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Health status and factors influencing healthcare choices among leafy vegetable farmers in Calabar agricultural zone, Cross River State, Nigeria

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ABSTRACT

This study investigated the health status and factors influencing healthcare choices among leafy vegetables (waterleaf and fluted pumpkin) farmers in Calabar Agricultural Zone, Cross River State Nigeria. Specifically, this study sought to: assess the health status of the leafy vegetable farmers in the study area by identifying the common illnesses they suffer and days of being off-farm as a result of ill health; identify the choices of healthcare used by the farmers and determine socio-economic factors influencing their choices. A multi-stage sampling technique was used in selecting 240 leafy vegetable farmers from the study area. Primary data were collected using a set of structured questionnaires and analyzed using descriptive statistics such as tables, means, frequencies, percentages, minimum, maximum, and standard deviation; and inferential statistics such as multinomial logit regression. Results from the study show that malaria, typhoid, diarrhea, stomach upset, farm injuries, skin rashes, respiratory disease, and body pain/fatigue were the prevalent illnesses in the study area. The majority of the farmers (37.5%) preferred Primary Healthcare Centres (PHCs). Household size, waiting time, and distance had a significant influence on the choice of PHCs over other alternatives. The study recommends an increase in the use of insecticide-treated mosquito nets by farmers in the study area. The study also called for adequate training and staffing of PHCs to reduce the waiting time and better serve the people.

Keywords: Health status, Healthcare, Vegetable, Logit regression, Calabar Agricultural Zone

1. INTRODUCTION

Global agricultural endeavours, particularly those centred on leafy vegetable cultivation, play a fundamental role in ensuring food security and sustainable agricultural practices. Nigeria, with its agricultural economy deeply ingrained in its societal fabric, relies significantly on this sector for substantial employment opportunities. The health status of individuals encompasses their overall health condition, accounting for underlying ailments, injuries, and functional incapacities^[1]. Optimal health augments work efficacy and productivity^[6], while compromised health can lead to escalated healthcare expenses, diminished output, and reduced quality of life. Notably,^[15] attests that poor health among agricultural workers, including afflictions such as malaria, onchocerciasis, and HIV/AIDS, poses hindrances to agricultural progress and poverty alleviation in African nations.

Within the confines of the Calabar Agricultural Zone, a distinct group of farmers emerges, distinguished by their dedication to the cultivation of leafy vegetables. This subset of leafy vegetable farmers, principally engaged in nurturing nutritionally rich crops such as waterleaf (*Talinum triangulare*) and fluted pumpkins (*Telfairia occidentalis*), holds a pivotal role in bolstering regional food security and driving economic growth. As these farmers labour to yield indispensable crops, their health status transcends personal well-being and converges with the prosperity of their communities, aligning with the United Nations Sustainable Development Goal 3 – "Good Health and Well-being." This nexus between health and agricultural productivity is particularly significant for smallholder farmers undertaking the cultivation of these vegetables, who grapple with an array of health-related challenges, culminating in premature loss of youthful human capital within rural enclaves and mounting healthcare expenditure^[7].

Amid the backdrop of diverse diseases, environmental factors, and socioeconomic circumstances, unravelling the health status of leafy vegetable farmers stands as a pivotal facet in sustaining agricultural practices and enhancing livelihoods. Concurrently, their healthcare choices wield considerable influence, dictating access to medical resources, adherence to preventative measures, and the management of health issues that can directly reverberate through productivity and the calibre of cultivated produce. Research, as undertaken by^[3] focusing on the technical efficiency of dry season vegetable farmers in Lagos State, South-West Nigeria,^[20] assessing the impact of ill health on agricultural output in Kogi state, and^[12] exploring the effects of specific diseases on agricultural production in Benue State, Nigeria, has laid bare the exigent need for empirical investigations into the health status and healthcare determinants of leafy vegetable farmers within the Calabar Agricultural Zone, Cross River State, Nigeria. Understanding the health challenges that farmers face, and the factors that inform their choice of healthcare is crucial to improving their well-being and promoting sustainable agricultural practices. Furthermore, the findings of this study will be useful for policymakers and stakeholders in the agricultural sector to develop policies and programs aimed at improving the health of farmers in Nigeria. In light of the above, the study was designed to assess the health status and factors influencing healthcare choices among Waterleaf and Fluted Pumpkin farmers in the Calabar Agricultural Zone of Cross River State, Nigeria. Specifically, the study aimed to describe the socioeconomic characteristics of leafy vegetable farmers in the study area, examine the health status of leafy vegetable producers in the study area, identify the healthcare choices most preferred by leafy vegetable farmers in the area, and determine the influence of selected farmers' socioeconomic characteristics on their healthcare choices.

