ISSN: 2736-0040(Online)
ISSN: 2695-1975(Print)
AKSUJAEERD 3 (2): 27 – 35, 2020 AKSU Journal of Agricultural Economics, Extension and Rural Development

ADOPTION OF TRADITIONAL AND ORTHODOX METHODS FOR THE TREATMENT OF MALARIA BY CASSAVA FARMERS IN AKWA IBOM STATE, NIGERIA

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Abstract

The study assessed the extent of adoption of traditional and orthodox methods of treating malaria among cassava farmers in Akwa Ibom State. Primary data were collected with the aid of structured questionnaire and responses recorded during focus group discussion. Sample sizes of 120 cassava farmers were randomly selected for the study and responses recorded during focus group discussion. Data were analysed using descriptive statistics and Logit Regression model.Findings showed that 56.7% of the respondents were male while 43.3% were female.A large proportion (50.8%) of the respondents were within the age range of 31- 40 years. A total of fourteen and fifteen methods of malaria therapies were known to cassava farmers in AKS,only six (6) variables showed high adoption. These were; mixture of lemon grass + mango(bark)+lime + dogongaro + palm wine ($\bar{x}$= 3.71), unripe pawpaw +unripe pineapple +lime +lemon grass + H_20 ($\bar{x}$ 3.33), mixture of garlic +onion +H_20 ($\bar{x}$= 3.22) vinegar ($\bar{x}$= 3.54), grape H_20 ($\bar{x}$=2.87) and moringalatifolia + H_20 ($\bar{x}$=2.80). With the grand mean pooled data ($\bar{x}$ =2.58), with regards to orthodox methods only three (3) variables were highly adopted these include lumarrthem ($\bar{x}$=3.71), artesunate ($\bar{x}$=3.33) and chloroquine ($\bar{x}$= 3.22), *hence farmers in the state were conversance of a good number of therapies for the treatment of malaria in the area. Logit regression analysis revealed that age, gender, educational attainment and years of farming experience were the major determinant of the use of TM. The study recommends enlightenment campaigns to be carried out through extension agent to sensitize farmers on the potentials and benefit of using traditional therapies to improve their health needs in order complement the high cost of orthodox medicine.*

Keynotes: Adoption, Cassava farmers, malaria, therapy, Nigeria

Introduction

Cassava (*Manihot spp.*) is an important staple food and cash crop in Nigeria where it plays principal role in food economy as a source of dietary carbohydrate and provides food for over 60 million people in Nigeria (Abdulahi, 2003; Nwaobiala and Nottidge, 2013). For human consumption alone, cassava is processed into various forms such as Garri, Fufu, Chips, Tapioca and Flour (Echebiri and Edaba, 2008). Apart from its status as a staple crop to Nigerians, it is also used in animal feed formulation, pharmaceutical and industrial uses. It is being promoted for industrial processing into unfermented cassava flour which can be used as partial substitute in bakeries and also as a base for the production of adhesives and glue extenders in textile, paper board and plywood industries, it has also been used for the production of glucose and maltose syrup and in beer manufacture (Amoa-Awua *et al*., 2005). Cassava could also be used in the production of fuel ethanol which can be used as a complement to petroleum (Garba *et. al*., 2011). The influence of the presidential initiative on cassava, launched in Nigeria in 2003, brought cassava and its potential to the national limelight (Sanogo and Adetunji, 2008). The initiative has as its goal on the promotion of cassava as a viable foreign exchange earner and also the development of the production system to sustain the national demand. Nigeria is the largest producer of cassava in the world with production put at about 34 metric tonnes a year (Food and Agricultural Organization (FAO) (2015). The South-east zone of Nigeria is leading in cassava production, accounting for 37 percent of thenational production (National Food Reserve Agency, 2009).

Cassava has special attribute which is thriving well even in extreme conditions of drought and as such it has been called 'the famine security crop' (Awa and Tumanteh, 2001). It produces more than twice the calories per hectare produced by other root crops and has the capacity to yield under managerial soil conditions of low fertility (Ayoade, 2012). The crop plays important and fundamental role in ensuring and stabilizing food security of rural households in Nigeria (Ezedinma *et. al.,* 2006)

Malaria, caused by parasites of the genus Plasmodium, is one of the leading infectious diseases in many tropical regions, including Nigeria,West African country where transmission occurs all year round. Many of the inhabitants use plants as remedies against fever and other symptoms of acute malaria, as reported herein (Alonso*et al.*,2005). Some of these plants and plants product have their antimalarial efficacies scientifically demonstrated and the active compounds isolated with their probable mechanisms of action studied. Medicinal plants are used to treat diseases also where the biodiversity of plants occur in parallel with endemic transmission of malaria. The search for new drugs based on plants is important due to the emergence and widespread of chloroquine-resistant and multiple drug-resistant malaria parasites, which require the development of new anti-malarials. An acquaintance with antimalarial plants may be a springboard for new phytotherapies that could be affordable to treat malaria, especially among the less privileged native people living in endemic areas of the tropics, mostly at risk of this devastating disease.

