

Nurturing Well-being: Understanding Healthcare Utilization among Smallholder Farming Households in Ibarapa East Local Government Area of Oyo State, Nigeria

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Abstract

Sound health is a basic requirement for the farming household to live a productive life. Poor health affects agricultural production as the health status of the farmers affects their physical ability to work, efficient utilization of resources, and the ability to adopt innovations, and by extension impact negatively on the welfare of their household. Malaria, stomach ache, and ringworm were the major ailments complained of by the respondents in the study area. The prevalence of these ailments is in decreasing order. Accessibility, effectiveness, and affordability were the reasons adduced by the majority of smallholder farmers' households for utilising traditional healthcare services. Most of the respondents who patronized traditional and modern healthcare services were within the range of 50 - 57 years. The users of traditional healthcare services incurred the lowest average cost per cropping season, and there was a significant difference among the average costs incurred (traditional, modern, and trado-modern healthcare) by respondents. Years of education and the cost of medications were the drivers of smallholder farmers' choice of healthcare services in Ibarapa East Local Government Area. The study recommends that rural communities should organize themselves into Community Development Associations through which corporate organisations can be approached for assistance to build healthcare centers in their respective localities to reduce the problem of accessibility. The need for local government authority to ensure the provision of subsidized drugs and services will increase the smallholders' farmer's patronage of modern healthcare.

Keywords: Healthcare Service Utilization; Modern Healthcare; Smallholder Farmer; Multinomial Logistic Regression

Introduction

Healthcare services are used to identify, treat, or lessen sickness or damage; enhance or preserve function, or even to learn about one's current health and outlook. However, in theory, a strong correlation should exist between need and healthcare utilization most especially in developing countries like Nigeria; where the availability of health infrastructure is an issue [1]. One of the key factors affecting how often people use healthcare is their health condition and the need for care to maintain or enhance it. Though access to treatment-including whether it is available, fast, convenient, and affordable-should be the primary determinant of how much healthcare is used, other factors, such as the capacity to seek care, are also important [1,2]. According to Severe Malaria Observatory [3], Nigeria has a pluralistic healthcare system with both contemporary and traditional healthcare professionals, as well as governmental and private healthcare facilities. The three layers of government are jointly responsible for providing healthcare. Poor access to modern healthcare services and beliefs are some of the factors that compelled the residents of the rural areas who are mainly small-scale far on the choice of healthcare when the

need arises. Most residents of the rural areas often use traditional self-medication (traditional) to address sickness because of their knowledge it traditional medicine is often passed down from one generation to the other. According to Katung [4], the majority of rural residents often use indigenous healthcare services first when they are ill and only turn to pharmacies and sellers of orthodox medication when they believe that traditional healthcare prescriptions have failed.

According to the National Demographic and Health Survey (NDHS), about 64% of Nigeria's population live in rural areas while many have little or no access to quality healthcare [5,6]. Despite the contribution of rural dwellers to food production, their quality of life is poorer than that of their urban counterparts [7]. According to the International Funds for Agricultural Development report [8] on Nigeria, seventy percent of rural residents are subsistence smallholder farmers who grow 90% of Nigeria's food on unirrigated plots entirely reliant on rainfall. Like other sectors of the economy, agriculture requires healthy manpower to contribute meaningfully to the economy as well as to improve their quality of life. Ill health compels farmers to take days off from attending to farm operations [9]. This resulted in loss of days worked, reduced worker capacity, hence, reducing total output [10]. Oladapo, *et al.* [11] posited that one workday lost to sickness increases farmers' inefficiency by 0.4%.

Good health is fundamental to improved quality of life, and promoting the health of rural community dwellers in Nigeria is critical in improving the quality of life of a vast majority of Nigerians who reside in rural communities. Nwangwu [12] affirmed that inadequate numbers of healthcare facilities and their appropriate distribution to enable every patient who requires one to have quick and easy access to one are among the issues with care accessibility. Other issues include cost, which consequently affects everyone's ability to receive high-quality healthcare. To maintain the health and productivity of the smallholder farmers, it is imperative that the use of healthcare services is addressed.

The small-scale farmers in Ibarapa East Local Government Area have a pivotal position in the socioeconomic structure of the LGA. Concerns over this important group's access to and use of healthcare services are, however, rising. Generally, most studies on the utilization of healthcare facilities in rural communities in Nigeria mostly focused on Western medicine which is a narrow concept of what healthcare entails. There is a paucity of empirical research to provide a complete understanding of the factors influencing the patterns of healthcare service use among smallholder farming households in the Ibarapa agricultural zone which is the hub of agricultural production in Oyo State. By examining the unique, complex factors that influence healthcare-seeking behaviours based, on access constraints, and the general health condition of smallholder farmers in the Ibarapa East Local Government Area, this study seeks to close this knowledge gap.