2. METHODOLOGY

2. 1. Study Area

The study was carried out in Cross River State. Cross River State is a coastal state in Nigeria's South-South geopolitical zone. Cross River State has a land area of 23,074 square kilometers and is located in the tropical rainforest. It is located between the equator's latitudes of 4°28N and 6°55N and the Greenwich Meridian's longitudes of 7°50E and 9°28E. It is bounded to the north by Benue State, to the south by Akwa Ibom State, and to the west by Ebonyi and Abia States. Cross River State has a tropical humid climate with a wet and dry season, average temperatures ranging between 15 °C and 13 °C, and annual rainfall ranging between 1300 mm and 3,000 mm. The state is divided into 18 administrative Local Government Areas (LGAs), which are divided into three (3) agricultural zones: Calabar, Ikom, and Ogoja. These zones also correspond to the senatorial districts of the South, Central, and North, in that order. Calabar Municipality, Calabar South, Akamkpa, Biase, Odukpani, Akpabuyo, and Bakassi Local Government Areas make up the Calabar Agricultural Zone. Cross River State's economy is primarily agrarian. Subsistence farming, artisanal fishing, and local trading predominate. Rice, yam, plantain, cassava, maize, melon, pumpkin, pepper, waterleaf, cocoa, oil palm, and rubber are among the crops grown by farmers. Vegetables such as fluted pumpkin and waterleaf are considered essential crops in the state's southern region.

2. 2. Sampling procedure and size

The sampling procedure used in this study involved a multistage approach with three sampling procedures. The first stage involved randomly selecting three LGAs from the Calabar Agricultural Zone using the Hat-and-Draw Method. The second stage involved obtaining a list of registered vegetable farmers from the Cross River Agricultural Development Project (CRADP) for the three randomly selected LGAs. Finally, to determine the sample size, a 50 percent proportionality factor was applied across the board, resulting in a sample size of 240 farmers.

2. 3. Source and method of data collection

Data for the study were gathered from primary sources collected from leafy vegetable farmers in the field. Data on the farmers' socioeconomic characteristics, leafy vegetable production inputs, and farmers' health status for both waterleaf and fluted pumpkins were collected through well-structured questionnaires designed to capture the study's objectives.

2. 4. Method of data analysis

The data gathered were analyzed using both descriptive and inferential statistics. Objectives i, ii, and iii were achieved using descriptive statistics such as frequency, percentage, mean, standard deviation, and range, while multinomial logistic regression was used to achieve objective iv.

2. 4. 1. Empirical model

The influence of selected socio-economic factors on the choice of healthcare of the leafy vegetable farmers was analyzed using the Multinomial logit regression. The Multinomial logit model takes the following general form:

$$\Pr(Y_i = j) = \frac{\exp(X_i\beta_j)}{1 + \sum \exp(X_i\beta_j)} \dots\dots\dots (1)$$

To ensure identifiability,

$$\Pr(Y_i = 0) = \frac{1}{1 + \sum \exp(X_i\beta_j)} \dots\dots\dots (2)$$

where: for the i^{th} individual, y_i is the observed outcome and X_i is a vector of explanatory variables. β_j is the unknown parameter.

According to [9], the multinomial logit coefficients are difficult to interpret, and associating β_j with the j^{th} outcome can be misleading. The marginal effects are usually derived to explain the effects of the independent variables on the dependent variable in terms of probabilities.

$$\partial_j = \frac{\partial P_j}{\partial x_i} = P_j(\beta_j - \sum_{k=0}^j P_k \beta_k) = P_j(\beta_j - \bar{\beta}) \dots\dots\dots (3)$$

The marginal effects measure the expected change in the likelihood of choosing a particular health care choice to a unit change in an exogenous variable. The empirical multinomial logit model for the choice of health care services is given as follows;

$$\ln \left[\frac{P_{ij}}{P_{ik}} \right] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_9 X_9 \dots\dots\dots (4)$$

The explicit form of the function is specified as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 \dots\dots\dots (5)$$

where;

Y = Choice of Healthcare (Primary healthcare = 1, General hospital, Private hospital= 3, Trado-medical = 4, self-medication = 5), X_1 = Educational (years of schooling), X_2 = Household size (number of persons), X_3 = Age of Farmers (years), X_4 = Primary occupation (Dummy: Yes = 1, No = 0), X_5 = Waiting time at healthcare facility (hours), X_6 = Distance to healthcare facility (km), X_7 = Severity of illness (1, severe; 0 otherwise), X_8 = Perception on causes of illness (1, spiritual; 0, otherwise), X_9 = Income (₦).