In Africa, up to 80% of the population use traditional medicine for primary healthcare. About 71% in Chile,65% in India,48% in Australia, 70% in Canada,49% in France and 42% in United States. Nigeria is not left out of this embrace. Traditional medicine is said to be popular among 70% of the population (Batta, 2012).

In Nigeria, Malaria is a major public health problem, with an estimated 100 million malaria cases and over 300,000 deaths per year in Nigeria (Nigeria Malaria Fact Sheet, 2011). Monetary loss due to malaria in Nigeria is estimated to be about 132 billion naira in terms of treatment cost, prevention and loss of man-hours (Federal Ministry of Health, 2007). Malaria constitutes a major public health problem globally (World Health Organization, WHO, 2000) about 93% of the 550 million people living in Africa are at risk of malaria infection (WHO, 1995). The disease represents one of the major causes of morbidity and mortality throughout Nigeria where it is holoendemic in status (Salako, 1986;EMOH,1989). The World Health Organization estimates that over 300 million new cases of malaria arise yearly with approximately two to three millions deaths resulting from contraction. Malaria is endemic in tropical Africa, with an estimated 90% of the total malaria incidence and death occurring there, particularly amongst pregnant women and children.

In Akwa Ibom State, malaria is responsible for one in four child deaths and poses a great economic burden on household and government (Akwa Ibom State Ministry of Health,2000; Opara *et al.,* 2004). It is also a major cause of maternal death, abortion, stillbirth, premature delivery and anaemia (FMOH, 1989; 2004). Considering the fact that over 80% of the populace lives in the rural area where there is no access to health-care delivery centers and a greater percentage of the people depend solely on traditional methods of treating malaria. It is important to look at health problems like malaria that grossly affect the morbidity and mortality rates, as well as the economy of a developing country, such as Nigeria. A large percentage of its population lives in extreme poverty in rural areas, without access to potable water and adequate healthcare. Many people in our society prefer health care seeking with the traditional

medicine practitioners because it is affordable and familiar with the culture, beliefs and practices of their culture (WHO, 2008). Hence the objectives of this paper are to:
identify the socio- economic characteristics of cassava farmers in thestudy area and assess the extent of adoption of traditional and orthodox methods for treatment of malaria in the study area.

Methodology

The study was conducted in AkwaIbom State.The State lies between latitude 4 º 31¨ and 5 º 31’’ North and longitudes 7º 35¨ and 8º 35’’East; occupies a total land area of 7,245,935km²; and has an estimated population of 3,920,208 (National Population Commission, NPC, 2006). Data used for the study are mainly primary data and were obtained from cassava farmers from three (Abak, Etinan and Uyo) out of six Agricultural Development Program (ADP) Zones in the State. Frequencies and percentages were used to analyze the socio-economic characteristics of the respondents. Collated data were analyzed with the aid of descriptive and inferential statistical tools.

Sampling Technique/ Analytical Technique

A multi-stage sampling technique was adopted in the study. At the first stage, a simple random sampling technique was used to select three (3) agricultural zones from Akwa Ibom State out of her six (6) ADP zones;the second stage involves the selection of 12 extension blocks from each of the zones, the third stage was a purposive selection of two (2) cells from each of the selected 12 blocks giving a total of 24 cells. Finally, five (5) cassava farmers were randomly selected from each of the cells, giving a total of 120 cassava farmers as the respondents which served as the sample size.

In order to measure respondents’ extent of adoption, fourteen (14) and fifteen (15) variables were respectively presented in the analysis, using a four point likert - type scale of - always utilized (4), mostly utilized (3) occasionally utilized (2) and not utilized (1) variables with mean scores of 2.5 and above were adjudged utilized while mean score below 2.5 were adjudged not utilized. Each of the frequency was multiplied with the number of categorization code.