Goal of the Study

The goal of the study is to identify the variables that affect both traditional and contemporary healthcare services for farmers. The creation of focused treatments and policy suggestions to enhance healthcare outcomes for smallholder farmers in the area is hampered by the lack of a thorough understanding of these aspects. It is anticipated that the results of this study will aid in the development of context-specific initiatives to improve healthcare use and accessibility, thereby improving the productivity and well-being of small-scale farming households in the area. The study supports the National Health Promotion Policy [13] objective of enabling Nigerians to take prompt action to avoid sickness, enhance their health and well-being, and take steps to guarantee a healthy society. To achieve the objective, the following research questions were raised:

¹The term "traditional healthcare" describes methods, approaches, knowledge, and beliefs related to health that include manual techniques, exercises, spiritual treatments, and medications derived from plants, animals, and minerals (Fokunang, *et al.* 2011).

²Modern healthcare is a scientific and technological outcome aimed at improving general physical and mental health, lessening and eradicating disease, and educating patients and their families to ensure safety (study.com, 2023).

³According to Merriam-Webster Dictionary, healthcare is the actions taken to preserve, improve, or foster a person's physical, mental, or emotional health, particularly when carried out by qualified and certified experts.

1. What are the socioeconomic and healthcare characteristics of the respondents?
2. Is there significant variation in the average cost of medication per cropping season among the healthcare services (traditional, modern, and combination)?
3. What are the other factors that influence the healthcare service (modern/traditional healthcare) patronized?

This hypothesis was tested: H_0 : There is no significant difference in the average cost of medication per cropping season among the healthcare services (traditional, modern, and combination).

Theoretical framework and literature review

Health Belief and Cultural Competence theories support the study. A social psychology model of health behaviour change, known as the health belief model (HBM) was created to explain and forecast behaviours connected to one's health, especially the use of healthcare services [14,15]. According to Laranjo [16], the Health Belief Model sees people are more likely to take preventative action if they believe there is a substantial threat to their health, if they believe they are individually susceptible, and if doing so would result in lower costs than benefits. The model would explain the small-scale farmers' perceptions of the value of healthcare, their perceived vulnerability to health problems, and the advantages and disadvantages of using healthcare services. The cultural competence theory hinges on the culture and competence of the people [17]. Healthcare-seeking behaviours are influenced substantially by cultural influences. This approach would aid in the investigation of how small-scale farmers' use of healthcare services is influenced by cultural ideas, values, and practices.

Several studies on access and utilization of healthcare services among rural/farming households showed divergent findings. Omonona, *et al.* [18] found that there is an unequal distribution of health facilities as well as a low level of accessibility of households to medical facilities. The majority of respondents who had access to healthcare utilized traditional healthcare services. Conversely, Okojie and Lane [19] revealed that rural dwellers mainly seek healthcare from patent medicine stores. Moreover, Olatunji, *et al.* [20] affirmed that the respondents ranked Western healthcare services in terms of effectiveness compared to traditional healthcare services, however, the high costs, time wastage, and grossly inadequate primary healthcare facilities are identified as the problems that prevent the utilization of western healthcare services. Using multinomial logit regression, Oni and Agboje [21] revealed that sex, ownership of the house, quality of care, waiting time, and cost of care influenced the choice of healthcare provider.

The descriptive approach has been widely used in studies on access and utilization of healthcare services among rural/farming households [18-20,22]. Inferential statistics (multinomial logit) have been used to determine the drivers of household choice of healthcare services [21,23]. The inability of descriptive statistics to provide information about the connections, causes, or impacts of your data is one of its primary drawbacks. Descriptive statistics don't explain the meaning or the reasons behind the data; they just report what it is.

Olawole [24], Ngugi, *et al.* [25], and Wanzala, *et al.* [26] utilized Principal Component Analysis. However, if the correct number of principal components is not chosen to adequately describe the variance in the dataset, there may be some information lost when using the Principal Component Analysis. This study utilized Multinomial Logit Regression [21,23,27] and used MNR to determine the factors that influenced the choice of healthcare services among smallholder farmers. Their choices were identified: western, traditional, and a combination of Western and traditional healthcare. MNR caters to dichotomous variables in cases where there are respondents who do not utilize any of the healthcare services (traditional and modern healthcare services).