3. RESULTS AND DISCUSSION

3. 1. Socio-economic Characteristics of Leafy Vegetable Farmers

With 39.2%, leafy vegetable farmers aged 41 to 50 made up the majority of the study population. The leafy vegetable farmers' average age was 47 years, representing a young and economically active population. Married was the most common marital status among leafy vegetable farmers, accounting for 65.8% of the sample, while 'single', 'widowed', and 'divorced' made up 20%, 7.5%, and 6.7% respectively. The study's results indicate that vegetable

production in the area was mainly carried out by married couples, suggesting that family labour could be utilized for production. Furthermore, 51.7% of the leafy vegetable farmers had finished secondary school. Education is known to have a positive impact on health outcomes, as individuals with higher levels of education are more likely to engage in healthy behaviors, have better access to healthcare, and experience less stress ^[5]. This suggests that farmers with a secondary education may be more likely to engage in health-promoting behaviors and seek medical care when needed, which could lead to better health outcomes.

The highest scores (77.9%) were obtained by households with fewer than five people and the average household size was four people. According to ^[20], these figures are lower than the national average of 7 people per household. The reason for the low scores could be that the farmers practiced family planning and did not use childbearing to gain an advantage in farming activities ^[11, 18]. According to the research, most of the participants cultivated waterleaf and fluted pumpkin on plots between 0.0016 to 0.003 ha in size. It was discovered that the 0.0016ha plot size was the most popular for growing waterleaf and pumpkin, accounting for 28.3% of the leafy vegetable farmers, while the 0.002 ha plot size was the least preferred, with only 17.9% of leafy vegetable farmers utilizing it. The study also showed that the average farm size was 0.0023 ha. The findings suggest that waterleaf and fluted pumpkin cultivation is popular among smallholder farmers in the study area.

In terms of association membership, the study found that only 47.1% of the leafy vegetable farmers were members of one association or the other, while 52.9% did not belong to any association. This suggests that a significant proportion of farmers in the study area are not taking advantage of the benefits of association membership, such as access to credit. ^[4] found that membership in agricultural associations increases the likelihood of obtaining credit, which is an important input for farming. According to the study, majority of leafy vegetable farmers (64.2%) had no contact with extension agents, while 35.8% had contact with extension agents. This finding suggests that a significant portion of farmers may not have access to valuable resources and information that could improve their farming practices.

Table 1. Distribution of leafy vegetable farmers according to age, marital status, educational level, and household size

Variable	Frequency	Percentage
Age		
<30	10	4.2
31-40	59	24.6
41-50	94	39.2
>50	77	32
Total	240	100
Mean (SD)	47 (8.76)	
Marital status		
Single	48	20.0
Married	158	65.8

Divorced	16	6.7
Widowed	18	7.5
Total	240	100
Education level		
No formal education	27	11
Primary education	57	24
Secondary education	124	51.7
Tertiary education	32	13.3
Total	240	100
Household size		
<5	187	77.9
5-10	48	20.0
>10	5	2.1
Total	240	100
Mean (SD)	4 (2.05)	
Farm size		
0.0001ha	68	28.3
0.002ha	43	17.9
0.0025ha	66	27.5
0.003ha	63	26.3
Total Mean	240 0.0023ha	100
Membership to association		
Yes	113	47.1
No	127	52.9
Total	240	100
Access to extension agent		
Yes	86	64.2
No	154	35.8
Total	240	100
Frequency of Extension visit		
Once a month	35	40.7
Once a year	51	59.3
Total	86	100
Farming experience		
<5	57	23.7
5-10	155	64.6

11-15	25	10.4
>15	3	1.3
Total	240	100
Mean (SD)	7 (3.18)	
Primary occupation		
Farming	170	70.8
Trading	62	25.8
Civil servant	8	3.3
Total	240	100
Income (₦)		
≤10,000	65	27.1
10,001-25,000	153	63.7
25,001-50,000	20	8.3
>50,000	2	0.8
Total	240	100
Mean (SD)	15,428.75(9,196.68)	

Source: Field survey, 2020.

SD = standard deviation

The results further showed that the leafy vegetable farmers had experience producing waterleaf and fluted pumpkins, with an average of 7 years of farming experience. Most of the farmers (64.6%) had 5 to 10 years of experience, while only 1.3% had more than 15 years of experience, and 23.7% had less than 5 years. The study conducted by ^[8] found that fruit and vegetable farmers in Osun state had higher mean scores of 30.8 years and 15.3 years of farming experience. It is important to note that experience in agricultural activities is critical, as it can influence awareness and adoption of agricultural technologies. According to the income distribution, most leafy vegetable farmers (63.7%) earned between ₦10,000 and ₦25,000 per month, while only 0.8% earned more than ₦50,000 per month. The average monthly income of ₦15,428.75 is less than Nigeria's statutory minimum wage of ₦30,000. This suggests that the leafy vegetable farmers were not financially stable and had the option of not seeking better healthcare while ill. According to ^[10], the higher one's income, the better one's health.

