

**ASSESSMENT OF RURAL WOMEN'S AWARENESS OF MALARIA DISEASE CONTROL
TOWARDS INCREASED AGRICULTURAL PRODUCTION IN ORSU LOCAL
GOVERNMENT AREA OF IMO STATE, NIGERIA**

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Abstract

This study assessed the awareness of malaria disease control by rural women farmers in Orsu Local Government Area of Imo State (LGA). Specifically, it described the socio-economic characteristics of the respondents, their level of awareness of the causes and symptoms of malaria and their level of awareness of malaria; control measures. Data were collected from 60 respondents with the aid of questionnaire and interview schedules using the multi-stage sampling technique. Descriptive statistics such as mean, frequency distribution, percentages, inferential statistics such as student t-test and multiple regression analysis were used to analyze the result. Results revealed that majority (98.88%) of the women were aware that female anopheles mosquito transmit the pathogen plasmodium which causes malaria. Respondents were also aware of fever (mean = 3.00), headache (mean = 3.00), loss of weight (mean = 2.95) and loss of blood (mean = 2.87) as symptoms of malaria. It was further revealed that they were aware that malaria could be prevented or controlled using traditional medicine (mean = 2.87), western medicine (mean = 3.00), preventing the vector from breeding by avoiding stagnant water (mean = 2.73), use of insecticide treated nets (mean = 2.83) and clearing of bushes around the house (mean = 2.55). They were not aware of treatment of dirty gutters with oil/kerosene to kill mosquito larva (1.98). The hypothesis tested showed that level of awareness of malaria control measures were influenced by respondents' marital status ($t = 3.3682$), age ($t = 14.3905$), education ($t = 4.0048$), occupation ($t = 4.2816$), farming experience ($t = 3.0032$), income ($t = 3.5892$) and membership in social organizations ($t = 4.3991$) at 5% significant level. The study recommends that all avenues open to government, Non Governmental bodies and other stakeholders be encouraged to embark on more malaria control awareness campaign. Also, educating women on malaria issues through social groups, extension personnel, handbills, television, radio jingles and animated packages becomes very useful here.

Keywords: Malaria, awareness, preventive, control, measures, rural women farmers.

INTRODUCTION

Rural women are responsible for half of the world's food production; they produce between 60 and 80 per cent of the food in most developing countries. In many African countries women provide 33% of the workforce, 70% of the agricultural workers, 60-80% of the labour to produce food for household consumption and sale, 100% of the processing for basic food stuffs, 90% of household water and fuel wood, 80% of food storage and transport from farm to village, 90% of the hoeing and weeding work, 60% of the harvesting and marketing activities, yet their key role as food producers and providers, and their critical contribution to household food security, is only recently becoming recognized (FAO, 2012).

The contribution of women in agriculture is expanding owing to the increasing migration of young men from rural areas which has changed their responsibilities and tasks (FAO, 2009). Based on the latest internationally comparable data, women comprise an average of 43% of the agricultural labour force of developing countries. The female share of the agricultural labour force ranges from about 20% in Latin America to almost 50% in Eastern and Southeastern Asia and sub-Saharan Africa (FAO, 2011).

Millennium Development Goal (MDG) 6 aims to combat HIV/AIDs, malaria and other diseases especially among women. HIV, malaria and other diseases have a direct and indirect impact on rural development, agricultural productivity and food and nutrition security. Sickness, absenteeism and reduced capacity to work have an impact on agricultural production and related sectors. People busy caring for those who are ill cannot work full time either, thus labour that should have been channeled towards agricultural production activities is lost, and this can also lead to distress, sale of land and productive resources. These factors lead to reduced levels of agricultural production and diminished food availability and income through labour lost by household members

when they are suffering from malaria (UN, 2010), thus the need to promote malaria control programmes.