Analytical framework of multinomial logistic regression

Following Greene [28], multinomial logistic regression, like other linear regression techniques, makes use of a linear predictor function $f(k,i)$ to forecast the likelihood that observation i will result in outcome k , which has the following form [29-31]:

$$f(\mathbf{k}, \mathbf{i}) = \beta_{0,k} + \beta_{1,k}x_{1,i} + \beta_{2,k}x_{2,i} + \dots + \beta_{M,k}x_{M,i} \quad (1)$$

Where $\beta_{m,k}$ is the regression coefficient connected to the k^{th} outcome and the m^{th} explanatory variable. To write the predictor function more compactly, the regression coefficients and explanatory variables are often arranged into vectors of size $M+1$, as described in the logistic regression article:

$$f(k, i) = \beta_k \cdot x_i \quad (2)$$

Where x_i (a row vector) is the set of explanatory variables linked to observation i , β_k represents the set of regression coefficients connected with outcome k .

The multinomial logit model may be obtained by supposing that, given K potential outcomes, $K-1$ independent binary logistic regression models are run, with one result selected as the “pivot” and the remaining $K-1$ outcomes regressed against it independently. The $K-1$ regression equations are as follows if result K -the final outcome-is selected as the pivot:

$$\ln \frac{\Pr(Y_i = k)}{\Pr(Y_i = K)} = \beta_k \cdot X_i, k < K \quad (3)$$

Another name for this formula is the Additive Log Ratio transform, which is frequently applied to compositional data analysis. It’s known as “relative risk” in other contexts.

When it is solved for the probabilities after exponentiating both sides, equation (4) is obtained:

$$\Pr(Y_i = k) = \Pr(Y_i = K) e^{\beta_k \cdot X_i}, k < K \quad (4)$$

Since all K of the probabilities must add up to one, we may find:

$$\Pr(Y_i = K) = 1 - \sum_{j=1}^{K-1} \Pr(Y_i = j) = 1 - \sum_{j=1}^{K-1} \Pr(Y_i = K) e^{\beta_j \cdot X_i} \Rightarrow \Pr(Y_i = K) = \frac{1}{1 + \sum_{j=1}^{K-1} e^{\beta_j \cdot X_i}} \quad (5)$$

This will make it possible to determine the other probabilities:

$$\Pr(Y_i = k) = \frac{e^{\beta_k \cdot X_i}}{1 + \sum_{j=1}^{K-1} e^{\beta_j \cdot X_i}}, k < K \quad (6)$$

Methodology

Study area

The study was carried out in Ibarapa East Local Government Area (LGA) (See figure 1). Ibarapa East LGA is one of the thirty-three (33) LGAs in Oyo State. The headquarters is in Eruwa. The LGA has a land area of 838 km². It is bounded in the West by Ibarapa Central Local Government, in the East by Ido Local Government while it is bounded in the North and South by Iseyin and Odeda Local Government in Ogun state [32]. The average temperature of the LGA is 28 degrees centigrade while the area has an average humidity level of 60 percent. The tropical climate of the LGA encourages the growth of both food and cash crops. Over seventy-five (75%) percent of the population derives income and employment opportunities from the agricultural sector; consequently, the Local Government supports and facilitates agricultural empowerment and developmental initiatives. This explains why the area is a hub for so many Agro-Allied investments.