3. 2. Health Status of Leafy Vegetable Farmers

The health status of waterleaf and fluted pumpkin farmers in the Calabar Agricultural Zone is presented in Table 2. The study found that majority of leafy vegetable farmers experienced one or more illnesses no more than five times during a planting season. Malaria, stomach upset, diarrhoea, farm injuries, skin rashes, respiratory disease, and body pain/fatigue were the common illnesses experienced by farmers in the previous planting season. However, only a small percentage of leafy vegetable farmers encountered these illnesses more than five times. The average number of times leafy vegetable farmers encountered any illness or disease was four, while the lowest was three. Malaria and skin rashes were the most common illnesses

in the area, indicating that they are endemic. This is consistent with [2] who noted that poor sanitary conditions in rural areas provide ideal breeding grounds for mosquitoes that cause malaria.

Table 2. Health status of waterleaf and fluted pumpkin farmers

	Malaria	Typhoid fever	Stomach upset	Diarrhea	Farm injuries	Skin rashes	Respiratory disease	Body pain/fatigue
Number of times Illnesses were encountered in a Farming Season								
<3 times	15 (6.3 %)	129 (53.8 %)	24 (10 %)	115 (47.9 %)	50 (20.8 %)	15 (6.3 %)	45 (18.8 %)	21 (8.8 %)
3-5 times	194 (80.8 %)	107 (44.6 %)	177 (73.8 %)	125 (52.1 %)	190 (79.2 %)	194 (80.8%)	189 (78.8 %)	190 (79.2 %)
>5 times	31 (12.9 %)	4 (1.7 %)	39 (16.3 %)	-	-	31 (12.9 %)	6 (2.5 %)	29 (12.1 %)
Mean (SD)	4 (1.08)	3 (0.97)	4 (1.22)	3 (1.02)	3 (0.91)	4 (1.08)	4 (1.04)	4 (1.12)
Number of days lost to illness in a Farming Season								
≤5 days	14 (5.8 %)	31 (12.9 %)	194 (80.8 %)	27 (11.3 %)	50 (20.8 %)	14 (5.8 %)	65 (27.1 %)	176 (73.3 %)
6-10 days	177 (73.8 %)	196 (81.7 %)	46 (19.2 %)	178 (74.2 %)	190 (79.2 %)	176 (73.3 %)	143 (59.6 %)	64 (26.7 %)
11-15 days	46 (19.2)	9 (3.8 %)	-	35 (14.6 %)	-	47 (19.6 %)	32 (13.3 %)	-
>15	3 (1.3)	4 (1.7 %)	-	-	-	3 (1.3 %)	-	-
Mean (SD)	9 (2.69)	7 (2.93)	4 (1.40)	8 (2.46)	7 (1.82)	9 (2.69)	12 (3.39)	5 (1.13)
Cost of treatment of illness in a Farming Season								
<1,000	106 (44.2%)	-	202 (84.2 %)	27 (11.3 %)	240 (100 %)	236 (98.3 %)	19 (7.9 %)	240 (100 %)
1,001-2,500	44 (18.3 %)	70 (29.2 %)	38 (15.8 %)	178 (74.2 %)	-	4 (1.7 %)	189 (78.8 %)	-
2,501-5,000	54 (22.5 %)	135 (56.3 %)	-	35 (14.6 %)	-	-	32 (13.3 %)	-
5,001-10,000	32 (13.3 %)	32 (13.3 %)	-	-	-	-	-	-
>10,000	4 (1.7 %)	3 (1.3 %)	-	-	-	-	-	-
Mean (SD)	6,262.5 (2,475.37)	6,218.75 (1,799.30)	2,087.50 (605.63)	4,029 (1,232.06)	1,681.25 (459.05)	1,656.67 (433.86)	4,08.33 (1,130.007)	990.62 (286.81)

Source: Field survey, 2020

SD = Standard deviation

Most of the farmers who experienced malaria (73.8 %), typhoid (81.7%), diarrhoea (74.2%), farm injuries (79.2%), skin rashes (73.3%), and body pain and fatigue (73.3%) missed 6 to 10 farm-work days. Farmers with stomach upset (80.8%) and body pain/fatigue (73.3%)

missed five or fewer days. Only a small number of farmers missed more than 15 farm-work days due to illness, such as those who contracted malaria (1.3%), typhoid (1.7%), and skin rashes (1.3%). The average number of farm-work days lost due to illness was 9 days for leafy vegetable farmers who contracted malaria and skin diseases and four days for those with stomach upset. This is at variance with the findings of ^[15] who reported that only 20% of grain farmers in Gombe state lost more than 15 farming days due to illness.