$X = \Sigma$ fn /nr
Where:
Σ = Summation
f = Frequency of each of the response made
n = Likert value
nr = number of respondents
($\bar{x}$) = mean
= (F x 1) + (F x 2) + (F x3) + (F x 4) = T

Socio-Economic Characteristics of Cassava Farmers in Akwa Ibom State

Table 1 reveals that 56.7% of the respondents were male while 43.3% were female. A large proportion (39.2%) of the respondents were within the age ranged of 41 - 50. With regard to educational status, 25% of the respondents had acquired a primary/ vocational level of education. In essence, a good number (50%) of the respondents had little or no formal education. While 48% of the respondents were on full-time, others combined farming with other form of economic pursuits. Table 1 also shows that 71.6% respondents had acquired more than 10 years of farming experience. The implication of this is that experienced farmers appreciate the negative effect of this disease. It is more probable that health shocks affects worker productivity (Asenso *et. al.*, 2010). Health status even emerges as the main determinant of labour supply by older workers in several studies (Suhreke *et. al.*,2008).

A good number (66.7%) of the respondents eared between ₦10,000 – ₦20,000 per month. A large proportion of the respondents (52.5%) received information of cassava farming practices from their fellow farmers while 40.8% of the respondents received information from radio/ television, only 4.17% of the respondent’s received information from extension agents. According to (Ali *et al.*,2008), agricultural extension primarily deals with human resources development and the transfer of technology and knowledge for agricultural research centres to farmers. Extension workers are professionals in the extension system responsible for developing individual farmers in the community. Since they are constantly and consistently in torch with the farmers as well as the rural dwellers, it becomes necessary that their campaign should include proper education of their clienteles on the enormous plant and plants product to improve the health condition of farmers.

Table 1: Socio - Economic Characteristics of Cassava FarmersinAkwa Ibom State, Nigeria (n = 120) Total

S/N	Variables	Frequency	(%)
1.	Sex		
	Male	68	56.7
	Female	52	43.3
2.	Age Distribution (years)		
	18 - 28 1815.0		
	29 – 40 4335.8		
	41 – 50	47	39.2
	51 and above1210.0		
3.	Educational Status		
	Primary /vocational	30	25.0
	Secondary	20	16.7
	Tertiary	10	8.3
	None of above	60	50.0
4.	Primary Occupation		
	Farming	58	48.33
	Farming/ Trading	53	44.16
	Farming/ Civil Service	9	7.5
5.	Farming Experience		
	Less than 10 years	34	28.33
	More than 10 years	86	71.63
6.	Farm Income		
	Less than (₦) 10,000	30	25.0
	₦ 10 – ₦20,000	80	66.7
	More than ₦20,000	10	8.3
7.	Source of awareness		
	Radio/TV	49	40.8
	Newspaper	3	2.5
	Extension agents	5	4.17
	Fellow farmers	63	52.5

***Source**: Field Survey ,2020.*

2.0. Adoption of Traditional Methods for Malaria Treatment in AKS, Nigeria

A total of fourteen (14) traditional methods of malaria treatment were known to cassava farmers in Akwa Ibom State, only six (6) variables were highly adopted which include mixture of lemon grass + mango(bark)+lime + dogongaro + palmwine ($\bar{x}$= 3.71), unripe pawpaw +unripe pineapple +lime +lemon grass + H_20 ($\bar{x}$ 3.33), mixture of garlic + onion + ginger + H_20 ($\bar{x}$= 3.22) vinegar ($\bar{x}$= 3.54), grape H_20 ($\bar{x}$=2.87) and moringalatifolia + H_20 ($\bar{x}$=2.80). With regards to grand mean pooled data ($\bar{x}$ =2.88), which was above the midpoint of 2.50. This implies that cassava farmers in Akwa Ibom State were conversance with a good number of therapies for the treatment of malaria in the State. This may be attributed to the fact that chloroquine the cheapest drug for malaria treatment has lost its potency, thus implying more cost for malaria treatment and reduction of income among rural famers (Oladepe *et. al.*, 2010). This study corroborates with Oreagba, *et al.*, 2011, which revealed that 66.8% of the respondents use traditional medicine to treat various ailments including malaria.

Also, during the focus group discussion (FGD) it was revealed that a large proportion of the famers utilized traditional therapies for the treatment of human diseases such as malaria, typhoid, diabetes, diarrhea etc. The rural dwellers rely almost exclusively on traditional medicine (IM) for their healthcare needs in order to remain economically active. Were it not for traditional medicine therefore, it is probable that the food problem in Nigeria would have been more acute than it is presently (Mafimisebi and Oguntade, 2010).