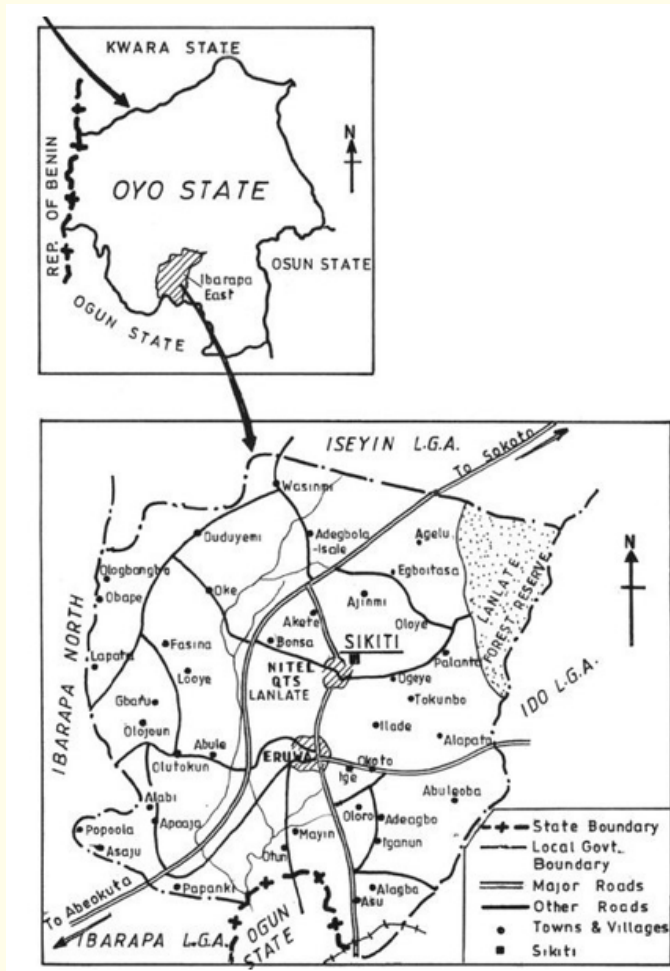


Figure 1: Map of Ibarapa east local government area.

Source: Jibiri, et al. [33].

Sampling technique and sample size

A two-stage sampling technique was adopted. In the first stage, sixteen (16) villages were purposively selected from well-known agrarian communities. The selection also ensures the spread of the villages across the landscape of the LGA. In the second stage, a random sample of farming households using proportionate to size (22%) (See table 1).

SN	Sampled village	Number of farming households	Sample size from each village
1	Alagba	35	8
2.	Adeagbo	20	4
3.	Abolonko	55	12
4.	Ajinmi	45	10
5.	Apaja	30	7

6.	Abule	60	13
7.	Duduyemi	50	11
8.	Alapata	50	11
9.	Mayin	35	8
10.	Wasinmi	40	9
11.	Akete	25	6
12.	Fasina	60	13
13.	Ige	45	10
14.	Dagilegbo	66	15
15.	Aderounmu	35	8
16.	Okolo	48	11
	Total	699	154

Table 1: Distribution of sampled villages and sample sizes.

The sample size (farming households: $111.86 \cong 112$) for the study was obtained using the International Fund for Agricultural Development procedure based on equation (7). The final sample size ($n = 154$) used included allowances for design defect and contingency. The allowance for design defects is expected to correct the difference in design, while the allowance for contingency accounts for contingencies, such as non-response or recording errors. The sample size was obtained using:

$$n = \frac{z^2 p(1-p)}{m^2} \quad (7)$$

Where n represents the sample size; Z represents the confidence level at 95% (1.96); p represents the estimated percentage of smallholder farmers in the study area (92%), and m represents the margin of error (5% or 0.05).

Type of data used and research instrument

The study utilized primary data. A structured questionnaire was used for data collection. The questionnaire was divided into three sections: socioeconomic characteristics of respondents (age, sex, household size, household head income, level of education of household head, farm size, experience in farming, marital status) and healthcare service characteristics (ailment, cost of treatment, choice of healthcare, reason for choosing healthcare). One hundred fifty-four copies (154) of questionnaires were administered to the consenting respondents following table 1 as a guide. One hundred and twenty-six (126) were returned to time while 120 of the returned questionnaires were good for the analysis.

Methods of data analysis

Data were analyzed using descriptive statistics, ANOVA, chi-square test, and multinomial logit regression. Specifically, descriptive statistics (frequency distribution, charts, mean, mode and skewness) was used to profile the socio-economic characteristics of the respondents, while the ANOVA was used to test whether there was a significant difference in the average cost of medications among the three identified healthcare services per cropping season. The multinomial logit regression was used to determine the factors influencing the choice of healthcare service among smallholder farmers. The multinomial logit regression equation is given as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + U_i, \dots (4)$$

Where:

Y is the polychotomous dependent variable, it represents the choice of healthcare service (s) patronized by respondents. Y is defined by:

Y_1 represents the traditional healthcare service.

Y_2 represents the modern healthcare service.

Y_3 represents the combination of both healthcare services.

β_i represents the estimated regression coefficient.

X_1 represents the years of formal education of the respondents.

X_2 represents sex of the respondents (male = 1, female = 0).

X_3 represents the cost (₦) of medication of healthcare service (s) per cropping season.

X_4 represents the marital status of the respondents (married = 1, others = 0).

X_5 represents the age (year) of the respondents.

X_6 represents the household size of respondents.