Also, Table 2 shows the expenses incurred by farmers when they became ill. According to the findings, the majority of farmers treated illness when the cost of treatment was low and within affordable limits but declined as the cost of treatment increased. Most farmers (44.2%) paid less than ₦1,000 for malaria treatment, while the fewest farmers (1.7%) paid more than ₦10,000. Malaria treatment costs an average of ₦6,262.5. The majority of farmers paid between ₦2,501 and ₦5,000 for Typhoid Fever treatment, with only 1.3 percent paying more than ₦10,000. The average cost of typhoid treatment was ₦6,218.75. Farmers who developed stomach upset, farm injuries, skin rashes, and body pain/fatigue did not incur treatment costs exceeding ₦2,500. However, the majority of farmers spent less than ₦1,000 to treat this illness. Farmers did not incur costs over ₦5,000. for diarrhoea and respiratory diseases. Majority of the farmers incurred costs ranging between ₦2,501 and ₦5,000, with 74.2% and 78.8% incurring costs for diarrhoea and respiratory diseases, respectively. This result indicates that farmers incurred high health costs in treating various diseases that afflicted them, reducing their productivity.

3. 3. Leafy Vegetable Farmers’ Healthcare Choices

Information on the distribution of leafy vegetable farmers in the Calabar Agricultural Zone based on their most preferred choice of healthcare is show in Table 3. The table shows that out of the 240 farmers surveyed, 90 (37.5%) chose primary healthcare as their preferred option, followed by self-medication with 51 (21.2%) farmers choosing this option. Private hospitals and trado-medical were chosen by 43 (17.9%) and 28 (11.7%) farmers, respectively, while only 28 (11.7%) farmers chose general hospitals. The table shows that primary healthcare and self-medication were the most preferred healthcare options among the farmers.

Table 3. Distribution of leafy vegetable farmers according to their most preferred healthcare facility.

Healthcare	Frequency	Percentages
Primary Healthcare	90	37.5
General Hospital	28	11.7
Private hospital	43	17.9
Trado-medical	28	11.7
self-medication	51	21.2
Total	240	100

Source: field survey, 2020

This result could be attributed to the availability and accessibility of primary healthcare centres and the farmers' limited financial resources. The low preference for general hospitals may be due to their distance from the farming communities or the farmers' perception of the quality of care provided by such facilities. These results agree with the finding of [13] who in their study to examine healthcare-seeking behavior among rural farmers in Oyo State, Nigeria reported that majority of the farmers preferred primary healthcare centers as their first choice of healthcare. These findings have significant implications for policymakers and healthcare providers in rural areas.

3. 4. Factors Influencing Leafy Vegetable Farmers’ Healthcare Choices

The factors influencing farmers' choice of healthcare in the Calabar Agricultural Zone based on the results of the multinomial logit regression is presented in Table 4. The coefficients were estimated using self-medication as the base category, and inferences for each choice category were drawn using the base category as a reference.

Table 4. Factors that influence the healthcare decision of leafy vegetable farmers

Variables	Primary healthcare		General hospital		Private hospital		Trado-medical	
	Coefficient	Std. error	Coefficient	Std. error	Coefficient	Std. error	Coefficient	Std. error
Constant	0.496	2.758	1.456	2.767	0.409	2.885	-6.247***	3.347
Age	0.0188	0.0449	-0.0188	0.0458	-0.00298	0.0474	0.06489	0.05228
Education	0.0667	0.0667	-0.00674	0.0831	-0.0107	0.0832	0.06001	0.0942
Household size	-0.2365	0.1945	-0.0339	0.1982	-0.0134	0.1988	-0.1371	0.2241
^b Perception	-0.4031	0.745	1.1916	0.7882	-1.242	0.8098	1.0242	0.9072
Income	-0.000114*	6.05E-5	-	6.39E-5	-6.31E-5	6.22E-5	4.81E-5	6.44E-5
^a Occupation (2)	-0.6950	0.7596	-0.3751	0.775	-1.716**	0.857	-1.0897	0.90155
^a Occupation (3)	4.224	6.432	4.581	6.462	2.8988	6.466	3.3707	6.50677
Waiting time	0.1752***	0.0281	0.121***	0.0264	0.1841***	0.02986	0.2118***	0.03228
Distance	-1.0182***	0.2673	-	0.271	-	0.2817	-	0.3155
^a Severity (2)	-1.0145	0.853	-0.8728	0.875	-1.5118*	0.91315	-1.7651*	0.9859
^a Severity (3)	0.495	0.989	-0.397	1.0786	0.2165	1.0334	-0.6899	1.1408
Base category	Self-medication							
Observations	240							
Pseudo R ²	0.363							
Likelihood ratio X ² ₍₄₄₎	262.48							
Prob > chi2	0.0000							
Log-likelihood	-230.271							

Source: Computations from field survey, 2020.