The FAO promotes awareness among key actors in the food and agriculture sector on the impacts of HIV, malaria, and other diseases on food security and agriculture, while advocating for multisectoral responses to the epidemic. Approximately half of the world's population is at risk of malaria but primarily, malaria affects women and children most. According to the World malaria report 2011, there were about 216 million cases of malaria (with an uncertainty range of 149 million to 274 million) and an estimated 655 000 deaths in 2010 (with an uncertainty range of 537 000 to 907 000). Malaria mortality rates have fallen by more than 25% globally since 2000, and by 33% in the WHO African Region. Most deaths occur among children living in Africa where a child dies every minute from malaria (WHO, 2012), and this reduces the psyche of farming mothers during periods of mourning.

Malaria is transmitted exclusively through the bites of female *Anopheles* mosquitoes. The intensity of transmission depends on factors related to the parasite, the vector, the human host, and the environment. Women especially pregnant women, with HIV/AIDS, are at high risk of malaria disease when infected, taking ill at planting season, a farmer may not be able to cultivate as much land and engage in intensive farming practices. They may then plant less labour-intensive crops and change cropping patterns, perhaps raising crops with a lower return, and fewer of them resulting in less land under cultivation, less effective methods, and a smaller harvest, generate less income to pay for prevention and treatment. (Asenso-Okyere, *et al.* 2009). Malaria if not treated, can quickly become life-threatening by disrupting the blood supply to vital organs (WHO, 2010). Some mosquito borne viruses can cause infections which may be fatal or lead to permanent brain damage (Lawler and Lanzaro, 2005), National Health Management and Information System is frequently inadequate for ensuring good health outcomes and optimal use of resources (Federal Ministry of Health, 2011) Despite all the malaria awareness programmes on symptoms and control methods created through health workers television, radio, newspaper, handbills, extension agents, etc, women still lack adequate information on effective malaria control measures

This study therefore determined the level of awareness of the prophylactic and therapeutic

measures of malaria among women farmers in Orsu LGA, Imo State. Specifically, the study assumed that there is no significant relationship between the socio economic characteristics of respondents and respondents' level of awareness of malaria control measures.

METHODOLOGY

The study was conducted in Orsu Local Government Area, one of the 27 local government areas in Imo State. The area lies within the humid climate with two seasons; the dry (November-March) and rainy (April-October) seasons. The people of the area are mainly farmers and traders. The main crops grown are yam, maize, cassava, plantain, cocoyam and vegetables. Live-stocks reared are poultry, sheep and goats. Labour supply is by household mainly. There is also hired labour which can be on the basis of finish and pay system.

Multi-stage sampling was used in the sample selection for this study. In the first stage, 6 communities were randomly selected of the 21 communities that make up the local government area. In the second stage, 2 villages were randomly selected from each of the 6 communities giving a total of 12 villages. In the third stage, 5 farmers were randomly selected from each of 12 villages to give a sample size of 60 farmers. Primary and secondary data sources were used in data collection. Structured questionnaire and interview schedule were used in this study.

Awareness was measured using a three-point Likert-Type rating scale of fully aware = 3, aware = 2, not aware = 1. Based on the three-point, a mean score of 2.00 was obtained thus $(3 + 2 + 1 = 6 \div 3 = 2.00)$. Decision was taken thus: any mean response less than or equal to 2.00 suggests not aware, while any mean response greater than 2.00 suggests aware. To determine the index of awareness the individual item scores were pooled together and a raw score obtained. Data were analyzed using descriptive statistics such as mean, frequencies, percentages for objectives 1, 2 and 3. Inferential statistics such as t-test was used for hypothesis testing which says there is no significant relationship .

Regression analysis of Socio-economic characteristics of rural women and their level of awareness of malaria control measures.