X_7 represents respondents' engagement in other economic activities excluding farming (yes = 1, no = 0).

X_8 represents total income (₦) per cropping season.

Results and Discussion

Socioeconomic characteristics of respondents

The study revealed that the majority of the respondents (60.0%) were males. The majority (24.2%) of the smallholder farmers were within the age bracket of 50 - 57 years while the average age for all the small-scale farmers was 45.6 years (See table A in the Appendices). The result showed that most of the respondents were above the average age recorded (negative skewness). The aging population of the farmers may be attributed to rural-urban migration. According to HelpPage International [34], and Akintayo and Lawal [35], numerous factors contribute to the aging of the rural population. The main cause is that migration from rural to urban areas is age-selective, with younger people moving to towns and cities for non-agricultural activities and elderly people staying behind. Also, most of the respondents (83.3%) were married while only 4.2% were single. The majority of the respondents (71.6%) had at least primary education while 23.3% had no formal education (See table A in the Appendices). The importance of education in agriculture cannot be overstressed. Education improves farmers' capacity to gather, interpret, and decode information, allowing them to better use the knowledge at their disposal to find relevant answers to problems with output, markets, and funding [36]. The study also showed that the average household size was 6.6 members which was above the average household size of 5.2 members according to the Nigerian Bureau of Statistics (2016). Olayemi [38] found that having a big family has a detrimental effect on the food security of the home. Amjad [39] attributed the low economic development in developing countries to a high population. He claimed that high population growth reduces the capital-labour ratio and savings. The study revealed that the majority of the smallholder farmers (33.3%) cultivated land in the range of 2.1 - 2.8 hectares (See

table A in the appendices). Also, 13.3% of the respondents cultivated land below one hectare. The average cultivated farm size was 1.63 hectares. Most of the farmers cultivated less than the average farm size (positive skewness). The result is in agreement with the United Nations Conference on Trade and Development [40] that farmers who produce two hectares or less are known as smallholders. Monocropping was not common in the study area. The combination of two or three maize, yam, cassava, and cowpea were the crops grown by most farmers in the last cropping season. It was affirmed that 47.5% and 23.3% of the smallholder farmers cultivated cassava and maize, respectively. Only 4.2% of the farmers planted cowpeas (See table A in the appendices).

Healthcare characteristics of the respondents

The respondents reported some common ailments with the majority (59.2%) suffering from malaria. This indicates that malaria was the prevalent ailment among the respondents. Oyelakin., *et al.* [41] affirmed that malaria is still a major worldwide health problem, especially in rural Nigerian communities with inadequate access to healthcare services and poor sanitation. Stomach aches (10.8%) and ringworm (5.0%) were the other common ailments in the study area (See figure 2). The malaria attack cut across the age bracket and the sex of the respondents. The study showed that 40.0% of the respondents patronized traditional healthcare/engaged in traditional methods, 20.0% claimed to patronize modern healthcare and 38.2% claimed to have used the combination of traditional and modern healthcare (See figure 3). This result aligns with Chali., *et al.* [42] and Wolde-Mariam., *et al.* [43] that found the choice of traditional healthcare services by respondents higher than modern healthcare in rural Ethiopia; they recorded 81.5% and 92.22% of the respondents, respectively.

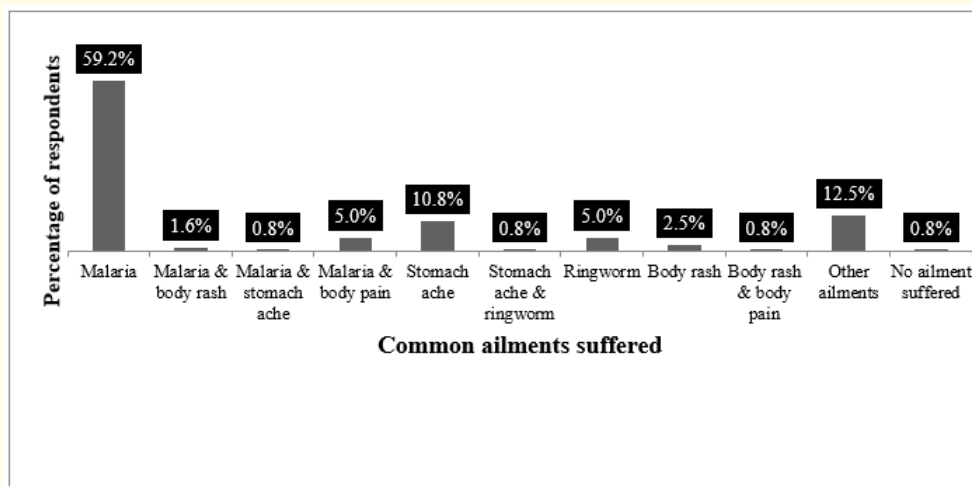


Figure 2: Distribution of the common ailments suffered by the respondents.