Table 2. Distribution of the Respondents According to Adoption of Traditional Methods Malaria Treatmentin AKS, Nigeria

S/N	Variables	Extent of Adoption of Malaria Therapies in AKS				Total	Mean Score	Rank	Remark
		Always Utilized	Mostly Utilized	Occasionally Utilized	Not utilized				
1	Mixture of lemon grass + mango(bark)+lime + dogongaro + palmwine	95(4)	18(3)	5(2)	2(1)	446	3.71	1st	Highly Utilized
2	Unripe pawpaw +unripe pineapple +lime +lemon grass + H_20	58	47	12	3	400	3.33	2nd	Highly Utilized
3	Mixture of garlic +onion + ginger +H_20	62	32	17	9	387	3.22	3rd	Highly Utilized
4	Bitter leave	54	23	26	17	354	2.95	4th	Highly utilized
5	Grape H_20	49	23	32	16	345	2.87	5th	Highly
6	Moringalatifolia + H_20	49	23	32	16	345	2.87	6th	Highly utilized
7	Fern (Iyamma) + lipton + H_20	47	23	29	21	336	2.80	7th	Highly utilized
8	MbritemCostusafer(Mbritem) + ginger + onion + garlic	20	22	32	46	256	2.13	8tth	Low utilized
9	Lipton +tomtom + soda H_20	24	18	24	54	252	2.10	9th	Low utilized
10	Cashew	14	18	51	37	249	2.07	10th	Low utilized
11	Vinegar	22	22	18	58	248	2.06	11th	Low utilized
12	Gangronemalatifolium (Utasi) + H_20	21	11	42	46	247	2.05	12th	Low utilized
13	Morindaluciada	11	23	45	41	244	2.03	13th	Low utilized
14	Aloe vera + pure honey	14	20	38	48	240	2.00	14th	Low utilized

Source: *Field survey, 2020.*

3.0. Distribution of the Respondents According to Adoption of Orthodox methods for Malaria TreatmentIn AKS, Nigeria

Table 3. Shows the result of the weighted mean score (WMS) analysis of the extent of adoption of orthodox methods of treating malaria among cassava farmers in the study area., A total of fifteen (15) orthodox methods of malaria therapies were known to cassava farmers in Akwa Ibom State, only three (3) variables had highly adopted which include, lumarrthem ($\bar{x}$=3.71), artesunate ($\bar{x}$=3.33) and chloroquine ($\bar{x}$= 3.22), were used regularly when they have malaria attack, since their mean scores were greater than the adjudged mean score 2.50. Others were not regularly utilized in the study

area since their mean scores were below the decision point. This must have been attributed to the fact that most farmers in the study area were aged, the tendency of using traditional methods increases.

Table 3: Distribution of the Respondents According to Adoption of Orthodox method for Malaria Treating in Akwa Ibom State, Nigeria

Orthodox Methods	Always utilized (4)	Mostly Utilized (3)	Occasionally utilized (2)	Not Utilized (1)	Total	Mean	Rank	Remark
Lumarthem	95 (4)	18(3)	5(2)	2(1)	446	3.71	1st	Highly Utilized
Artesunate	58	47	12	3	400	3.33	2nd	Highly Utilized
Chloroquine	62	32	17	9	387	3.22	3rd	Highly Utilized
Laridox	24	18	24	54	252	2.17	4th	Low Utilized
Lonart	21	23	29	47	258	2.15	5th	Low Utilized
Quiunine	20	22	32	46	256	2.13	6th	Low Utilized
Fansidar	15	27	34	44	253	2.10	7th	Low Utilized
Halfan	19	24	26	51	251	2.09	8th	Low Utilized
P-Alaxin	18	22	32	48	250	2.08	9th	Low Utilized
Waipa	23	17	26	54	249	2.07	10th	Low Utilized
Coartem	22	22	18	58	248	2.06	11th	Low Utilized
Malozine	21	11	42	46	247	2.05	12th	Low Utilized
Paludrine	11	23	45	41	244	2.03	13th	Low Utilized
Metakelfin	16	20	35	49	243	2.02	14th	Low Utilized
Malersch	14	20	38	48	240	2.00	15th	Low Utilized
Grand mean	**2.34**							

Source: Field Survey data, 2020.

NB:Midpoint = 2.5; therefore any mean score from 2.5 and above is significant while any mean score less than is not significant.

4.0.Result of Logit Regression Analysis of Socio-Economic Factors Influencing the Adoption of Traditional and Orthodox Methods of Malaria Treatment

Socio-economic factors influencing the use of traditional and orthodox methods of treating malaria by farmers in the study area is presented in Table 4. The logit model was used and the coefficient of multiple determinations was 0.7801 and 0.8922 for the traditional and orthodox methods respectively. These imply that, 78.01% and 89.48% of the variations in the use of traditional and orthodox methods of treating malaria by farmers in the study area were explained by the independent variables included in the model. The likelihood ratio chi square was both significant at 5% level which attests to the goodness of fit of the models. The significant variables influencing use of traditional methods of treating malaria were sex of the farmers, age and years of farming experience, while the significant factors influencing the use of orthodox method of treating malaria by the farmers were gender, educational attainment, income and farming experience.The coefficient of gender of the respondents was negative and not significant for those using traditional methods, while it was positive but not significant for those using orthodox methods of treating malaria by the farmers in the study area. This implies that males use orthodox measures more than the female. On the other hand, the negative relationship between gender and use of traditional methods of treating malaria implies that, gender is not a very important factor in the use of traditional methods of treating malaria.

