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Farmers' willingness to access national health insurance scheme services in Edo state, Nigeria

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Abstract

Arable cropping activities expose farmers to health problems that make them seek diverse health services to address their health challenges. A multi-stage sampling procedure was used in selecting 210 respondents using structured questionnaire out of which 179 copies properly filled were analysed using descriptive statistics while Logit Regression model was used to make inference. Majority (80.9%) of the respondents were male while their mean age was 52 years. Majority (87.1%) were married while 53.9% of them had tertiary educational background their farming experience was 18 years. The study revealed that their common health challenges were: malaria ($\bar{x}$ = 4.06), waist pain ($\bar{x}$ = 3.78), fever ($\bar{x}$ = 3.69), headache ($\bar{x}$ = 3.06) and cold/pneumonia ($\bar{x}$ = 2.87). The information sources accessible to respondents were: television (91.6%), radio (84.3%), and (social media 70.2%) and others. They perceived television (75.3%) as preferred source of information. Further findings showed that private clinics (84.3%) and general/central hospitals (62.9%) as commonly accessed healthcare centres in studied areas. The mean of respondents' knowledge on immunization against infectious diseases was 3.02. Also, result shows that farmers were willing to access NHIS services (82.0%); one reason for their willingness to access NHIS services was that NHIS services will help promote good healthcare services (94.5%). The constraints that farmers are facing were: poor information about NHIS services ($\bar{x}$ = 3.07) among others; distance barrier to NHIS providers was the least constraints. Inferential statistics result showed that sex has positive significant relationship with willingness to access NHIS services and income level being positive was the most significant in the relationship with farmers' knowledge of NHIS services ($p < 0.05$).

Keywords: Willingness, access, NHIS, Edo State

Introduction

Farming is labour intensive which could result in health challenges during and after farming activities while National Health Insurance Scheme was designed to put healthcare services at the "door step" of the citizens (Adaji, Lawal, and Onimisi, 2023) ^[1]. The process of agricultural production and other means of extracting livelihoods resources from the environment most times result to negative health condition to farmers, non-farmers, and the environment. Exacting physical efforts during crop production equally predisposes one especially farmers to a range of occupational hazards including accidents, strains, poisoning and diseases which may lead to death. The importance of health as a form of human capital cannot be underestimated. Good health and productive agriculture and other social and economic activities are important in the economy of any nation especially in the fight against poverty.

Health affects agricultural system by affecting the health of the producers. Poor health do result in loss of work days or decrease worker capacity, decrease innovation ability and ability to explore diverse farming practices and such makes farmers to capitalize on farm specific knowledge (Ajani and Ugwu, 2008) ^[2]. This may be concluded that health has a greater share in the inefficiency of the farmers and calls for attention of policy makers in Nigeria.

According to World Health Organization Statistics, WHO (2019) ^[22], total health expenditure in Nigeria is about US\$ 33 per capita, 63.4% of which comes directly out of pocket. This suggests that the farmers might be ready to spend about US\$ 20 annually or slightly less given the poverty of the region (WHO, 2019) ^[22]. Despite the government's and none governmental programmes aimed at reducing ill-health like Roll Back Malaria Initiative which is aimed at reducing malaria mortality and preventing Malaria by using insecticide-treated bed nets, access to health care in Nigeria is still far below the global standards. Hence, the broad objective of this study is to assess arable crop farmers' willingness to access National Health Insurance Scheme (NHIS) services in Edo State, Nigeria. Specifically, the study examined the respondents' socioeconomic characteristics, ascertained their awareness of NHIS services; and identified some of the reasons for rural dwellers' willingness to access NHIS services.