Source: Field survey (2018).

Studies [44,45] attributed high patronage of traditional healthcare to a combination of factors such as high rates of poverty, insufficient public health facilities, and the exorbitant cost of orthodox medical services. Without traditional healthcare practitioners, many rural communities would lack access to any kind of healthcare facility.

However, the WHO report [46] stated that traditional healthcare is a preferred alternative treatment for many rural dwellers because of its accessibility, availability, affordability, cultural acceptance, and alignment with spiritual, religious, and social ideals. Table 2 shows that modern healthcare ranked first in terms of effectiveness and the quality of services rendered as reasons for choosing it. However, the

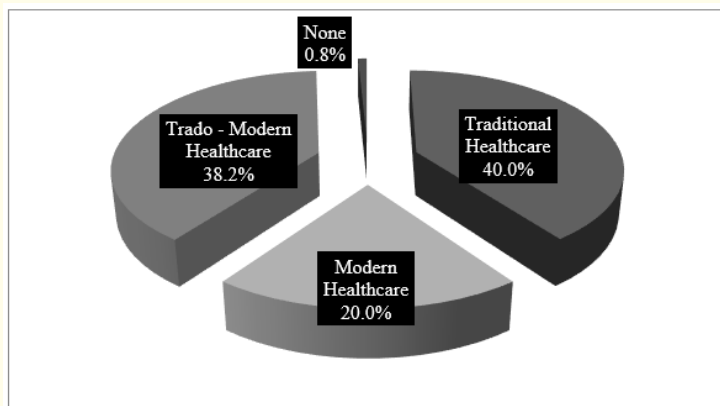


Figure 3: Distribution of healthcare service patronized by the respondents.

majority of the respondents had chosen traditional healthcare because of its accessibility and affordability which aligns with many studies WHO Report [46]; Sato [47] that traditional medicine is often used because it is more easily accessible and less expensive than modern medicine. The African continent is a place where the proportion of traditional healers to the population might be 100 times higher than that of medical professionals.

Reasons for the Choice of Healthcare	Choice of Healthcare Service		
	Modern	Traditional	Trado-modern
Effectiveness (%)	87	65	55
Accessibility (%)	45	92	63
Affordability (%)	35	89	52
Quality of service provided (%)	71	54	50

Table 2: Respondents' reasons for the choice of healthcare service.

Table 3 shows that most of the respondents that accessed traditional and modern healthcare services were within the range of 50 - 57 years. Majority of the respondents who patronized the trado-modern healthcare services were within the age bracket of 42 - 49 years. The average age of the traditional healthcare service users was the highest. The study showed that the traditional healthcare service had the highest percentage of patronage, at least 42 years old. National Institute of Aging [48] and the International Organisation for Standardization [49] found that there is a complicated correlation between age groups and traditional healthcare use. However, they affirmed that many factors, such as cultural views, socioeconomic position, and access to healthcare services, drive the usage of traditional healthcare.

Age (years) range	Traditional Healthcare	Modern healthcare	Both healthcare services
18 - 25	3	2	3
26 - 33	5	3	9
34 - 41	7	7	9
42 - 49	12	1	10
50 - 57	13	8	8

58 - 65	5	3	6
66 - 73	3	0	3
Total	48	24	48
Average age	46.5	43.8	44.3
Percentage of Respondents that were at least 42 years old	68.8	50.0	56.3

Table 3: Age (year) distribution of respondents by choice of healthcare services.

The study affirmed bimodal expenditure range per cropping (₦500-1500, ₦1501-2500) season by the users of traditional healthcare. The range of expenditure for most of the respondents who accessed modern and trado-modern healthcare was ₦3501- 4500 (See table 4). The traditional healthcare services recorded the lowest average expenditure per cropping season (₦1905.43) and also confirm why the majority of the smallholder farmers choose traditional healthcare services. This finding is corroborated by Mothibe and Sibanda [50], and Antwi-Baffour [51] that the choice of traditional healthcare by rural dwellers is because it is cheap compared to the relatively high cost of contemporary drugs and medical treatments, as well as the concentration of healthcare services in urban areas. However, the important role of modern healthcare in rural areas like Ibarapa where herder-farmers conflict is rampant. The conflicts often result in various body wounds from gunshots, machete cuts, and death among others. Through modern healthcare services, victims can be given adequate attention so that they can get back to their farming activities in a short time depending on the extent of wounds. According to Medecins Sans Frontieres [52], access to modern healthcare is more crucial than ever for those affected by violence or its consequences. The study also showed that there was a significant difference in the average expenditure per cropping season on the healthcare services by the respondents considering the three identified choices ($p < 0.05$) (See table B in the appendices).

