 are likely to have a new case of malaria when the rate of prevalence is between 60.1-80.0%. This suggests that when treatment cannot be afforded new cases may increase hence put a lot of family members at risk of transmission. This finding is also consistent with the findings of Bruce-Chwatt *et al.* (1973) that there is high incidence rate of malaria if malaria parasite is not removed from the sufferer in a particular environment.

Coping strategies of malaria prevalence and incidence of farming households

Table 3 shows the various levels of coping strategies of malaria cases in the area. The result shows that 36.2% of the farmers cope by using anti-malaria drugs while 32.7% of them employ insecticide as a way to cope with malaria issues. Only 31.1% of them use mosquito treated nets to combat malaria in the area. This result suggests that the use of anti-malaria is more prevalent than other preventive measures (FMH, 2001). Studies have shown that the use of anti-malaria drugs though efficient as suggested by World Health Organizations, this measure may have some side effects. According Shields, and Twycross, (2003) mosquito parasite can develop resistance to anti-malaria drugs while the study of Oluwalana and Ogunsusi, (2013) opined that excess anti-malaria drugs in human bodies can cause damages to some sensitive organs like the liver, kidney, etc. owing to the fact that these organs detoxify some effect of drugs and may collapse if over labored. The crucial implication of anti-malaria drugs use in Nigeria is by people who self-medicate to malaria related cases. People drink these

drugs with reckless abandon even when they are not under malaria case but another case that presents similar symptoms (World Health Organization, 2005). Also insecticides over time have been found out to also affect the human organs like heart bronchus etc. Continuous inhalation of these chemicals can damage these sensitive organs responsible for breathing thereby putting the individuals at risk. The studies of Shepard, (1991) and Ettlting *et al.* (1994) suggested that prevention using mosquito treated nets is better but the study of Ettlting *et al.* (1994) showed that only few families use this coping measure. The study further recommends that policy towards distribution of mosquito treated nets be made available to these farmers to ensure a total compliance and reduction in numbers of people who are at risk, thus positioning the farming households to good health status which enhance labour productivity at large.

Cost associated with coping strategies of malaria prevalence and incidence

Table 4 shows that 57.4% of the respondents employed coping strategies with the lowest cost of ₦1940 in treating malaria cases in the area. Less than 21.0% spend between ₦1940.1-₦3880 while 11.1% spent between ₦5810.1 – ₦7740 in coping with malaria. Very few farmers of 3.7% spent between ₦3880.1-₦5810 in coping with malaria. The mean cost of coping with malaria incidence in the area is ₦2280. The study suggested that the cost of coping with malaria is relatively low; hence majority of the people may not know the likely consequences or implication. The study suggests that proper control or preventive measures be made available

Table 4. Cost associated with coping strategies of malaria prevalence and incidence.

Cost (Naira)	Frequency	Percentage
0-1940	62	57.4
1940.1-3880	23	21.3
3880.1-5810	4	3.7
5810.1-7740	12	11.1
≥7740.1	7	6.5
Total	108	100

Source: Field survey data, (2016)
Mean Cost = ₦2280

so that risk of spread or new cases will be minimized. The low cost of coping with malaria may suggest that majority of the people may not want to take the prevalence of malaria serious but the consequences on their health and food productivity may be very enormous. This is in line with the findings of Onwuchekwa, (2005) and Olanrewaju, (2006) who stated that even when the control or prevention is relatively insignificant the effect on health and food productivity are not easily quantifiable especially in the long run.

Conclusion and recommendations

Nigeria is known for high prevalence of malaria and it is a leading cause of morbidity and mortality in the country. Available records show that 50 percent of the population of Nigeria of which Imo State is involved suffers from at least one episode of malaria each year. The findings of the study showed that majority (43.0 %) of the farming households have a low rate of malaria prevalence between 20.1% to 40.0%, 22.2% of them have between 40.1 to 60.0 RMP while 19.4% has less than 20.0% RMP. It could be deduced from this result that there is low rate of malaria prevalence among farmers in the area. This suggests that the rate of treatment of malaria relative to new cases is on the increase and this invariably influence food production. Hence, increased awareness on the malaria prevention and control strategies such as Roll Back Malaria (RBM) strategies should be invigorated in the rural and urban areas to prevent malaria incidence among farming households.