In the regression analysis, level of awareness of malaria control measures of respondents represents the dependent variable (YA) i.e.

$$Y_A = F(x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8, x_9, e)$$

Where

Y = Awareness level

x_1 = marital status

x_2 = age

x_3 = Household size

x_4 = Education

x_5 = Type of farming

x_6 = occupation

x_7 = Years of experience

x_8 = Income level

x_9 = Social organization

e = Error term

RESULTS AND DISCUSSION

Table 1 shows that 5% of the respondents were single, 70% were married and 25% were widowed. From the result 8.33% of the respondents were between 11-25 years, 36.67% were between 26-40 years, and 55% were aged 41 years and above. Since majority of the farmers are middle aged with a mean age of 40 years it implies that they may likely have the ability to positively respond to new methods of malaria control. 41.67% of the respondents had a household size of 4-6, 18.33% had 1-3 and 8.33% had above 10. The mean of household size was approximately 6 meaning that the majority of the respondents have relatively

large household size. This further means that there is relatively large number of individuals to feed and more hands to work, then malaria is to be controlled over a relatively high number of people. The table also shows that 20% of the respondents did not attend any formal education, 5% did not complete primary school, 28.33% completed primary school, 8.33% did not complete secondary school, 33.33% completed secondary school and 5% had tertiary education. This implies that the majority of the respondents completed their secondary education, and are thus literate enough to respond positively to control methods of malaria and are aware of problems associated with it. 15% of the farmers are engaged in civil service, 53.33% trading, and 31.67% artisan outside farming this may be in the bid to increase family income to be able to control malaria. Findings show that 28.33% of the respondents earned 5,000-19,000 naira income, 65% earned 20,000-34,000 naira income and 6.6% earned 35,000-49,000 naira income. This implied that the majority of the respondents earned between 20,000-34,000 per month, thus can relatively control malaria. 11.67% of the respondents did not belong to any organization, 73.33% belonged to only one and 15% belonged to 2 organizations. This then implies that most of the respondents belong to organization and this will enable them to be more aware of malaria symptoms/causes and control methods.

Table 1: Socio-economic characteristics of respondents

Variables	Frequency (n=60)	Percentage (%)
Marital status		
Single	3	5
Married	42	70
Widowed	15	25
Total	60	100
Age (years)		
11-25	5	8.33
26-40	22	36.67
41 and above	33	55
Total	60	100
Household size		
1-3	11	18.33
4-6	25	41.67
7-9	19	31.67
10 and above	5	8.33
Total	60	100
Educational level		
Never attended school	12	20
Primary school uncompleted	3	5
Primary school completed	17	28.33

Secondary school uncompleted	5	8.33
Secondary school completed	20	33.33
Tertiary school	3	5
Total	60	100
Secondary occupation		
Civil service	9	15
Trading	32	53.33
Artisan	19	31.67
Total	60	100
Income level/Month		
5000-19000	17	28.33
20000-34000	39	65
35000-49000	4	5
50000-64000	1	1.67
Total	60	100
Membership of social organization		
0	7	11.67
1	44	73.33
2	9	15
Total	60	100

Source(s): Field survey data (2012).

Table 2 shows that respondents are aware of malaria disease with mean 2.97 and also aware of the causes of malaria with mean 2.17 then malaria symptoms with mean 2.97. Respondents were also aware that malaria is dangerous with mean 3.00 and can kill with mean 2.93. It also shows they

were aware that malaria can disrupt farm work (mean 2.95) and cause persistent fever (mean 3.00). That malaria can cause acute headache (mean 3.00) and anemia (mean 2.87). Respondents were also aware that malaria can cause weight loss as a result of loss of appetite (mean 2.95).

Table 2: Level of Awareness of Malaria Symptoms /Causes

Sypmtoms/Causes	Mean	Remarks
Aware of malaria disease	2.97	A
Aware of causes of malaria	2.97	A
Aware that malaria is dangerous and can cause you to be sick	3.00	A
Aware that malaria can kill	2.93	A
Aware that malaria can disrupt farm work, reducing farm hand	2.95	A
Aware of malaria symptoms	2.96	A
Aware that malaria can cause persistent fever	3.00	A
Aware that malaria can cause acute headache	3.00	A
Aware that malaria can cause anemia	2.87	A
Aware that malaria can cause weight loss as a result of loss of appetite	2.95	A

Source(s): Field survey data (2012).