Methodology

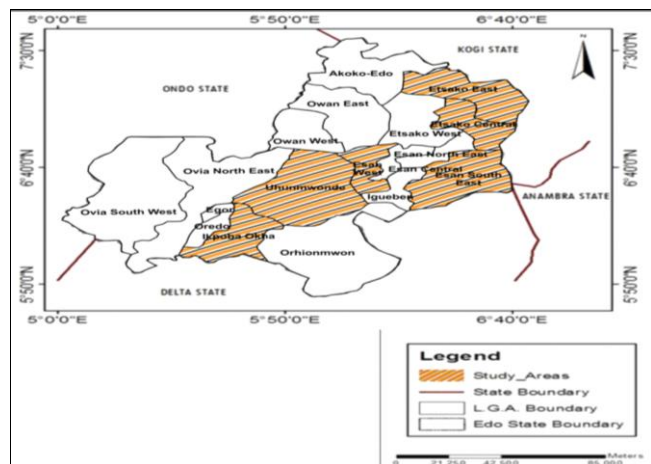
Study area

The study was carried out in the three agricultural zones of Edo State in Nigeria, which are Edo south, Central, and North. The estimated population of the Edo State was about 5 million people and it is made up of 5 major ethnic groups;

namely the Benin, Esan, Owan, Etsako and Akoko-Edo. However, the State has a high presence of residents from across the country and elsewhere due to its cosmopolitan tendencies. The Benin speaking people who occupy seven out of the 18 local government areas of the State constitute 57.54% while others are as follow; Esan (17.14%), Etsako (12.19%), Owan (7.43%), and Akoko Edo (5.70%).

All communities and the ruling dynasties in all the clans trace their roots to the ancient kingdom of Benin. Cultural similarities are in the areas of religious worships, dances, and festivals, traditional modes of dressing as well as arts and craft. English is the official language of the state. The major tribal languages spoken in the state are Edo language, Igarra, Etsako/Afemai, Esan and Okpamheri. Edo State is a home to several ethnicities; among them are the Okpe, Esan, Afemai/Etsako, Ora, Akoko-Edo, Igbanke, Emai. The state produces crude oil, and other mineral resources like lime stone quarry.

The State lies between latitude 6° 44"N and 6°21"N and longitude 5°35"E and 5°44"E. To the north Edo State is bounded by Kogi State, to the east, it is bounded by Anambra State, to the south, by Delta state and to the west, by Ondo State (figure 3).



Source: Modified from the Administrative Map of Edo State (2003), Cited by Ezemonye *et al* (2022) ^[12]

Fig 1: Map of Edo State showing the study area

The study areas have tropical climate characterized by two distinct seasons, the wet and dry seasons. The wet season occurs between April to November and dry season from December to March; with a break in August. Rain fall intensity decreases from the south to the north. In the south, average annual rainfall is 152-254 cm and in the north, average annual rain fall is 127-152. Edo State therefore enjoys abundant rainfall (which favours the breeding of Mosquitoes) almost all the year round, except December to March when the dry season sets in, due to the influence of the Northeast Trade Wind or the tropical continental air mass. Generally, temperature across the State is relatively high with a very narrow variation in seasonal and diurnal ranges of 220 °C– 360 °C. The Temperature averages about 25 °C in the rainy season and 28 °C in the dry season. The soil in the study area are generally the red yellow kind of ferrelsols, the formation is made up of top reddish clayey sand capping highly porous fresh water bearing loose pebbly sands, and sandstone with local thin clays and shale inter-beds which are considered to be of braided stream

origin. Sands, sandstones and clays vary in colour from reddish brown to pinkish yellow on weathered surfaces to white in the deeper fresh surfaces (Osaigbovo and Asemota, 2020) ^[19].

Three vegetation belts are discernible from the south to the north, the mangrove swamp forest in the southern part, the rain forest at the middle while the northern part has the savannah vegetation. In the north, the area is mainly derived savannah. The vegetation belts are discernible from the south to the north, the mangrove swamp forest in the southern part, the rain forest at the middle while the northern part has the savannah vegetation.

Sampling technique and sample size

A multi-stage sampling procedure was used to select the respondents for the study. Stage 1: A purposive sampling of three (3) Senatorial Zones as provided by the NHIS in Edo State, that is Edo North, Edo Central and Edo South zones, because NHIS service have covered these senatorial zones with NHIS service. Stage 2 involved purposive sampling of two (2) local government areas in selected zones where NHIS services are provided. And Stage 3, a simple random sampling of four (4) rural communities from each of the local government areas previously selected making a total number of 16 communities. The communities were where NHIS centres are domiciled. The total number of intended respondents include: 60 in Edo North, 70 from Edo Central and 80 from Edo South making a total of 210 respondents that make up the sample size. The reason is because of the variation of seekers of NHIS services in each centre.