Expenditure (₦) on healthcare per cropping season	Traditional Healthcare		Modern Healthcare		Trado-modern Healthcare	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
500 - 1500	14	33.3	-	-	1	3.0
1501 - 2500	14	33.3	4	23.5	6	18.2
2501 - 3500	4	9.5	4	23.5	7	21.2
3501 - 4500	3	7.1	5	29.4	12	36.4
4501 - 5500	7	16.7	4	23.5	7	21.2
Total	42	100	17		33	
Mean	1905.43		3030.41		3046.42	
S.D	1449.63		1124.59		1120.64	

Table 4: Distribution of healthcare service expenditure by choice.

Determinants of choice of healthcare services among the respondents

Table 5 shows that the log-likelihood was -116.89, and the likelihood ratio (LR) χ^2 (43.56) was significant ($p < 0.05$). This implied that the substantial number of the estimated coefficients were statistically different from zero; thus affirming the appropriateness of the model. Hence, there were results only for the drivers of traditional, and modern healthcare services; trado-modern was used as the base. Out of the eight (8) variables in the model, the coefficients of five (5) of the variables were significant for traditional and modern

healthcare services, respectively. The result shows that the probability of choosing traditional healthcare services reduces as the years of education increase relative to the base outcome. Generally, educated persons prefer modern healthcare services. Okojie and Lane [19] found that poor education makes many rural dwellers seek other healthcare options available to them. Musoke, *et al.* [53] submitted that a sizeable proportion of the Nigerian population, the majority of whom live in rural communities, are yet to attain the level of education required to make them appreciate the benefits of utilizing available health resources like health centers. Also, as the cost of healthcare services increases, the likelihood of smallholder farmers choosing traditional healthcare increases by 0.72%. This result confirms the finding in table 2 that affordability was the reason why 89% of the respondents opted for traditional healthcare services. This result agrees with Murray [54] who posited that due to poverty and inability to pay the rising expense of medical treatment, the majority of people living in rural areas may turn to alternative healthcare providers like traditional healers. Aging reduced the probability of respondents choosing traditional healthcare services by 6.9% relative to the base outcome (trado-modern healthcare). Ismail, *et al.* [55] revealed that the elderly used more modern than traditional healthcare services. The probability of smallholder farmers patronizing traditional healthcare service providers relative to trado-modern healthcare increases as the household size increases. The high cost of maintaining a large family may be the reason for the choice of traditional healthcare because it is affordable (Krah, *et al.*, [56]; Omonona, *et al.* [18]). The result showed that the respondent’s income per cropping season negatively influenced the choice of traditional healthcare service. The finding aligns with Sato [47] who found that declining income is linked to the use of traditional care.

Moreover, respondents’ years of education, respondents’ engagement in other economic activities, and income per cropping season positively influenced the respondents’ likelihood of choosing modern healthcare relative to trado-modern healthcare service. Cost of medication and respondents engaging in other economic activities negatively influenced respondents’ utilization of modern healthcare. Omonona, *et al.* [18] found that a larger percentage of households whose heads had tertiary education utilized modern health care facilities (government and private hospitals). Also, Okojie and Lane [19] and Musoke, *et al.* [53] posited that poor education is the reason most rural dwellers do not appreciate the benefits of utilizing modern healthcare services. The positive relationship between respondents’ income per cropping season and the probability of utilising modern healthcare aligns with Sato [47]. As the cost of medication increases per cropping season, the likelihood of the respondents choosing modern healthcare reduces. This finding aligns with theory of demand. The coefficient of smallholders’ farmers engaging in other economic activities was significant but the sign contradicted the a ‘priori expectation.