Values in parenthesis are standard error; a = categorical variable; b = dummy variables *, **, *** are significant at 10, 5, 1 %, Perception = Perception on causes of illness; Distance = distance from home to healthcare center

According to Table 4, the likelihood ratio (2) value was 262.48, which was significant at a 1% probability level. This test confirms that all of the coefficients are significantly different from zero when taken together.

The Pseudo R-squared value was 0.363. This means that the entire set of independent variables explains 36.3 percent of the variation in the choice of alternative healthcare services. The estimated marginal effects of the factors influencing vegetable farmers' choice of healthcare services in Cross River State are shown in Table 5.

Table 5. Marginal effects of factors that influence leafy vegetable farmer’s healthcare decisions

Variables	Primary healthcare		General hospital		Private hospital		Trado-medical	
	dy/dx	Std. error	dy/dx	Std. error	dy/dx	Std. error	dy/dx	Std. error
Age	0.00425	0.00514	-0.00486	0.00379	-0.002859	0.004094	0.00389*	0.00213
Education	0.0162	0.010076	-0.00691	0.08025	-0.00967	0.00763	0.00179	0.00385
Household size	-0.0424*	0.02189	-0.03099**	0.0153	0.00403	0.01594	0.00118	0.00889
^a Perception	-0.0989	0.0855	0.2239***	0.0678	-0.2162***	0.0688	0.0839**	0.039
Income	-9.5E-6	6.33E-6	-4.56-E6	5.08E-6	6.83E-6	4.90E-6	3.38E-6	2.29E-6
^a Occupation (2)	0.05758	0.0921	0.0763	0.0738	-0.1604**	0.065	-0.01868	0.0335
^a Occupation (3)	0.1322	0.2573	0.1159	0.2492	-0.177	0.127	-0.0348	0.0594
Waiting time	0.0059*	0.00341	-0.0071**	0.00295	0.0043*	0.0023	0.00345***	0.00107
Distance	-0.0513*	0.0299	0.01885	0.0244	0.00824	0.0232	-0.0127	0.012
^a Severity (2)	0.03189	0.09688	0.0407	0.0849	-0.08105	0.0702	-0.0513	0.0395
^a Severity (3)	0.1478	0.0953	-0.0803	0.0673	0.00015	0.0835	-0.0617	0.0389
Base category	Self-Medication							
Observations	240							

Source: Computations from field survey, 2020.

Values in parenthesis are standard error; ^(a) dy/dx for factor levels is the discrete change from the base level, *, **, *** are significant at 10, 5, 1 %, Perception = Perception on causes of illness; Distance = distance from home to healthcare center

The primary factors that influenced farmers' choice of healthcare were household size, waiting time, and proximity to healthcare centres. Farmers with larger households were less likely to choose primary healthcare over self-medication. Specifically, a 1% increase in household size reduces the probability of choosing primary healthcare by 4.24% compared to self-medication. Conversely, ^[2] in their study found that household size increased the likelihood of farmers choosing primary healthcare over other options. Waiting time also played a role in farmers' healthcare decisions, with an increase in waiting time actually increasing the likelihood of choosing primary healthcare over self-medication by 0.59%, contrary to prior expectations. Despite longer waiting times, primary healthcare remained the most popular choice for farmers

due to its accessibility and subsidized treatment rates from the government, as compared to general and private hospitals. This finding contrasts with the results of ^[19] study, which found that even a slight decrease in waiting time increased the probability of farming households choosing primary healthcare by 0.008 units.

Furthermore, farmers were less likely to choose primary healthcare centres for self-medication if they were located far away. The marginal effect showed that increasing the distance to the healthcare facility reduced the likelihood of choosing primary healthcare by 5.13% compared to self-medication. This suggests that distance was a significant factor in farmers' decision-making process, with rural dwellers often preferring self-medication as a cost-cutting strategy unless their illness was critical, as noted by ^[2].