REFERENCES

- Achwai IH (2016). Prevalence and Economic Burden of Malaria among Family Households in Bokkos L.G.A, Plateau State, Nigeria. Unpublished M.Sc Thesis, Department of Public Health, Federal University of Technology, Owerri.
- Asenso-Okyere K, Asante FA, Tarekegn J, Andam KS (2009). "The Linkages between Agriculture and Malaria. Issues for Policy,

- Research, and Capacity Strengthening". *IFPRI Discussion Paper 00861*.
- Bruce-Chwatt LJ, Draper CC, Konforton P.(1973).Seroepidemiologic evidence of eradication of malaria from Mauritius. *Lancet* 2, 547-551.
- Ettling M, McFarland DA, Schultz LJ, Chitsulo L (1994). Economic impact of malaria in Malawian Households". *Trop. Med. Parasitol*, 45(1): 74-79.
- FMH (2001). Annual bulletins of the Federal Ministry of Health Abuja, Nigeria. Gallup JL Sachs JL (2001). The economic burden of malaria. *American Journal of Tropical Medicine and Hygiene*. 64(1): 85-89.
- Nwaru JC (2004). Rural credit markets and resources use in arable crop production in Imo State, Nigeria. Unpublished Ph.D Thesis, Department of Agricultural Economics, Micheal Okpara University of Agriculture, Umudike, Nigeria.
- Ogunniyi A, Kehinde O, Adewuyi SA (2015). The impact of malaria disease on productivity of rural farmers in Osun State, Nigeria. *Studia Mundi – Economica*. 2(1): 45-49.
- Olanrewaju RM (2006). Climate and Malaria: A Geographer's View Point Confluence. *J. Environ. Stud*. 1(2): 90-97.
- Oluwalana EO, Ogunsusi OO (2013). Impact of Malaria on Productivity and Coping Strategies among Small-Scale Garri Processors in Odeda Local Government Area of Ogun State, Nigeria. *Journal of Agric*. 2(1): 118-129.
- Onwuchekwa IB (2005).Socioeconomic Burden of Malaria on Productivity of Rice Farmers in Rural Southwest, Nigeria. *Bio. Sci. Journal*. 5(15): 175 – 182.
- Osuji EE (2017). Impact of Sustainable Soil Management Techniques on Land Productivity and Poverty Levels of Arable Crop Farmers in Imo State, Nigeria. Unpublished PhD Thesis, Department of Agricultural Economics, Michael Okpara University of Agriculture Umudike, Abia State.
- Osuji EE, Ohajianya DO, Ehirim NC, Eze E (2012). Effect of Land Use Patterns on Agricultural Productivity in Imo State, Nigeria. *International Journal of Food And Agricultural Research*, 9(1): 81-87.
- Shepard DS (1991).The economic cost of malaria in Africa. *Tropical Medicine and Parasitology*, 42(3):199-203.
- Shields L, Twycross A (2003). The difference between incidence and prevalence. *Paediatric Nursing*, 15, 7: 50-50
- World Health Organization, (2010). World Health Organization guide to identifying the economic consequences of diseases and injury. *Department of Health Systems and Services. World Health Organization Geneva, Switzerland*.
- World Health Organization, (2013). Guide for tutors and participants: Epidemiological approach for malaria control. World Health Organization Library Cataloguing-in- Publication Data – 2nd ed.
- World Health Organisation (2000a). Severe and complicated malaria. *Transaction Research Social Tropical Medicine and Hygiene* 9(4): 245 – 270.
- World Health Organization (2000b). The African Summit on Roll Back Malaria, Abuja, Nigeria. www.rbm.who.int/docs/abuja_declaration.pdf.
- World Health Organization (2005). World Malaria Report. Geneva.
- WorldBank, (2007). World development indicators. Washington D.C. Retrieved from <http://web.worldbank.org/website/external/data/statistics>.