Choice of healthcare service	Variables	Coefficient	Standard error	Z	p - value	dy/dx
Traditional Healthcare Service	Constant	-1.562477	1.374034	-1.14	0.2551	
	X ₁	-0.0891211**	0.0401171	-2.221	0.0264	-0.0037817
	X ₂	0.2440647	0.4941795	0.496	0.6213	0.1077329
	X ₃	0.039674***	0.0121043	3.278	0.00105	0.0072342
	X ₄	-0.0002301	0.0001413	-1.633	0.104	-0.0000574
	X ₅	-0.2168763**	0.0816955	-2.655	-0.0079	-0.0689885
	X ₆	0.1969957**	0.0923488	2.133	0.0329	0.0296961
	X ₇	1.209208	0.8314135	1.454	0.145946	0.277828
X ₈	-7.59E-06**	3.51E-06	-2.162	0.030618	-5.20E-08	

Modern Healthcare Service	Constant	-1.139018	1.583691	-0.72	0.472	
	X ₁	0.0428625**	0.0186647	2.2964	0.010827	0.002793
	X ₂	-0.7272894	0.5756734	-1.26337	-0.103241	-0.1259164
	X ₃	-0.000389**	0.0001904	-2.04306	0.020497	-0.0000302
	X ₄	0.2848112	0.7714068	0.36921	0.71232	0.0582842
	X ₅	0.0466969	0.0743489	0.628078	0.530004	0.0001341
	X ₆	-0.1868952	0.1151073	-1.62366	0.052231	-0.013142
	X ₇	-0.3442***	0.0790856	4.35204	0.00001	-0.1108481
	X ₈	7.92E-06**	3.80E-06	2.08421	0.018571	9.61E-07

Table 5: Multinomial logistic regression of the determinants of choice of medication among respondents.

Log-likelihood = -116.88915.

Likelihood ratio test: Chi-square (20) = 43.5586 [0.0164]

Number of observation = 120.

Conclusion and Recommendation

Agricultural productivity is impacted by poor health because it limits farmers’ physical capacity to work, ability to use resources efficiently, and the capacity to accept new ideas. These factors also have an adverse effect on the welfare of the entire household. Malaria and stomach ache were the most commonly reported ailments by the respondents. Also, effectiveness, accessibility, affordability, and quality of service were the reasons smallholder farmers considered for the choice of healthcare. The traditional healthcare service was the most patronized by the smallholder farmers because of their affordability and accessibility. Among the three healthcare services identified, the respondents patronizing traditional healthcare spent the least amount per cropping season. Education and the cost of medications were the drivers of smallholder farmers’ choice of healthcare services in Ibarapa East Local Government Area. The large family size among the residents might have contributed to the unaffordability of modern healthcare. The study recommends that rural communities should organize themselves into Community Development Associations through which corporate organisations can be approached for assistance in building healthcare centers in their respective localities to reduce the problem of accessibility. The need for local government authority to ensure the provision of subsidized drugs and services will increase the smallholders’ farmer’s patronage of modern healthcare. The intensification of the campaign by the Public Enlightenment Unit of Ibarapa East LGA and the Non-Governmental Organisations on the need for rural dwellers to imbibe family planning will go a long way to reducing poverty associated with low utilization of modern healthcare.

Ethical Consideration

The respondents gave verbal permission, after being fully informed about the goal and procedures of the study and being assured that their answers would remain anonymous and confidential.

Appendices

Variable	Frequency	Percentage
Marital status		
Single	5	4.2
Married	100	83.3
Divorced/Separated	8	6.7
Widow	7	5.8
Sex		
Male	72	60.0
Female	48	40.0
Age		
18 - 25	8	6.7
26 - 33	20	16.7
34 - 41	22	18.3
42 - 49	21	17.5
50 - 57	29	24.2
58 - 65	15	12.5
66 - 73	5	4.2
	120	
No formal education	28	23.3
Primary	39	32.5
Secondary	27	22.5
NCE/OND	16	13.3
HND/BSc	4	3.3
	114	
HHS		
1-3	18	15.3
4-6	54	45.8
7 and above	46	39.0
	118	
Farm size (ha)		
0.4 - 0.8	16	13.3
1.0 - 1.2	25	20.8
1.6 - 2.0	30	25.0
2.1 - 2.8	40	33.3
3.2 - 6.1	9	7.5
	120	

Table A: Socioeconomic characteristics of the respondents.

Expenditure (₦) per cropping season on healthcare service						F	P-value
Traditional healthcare (n = 42)		Modern healthcare (n = 17)		Trado-modern healthcare (n = 33)			
Mean	Std	Mean	Std	Mean	Std	8.94	0.00029
1905.43	1449.63	3030.41	1124.59	3046.42	1120.64		

Table B: ANOVA result.

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