Table 3 reveals that respondents were aware of traditional method of controlling malaria with

mean value of 2.87, also going to health care / hospital with mean valuen of 3.00. Respondents

were aware of preventing the vector from breeding by pouring away water collected in containers with mean value of 2.73, also putting mosquito nets on the doors and windows of the house (mean = 2.83), the use of both traditional and medical

sources (mean = 2.93) and siting farms away from home (mean = 2.55). Most of the respondents were not aware of the use of kerosene and/or used oil in dirty gutters to kill mosquito larva and pupa.

Table 3: Level of Awareness of Malaria Control Method

Control Method	Mean	Remarks
Traditional use of herb	2.87	A
Going to health care /hospital	3.00	A
Preventing the vector from breeding by avoiding/treating stagnant water	2.73	A
Putting mosquito nets on the window and door of the house	2.83	A
The use of both traditional and medical sources	2.83	A
The use of kerosene/crude oil in gutters to kill mosquito larva.	1.98	NA
Clearing of bushes around the house.	2.55	A

Source(s): Field survey data (2012).

The results of the four functional forms of the ordinary least square multiple regression analysis of socio-economic characteristics of rural women and their level of awareness of malaria control measures is shown in Table 4.

Table 4: Determination of Socio-economic Factors that Influence Rural Women's level of awareness of malaria control measures.

Explanatory Variable	Linear Function	Semi-log Function	Double-log Function+	Exponential Function
Constant	294.1788	201.6894	151.9428	106.3891
Marital status (X ₁)	16.4505 (1.0326)	1.0392 (1.0326)	0.0694 (3.3689)**	0.0081 (1.1739)
Age (X ₂)	-17.2216 (-1.0738)	-1.3391 (-1.2613)	-0.742 (14.3905)**	-0.0094 (-3.7692)**
Household size (X ₃)	14.1904 (1.0889)	2.7046 (1.2786)	0.0973 (1.1983)	0.0085 (1.1644)

Education (X_4)	10.2291 (1.1228)	1.3309 (1.2539)	0.0829 (4.0048)**	0.0069 (1.3529)
Type of farming (X_5)	11.0982 (5.2685)**	2.8146 (1.2822)	0.0743 (1.2101)	0.0077 (3.6667)**
Occupation (X_6)	19.2049 (1.0649)	3.9914 (4.5637)**	0.0882 (4.2816)**	0.0054 (3.4583)**
Farming Experience (X_7)	15.0314 (1.0648)	3.1792 (3.4921)	0.0943 (3.0032)**	0.0083 (3.4583)**
Income (X_8)	17.9122 (4.4539)**	1.8742 (1.0936)	0.0664 (3.5892)**	0.0059 (3.2778)**
Social organization (X_9)	19.1126 (1.0676)	2.0981 (1.0966)	0.0937 (4.3991)	0.0093 (3.3214)**
R^2	0.4813	0.4275	0.7653	0.6413
F-Value	5.3478	4.3182	18.0922	9.8966

Sources: Field survey data (2012)

Figures in parenthesis are the t-ratios. + = Lead Equation

- * = Significant at 5% and ** = significant at 1%
- t-ratio < 1.96 is not significant at 5% (*), 2.58 and above is significant at 1% (**)

The double-log function gave the lead equation having produced the highest value of co-efficient of multiple determination (R^2) and F-value. The co-efficient of multiple determinations (R^2) was 0.7653 which implies that about 76% of the variation is accounted for by the joint effect of the socio-economic variables investigated, while the remaining percentage was as a result of other variables/factors not investigated.