Concerning General Hospitals, Table 5 showed that an increase in household size negatively affected the likelihood of farmers choosing General Hospitals over self-medication. Specifically, for vegetable farmers, a 1% increase in household size reduced the probability of choosing General Hospitals by 3.1% compared to self-medication. This suggests that as household size grows, the preference for self-medication over General Hospitals increases. The perception of the cause of an illness was found to influence farmers' likelihood of choosing General Hospitals over self-medication. If farmers perceived the cause of their illness to be natural rather than spiritual, they were 22.39% more likely to choose a General Hospital over self-medication. This is consistent with a priori expectations. Waiting time was found to have a negative impact on the likelihood of choosing General Hospitals over self-medication. Specifically, an increase in waiting time decreased the probability of choosing General Hospitals by 0.71% compared to self-medication. This finding is in line with the assertion made by ^[2] and ^[14] that long waiting times in General Hospitals can deter patients from seeking healthcare at these facilities.

The results of the study also showed that farmer's perception about the cause of illness had a negative influence on their decision to choose private hospitals over self-medication. When compared to self-medication, an increase in a farmer's perception that the cause of an illness is spiritual reduced the probability of choosing a private hospital by 21.62%. This result aligns with the findings of ^[2] who found that beliefs about the cause of illness were inversely related to the selection of private hospitals. The farmers' primary occupation had a negative effect on their probability of choosing private hospitals over self-medication.

The marginal effect indicates that changing from farming to trading reduced the probability of selecting a private hospital by 16.04% when compared to self-medication. In addition, waiting time was positively associated with the likelihood of choosing private hospitals over self-medication. The marginal effect shows that as waiting time increased by 1%, the probability of leafy vegetable farmers seeking health care from a private hospital also increased by 0.43%. This finding contradicts the findings of ^[2] and ^[19] who discovered that a slight decrease in waiting time increased the probability of selecting a private hospital by 0.523 and 0.8% respectively.

The choice of healthcare among trado-medicals (spiritualists) was significantly influenced by age, perception of the cause of illness, and waiting time. As farmers grew older, they were more likely to opt for trado-medical treatment instead of self-medication. The marginal effect revealed that increasing a farmer's age by 1 year increased their chance of choosing trado-medical treatment over self-medication by 0.389%, indicating that older farmers tend to seek healthcare from trado-medical centres more often than younger farmers. This finding supports ^[2] discovery that age is positively correlated with the choice of trado-medical

healthcare. The perception of the cause of illness was also found to influence the preference for trado-medical healthcare over self-medication among farmers.

According to the marginal effect, if a farmer perceived the cause of their illness to be spiritual, they were 8.39% more likely to choose trado-medical healthcare over self-medication. This finding is consistent with ^[17] research, which revealed that a significant number of individuals in Oyo and Ekiti States consult spiritualists for medical help, particularly when they believe the cause of their illness is spiritual. ^[2] also discovered that the belief in the cause of illness positively impacted the choice between traditional medical care and self-medication. Waiting time was another factor found to positively influence the likelihood of choosing trado-medical healthcare over self-medication. Compared to self-medication, an increase in waiting time raised the probability of opting for trado-medical healthcare by 0.345%.

4. CONCLUSION AND RECOMMENDATIONS

The study aimed to assess the health status and factors influencing healthcare choices among Waterleaf and Fluted Pumpkin farmers in the Calabar Agricultural Zone of Cross River State, Nigeria. The study indicates that the health status of leafy vegetable farmers in the study area is a concern as they experienced multiple illnesses and diseases during the planting season, resulting in lost farm-work days. The study also found that primary healthcare and self-medication were the most preferred healthcare options among the farmers, and this is attributed to the availability and accessibility of primary healthcare centers and the farmers' limited financial resources. Furthermore, the study highlights that farmers' who received infrequent visits from extension agents had lower chances of adopting new techniques, indicating a need for improved knowledge transfer and adoption of new technologies. Age, household size, perception, occupation and waiting time were the factors that influenced leafy vegetable farmer's choice of healthcare. Overall, the study emphasizes the importance of improving farmers' health status, knowledge transfer, and adoption of new technologies to enhance their productivity and economic well-being.

Based on the findings of this study, it is recommended that Agricultural Development Programmes (ADPs) and the Federal Ministry of Agriculture and Rural Development (FMARD) should improve the quality and frequency of extension services by deploying more extension agents to the study area, providing regular training, and creating incentives for agents to engage with farmers. Farmers should use insecticide-treated nets in their homes to reduce mosquito bites to combat the high prevalence of malaria. The Cross River State government should invest in strengthening primary healthcare centres in rural areas and provide training for healthcare workers to improve their capacity to diagnose and treat common illnesses.