The coefficient of age was significant at 5% level of probability and positively related to traditional methods. This implies that use of traditional methods increases with age. The age of a farmer, all things being equal, may give an indication of the number of years he has spent in the farming business. Hence, he must have evaluated the effectiveness of the methods and thus the increased use. However, the coefficient of the age wasnot significant for the orthodox methods of treating malaria by the farmers

The coefficient of educational attainment was not significant for traditional methods while it was significant at 5% level of probability and positively related to the use of orthodox methods of malaria treatment. The result implies that, the higher the educational attainment of the respondents, the greater the use of orthodox methods of treating malaria.

The coefficient of income was significant at 5% level of significance for both the traditional and orthodox methods of treating malaria. However, income was negatively related to the use of traditional methods and positively related to the use of orthodox methods. These imply that, increase income would lead to decrease in the use of traditional methods of disease control and an increase in the use of orthodox methods of treating malaria.

The coefficient of farming experience was both positive for the traditional and orthodox methods of disease control and were significant at 1% and 5% level of significance respectively. The result explains the importance of experience. It has been noted that farmers would count a lot more on their farming experience for increased productivity rather than their educational attainment.

Table 4:Factors Influencing the Adoption of Traditional and Orthodox Methods of Malaria Treatment

Variables	Traditional			Orthodox		
	Coefficient	**Std. Error**	**p-values**	**Coefficient**	**Std. Error**	**p-values**
Constant	4.40762	2.62742	0.0234 *	- 3.25237	2.67987	0.2249
Gender	−0.211933	1.01154	0.0340	1.84858	1.07111	0.0844 *
Age	1.32729	0.896006	0.0285**	1.21313	0.803734	0.1312
Education	0.0483346	0.458806	0.9161	0.319267	0.435310	0.0633**
Income	−0.716565	0.649636	0.002700**	0.274474	0.587917	0. 0664**
Experience	0.170066	0.115937	0.01424***	0.0348865	0.118677	0.07688**
Likelihood ratio Chi^2			**10.12****	**31.67****		
R^2 = 0.7801				**R^2 = 0.8922**		

Source: *Field Survey, 2020*
*** = 1% significance, ** = 5% significant, * = 10% Significant

Conclusion and Recommendations

A total of fourteen (14) traditional methods of malaria treatment were known to cassava farmers in Akwa Ibom State, only six (6) variables were highly adopted which include mixture of lemon grass + mango(bark)+lime + dogongaro + palmwine ($\bar{x}$= 3.71), unripe pawpaw +unripe pineapple +lime +lemon grass + H_20 ($\bar{x}$ 3.33), mixture of garlic +onion +ginger +H_20 ($\bar{x}$= 3.22) vinegar ($\bar{x}$= 3.54), grape H_20 ($\bar{x}$=2.87) and moringalatifolia + H_20 ($\bar{x}$=2.80). With the grand mean of pooled data ($\bar{x}$ =2.58), which is above the midpoint of 2.50. With regards to orthodox methods a greater proportion of the respondent admitted always utilized Lumarrthem ($\bar{x}$=3.71), artesunate ($\bar{x}$=3.33) and chloroquine ($\bar{x}$= 3.22), wereused regularly when they have malaria attack, since their mean scores were greater than the adjudged mean score 2.50. Others were not regularly utilized in the study area since their mean scores were below the decision point. This imply that cassava farmers in Akwa Ibom State were conversance of a good number of therapies for the treatment of malaria in the state.

Based on the findings of this study, the following recommendations were made.

- Governments should formulate appropriate policies to promote and encourage the traditional medicine practices considering the inhaling effects of drugs to humanity.
- The traditional medicine practitioners should be encouraged to improve hygienic conditions in the preparation, packaging and handling of the indigenous medicine, the dosage regimen of indigenous medicine in different dosage forms such as tablets, capsules, coloured and flavoured syrups, to encourage NAFDAC approval.
- Government should upgrade the activities of traditional medicine healers by integrating them into orthodox medicine research, workshops and trainings in the university teaching hospitals. This will enable a larger percentage of the rural dwellers to have access to qualitative treatment.

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