The coefficient of marital status (X_1) was positive and significant at 1% which implies that the married women were more aware of malaria control measures. This could be because they may have large households who most likely would be attacked by malaria and thus the increased interest in information on malaria treatment. The coefficient of educational level (X_2) was positive and significant at 1% level which implies that the more educated women were more aware of malaria control measures. This may be so because educated women would more likely seek for more information on malaria since they are in better position to appreciate better the negative effect malaria has on farm family (incapacitation) and their agricultural activities, since the farm family is the major source of labour. Education plays an important role in treatment. The exposure and information people get from education makes them appreciate the importance of orthodox treatment. Education will enhance the 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). The coefficient of occupation (X_6) was positive and

significant at 1% implying that the women that were involved in other occupations may likely have more opportunity to interact with people in the course of their daily work activities and get exposed to more information on malaria control measures. The coefficient of farming experience (X_7) was positive and significant at 1% implying that women that have more farming experience know the disadvantage of malaria since malaria incidence can affect agricultural activities and consequently farm yield. The coefficient of income (X_8) was also positive and significance at 1% implying that an increase in income level will lead to an increase in the level of women's awareness of malaria control measures. The women with higher income were more aware of malaria control measures. This is likely because they may have television, radio, etc, through which they get information about malaria and the different control measures. Such women would possibly have ready household labour to carry out more agricultural activities and increased yield since they may rarely get incapacitated as a result of malaria disease as the likelihood to prevent it will be higher. The coefficient of social organization (X_9) was positive and significant at 1% implying that women that belonged to social organizations were more aware of malaria control measures since they go out and associate with people who may have information on current malaria treatment measures.

The coefficient of age (X_3) was negative and significant at 1% level implying that the older the women were, the less enlightened they were on malaria control measures. This is possible because younger women are major source of farm

labourand usually more active in agricultural activities. It is expected that they would likely go all out to ensure that their farming activities are not disrupted by malaria disease by seeking for more information on effective malaria preventive measures. Therefore, the null hypothesis which says that there is no significant relationship between the socioeconomic characteristics of respondents and their awareness of malaria control measures is therefore rejected.

Conclusion and Recommendations

Women in Orsu LGA are aware of malaria symptoms/causes and it's control measures. Women who were married, older, and more educated were more aware of malaria control measures. Women with more farming experience, higher income, membership in social organizations and who were engaged in other income yielding activities were also more aware of malaria control measures. Consequently, the study recommended that all avenues open to government, Non Governmental bodies and other stakeholders be encouraged to embark on more malaria control awareness campaign. Also, educating women on malaria issues through social groups, extension personnel, handbills, television, radio jingles and animated demonstrated packages becomes very useful here.

Rereferences

- Alade, O.A. and Kuponiyi, F.A. (2010). Perceived Health Status Of Rural Women In Oyo State, Nigeria. *Nigerian Journal of Rural Sociology*, Vol. 11 No. 2 December, 2010. Pp. 78-85
- Asenso-Okyere, K., Asante, F. A., Tarekegn, V., Andam, K. S. (2009). The Linkages Between Agriculture and Malaria. Issues for Policy, Research, and Capacity Strengthening Knowledge, Capacity, and

Innovation Division. International Food Policy Research Institute.

- FAO (Food and Agricultural Organization) (2009). Gender equity in agriculture and rural development: A quick guide to gender mainstreaming in FAO's new strategic framework.
- FAO (Food and Agricultural Organization) (2011). The State of Food and Agriculture, 20 -2011. Rome: FAO.
<http://www.fao.org/sd/fsdirect/FS/P001.htm#topofpage>
- FAO (Food and Agricultural Organization). (2012) Women and sustainable food security.
- Federal Ministry of Health (2011) Implementation Guide for Parasite-Based Diagnosis of Malaria National Malaria Control Programme.
- Lawler, S.P. and Lanzaro, G.C. 2005. Managing Mosquitoes on the Farm, University of California, Davis. USA.
- United Nations (2010) FAO and the Eight Millenium Development Goals http://www.fao.org/fileadmin/user_upload/mdg/doc/mdg6_en.pdf
- World Malaria Report 2009*. (2010). Geneva: World Health Organization
- World malaria report 2012 WHO global Malaria programme*. (2012). Geneva: World Health Organization