References

- [1] American Thoracic Society (2007). What is the health status? Retrieved from <https://www.thoracic.org/patients/patient-resources/resources/health-status.pdf>
- [2] Aminu F. O. and Asogba, E. O. (2020). Utilization of healthcare facilities among farming households in Yelwa south local government area, Ogun State, Nigeria. *Agro-*

- Science Journal of Tropical Agriculture, Food, Environment and Extension*, 19(1): 43-48
- [3] Aminu, F. O., Ayinde, I. A., and Ambali, O. I. (2013): The Effect of Ill Health on Technical Efficiency dry season Vegetable farmers in Ojo Local Government Area of Lagos State, Nigeria. *World Journal of Agricultural Research* 1(6): 108-113. Doi: 10.12691/wjar-1-6
- [4] Asenso-Okyere, K., Chiang, C., Thangata, P., and Andam, K. S. (2011). Interactions between Health and Farm-Labour Productivity IFPRI Food Policy Report. Page 36. DOI: <http://dx.doi.org/10.2499/9780896295421>
- [5] Cutler, D. M. and Lleras-Muney, A. (2010). Education and health: Evaluating theories and evidence (No. w15821). National Bureau of Economic Research
- [6] Donald, R. B. (2006). Managing occupational health in the workplace. *Journal of Occupational and Environmental Medicine*, 48(7): 670-676. doi: 10.1097/01.jom.0000224915.77350.0a
- [7] Etuk, G. R., Ifeanyi-Obi, C. C., and Udom, I. A. (2012). Socioeconomic determinants of labour productivity among smallholder vegetable farmers in Southeastern Nigeria. *Journal of Agricultural Extension*, 16(1): 119-130
- [8] Fakayode, S. B., Rahji, A. Y., and Adeniyi, S. T. (2012). Economic Analysis of Risks in Fruit and Vegetable Farming in Osun State, Nigeria. *Bangladesh Journal of Agricultural Research*. 37(3): 437 – 491.
- [9] Greene, W. H 2003, *Econometric Analysis*, Macmillan Publishing, New York.
- [10] Kawachi, I. and Kennedy, B. P. (1999). Income inequality and health: pathways and mechanisms. *Health Services Research*, 34(1 Pt 2): 215–227
- [11] Komolafe, S. E., Akangbe, J. A., Ajibola, B. O., Olarewaju, C. I. and Oduwaiye, M. O. (2017). Correlates of Ill Health Conditions and Farmers' Productivity in Ilorin East Area of Kwara State, Nigeria. *Journal of Biology, Agriculture and Healthcare*, 6 (22): 17-22
- [12] Kughhur, P. G., Daudu, S., and Yaikyur, I. V. (2015). Effects of selected diseases on farmers in Agricultural Production in Ukum Local Government Area of Benue State, Nigeria. *International Journal of Humanities and Social Science* 20(7): 2279-837. DOI:10.9790/0837-20715962
- [13] Mbanasa, S. I. and Kalu, J. I. (2008). Comparative study of the production and marketing of waterleaf (*Talinum triangulare*) and fluted pumpkin (*Telfairia occidentalis*) in Cross River State, Nigeria. *African Journal of Agricultural Research*, 3(10): 710-716
- [14] McGlone, T. A., Butler, E. S. and McGlone, V. L. (2002). Factors influencing consumers' selection of a primary care physician. *Health Mark Q*. 19: 21-37
- [15] Moses, D. J. (2017). Effect of Ill Health on Technical Efficiency of Grain Farmers in Gombe State, Nigeria. *International Journal of Innovative Food, Nutrition & Sustainable Agriculture* 5(4): 7-14

- [16] Ogunlana, O. O., Olawepo, J. O., Oladeji, O. O., and Afolabi, A. O. (2021). Healthcare-seeking behavior among rural farmers in Oyo State, Nigeria. *Journal of Health Research and Reviews*, 8(2): 107-113
- [17] Oluwatayo, I. B. (2015). Healthcare service delivery system and households' welfare status in urban Southwest Nigeria. *Journal of Human Ecology* 50 (2): 181-187
- [18] [Oni, O. A. and Agboje, I. A. (2010). Determinants of choice of healthcare providers among farming and non-farming households: Evidence from selected rural areas of Ibadan, Oyo State. *Nigerian Journal of Agriculture, Food and Environment* 6 (1&2): 33-46
- [19] Oni, O. A. and Agboje, E. O. (2010). The impact of waiting time on the choice of primary healthcare provider among farming households in Ogun state, Nigeria. *Journal of Medicine and Medical Sciences* 1(9): 414-420
- [20] Onuche, U., Opaluwa, H. I., and Edoka, M. H. (2014). Ill health and agricultural production: evidence from Kogi State of Nigeria. *African Journal of Food, Agriculture, Nutrition and Development* 14(1): 8488-8503