Data collection

Primary data were collected with the aid of structured questionnaire which was distributed to the respondents in the 3 agricultural zones of the State and the study was conducted between June and December 2023.

A list of 8 items were made available for respondents, these are list of items as recommended by UNICEF 1978 and as cited by Alenoghena, Aigbiremolen, Abejegah, Eboreme (2014) ^[3] for respondents to indicate their knowledge of. These are: promotion of food supply and proper nutrition; adequate supply of basic sanitation; maternal and child health care and family planning; immunization against infection diseases; prevention and control of locally endemic and epidemic diseases; appropriate treatment of common disease and injuries; provision of essential drugs; education and preventing health problems/prevention. respondents' knowledge of NHIS services will be rated in 4 points rating scale of highly knowledgeable (Have knowledge of between 6 and 8 NHIS practices coded 4, fairly knowledgeable of NHIS services coded 3 poorly knowledgeable have knowledge between 1 and 2 NHIS services coded 2 and not knowledgeable have no knowledge of any of the NHIS services coded 1. A mean score of 2.5 (4+3+2+1= 10/4 =2.50) and above was taken that respondents have knowledge of a particular NHIS services while others will be seen not knowledgeable by the respondents.

Access was measured in 4-point rating scale which was low, high, moderate and fairly moderate, at every two months it will indicate that respondents have high access to NHIS services, coded 4, between 2- and 4-months moderate access, coded 3, between 4- and 6-months low access, coded

2 and those that don't get it to use at all (No access) was coded 1. A mean score of 2.50 ($(4+3+2+1)/4 = 2.50$) was taken as access and above was taken that respondents have no access to NHIS services. This was adopted from the (International Institute for Sustainable Development (IISD, 2011)

Objective 3: Constraints identified from literature were outlined and others listed by respondents and they were asked to indicate their degree of agreement to the constraints on a five-point Likert scale of Strongly agree coded (5), Agree coded (4), Undecided coded (3), Disagree coded (2), Strongly disagree coded (1).

Data analysis

Logit Regression model was used to analyze the respondent's access to NHIS services.

Mathematically:

$$\text{Log} (P / 1-P) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 \dots + U \dots (1)$$

Where:

P = Probability that a farmer will access NHIS services.

1-P = Probability that a farmer will not access NHIS services

β_0 = Constant

$\beta_1 - \beta_5$ = Regression coefficient

$X_1 - X_7$ = Independent variables.

U = Error term

Where:

Y = Access to NHIS services (Low access = 0, High access = 1, moderate = 2, fairly moderate = 3).

X_1 = Sex of household Head (male = 1, female = 0)

X_2 = Age of household

X_3 = Educational level of Household heads.

X_4 = Household size in numbers

X_5 = Farming experience (Years)

X_6 = Family income (Naira)

X_7 = Farm size (Ha)

U = Random error term.

To identify the constraints of farmer's willingness to access NHIS services 5-point Likert scale was used. Decisions on which constraints, is serious or not was based on the mean

score of 3.0. It was computed as, $(5+4+3+2+1)/5 = 3.0$. A constraint item with mean score of 3.0 and above will simply mean that a constraint is serious while a score below 3.0 will simply mean otherwise.

Results and Discussion

Demographic Characteristics of Respondents

The majority (80.9%) of the respondents were male (Table 1). This indicates that male arable crop farmers are most likely to be dominant in accessing NHIS services. This may be as a result of the fact that males are the household heads in most family particularly in sub Saharan Africa. This is quite higher compared with Akaowo *et al.* (2021) study report on willingness to pay for contributory social health insurance scheme that about 71.7% were men in Akwa-Ibom State and Omotowo *et al* (2016) ^[18] who reported 63.8%. Respondents who were married were 87.08%. This is most likely to enhance their access to NHIS services in the study area.

The mean age of the respondents was 52years. This implies that most of the respondents sampled are likely to be productive. Further reasons, they are at marriageable age and energetic, hence they can still work, earn and carter for their family healthcare services. This is quite higher when compared with Oluedo *et al* (2023) ^[17] who reported that mean age of respondents in Enugu State were 45years who enrolled and pay for community based health services in rural areas. Similarly, Mesah (2020) reported that the mean age of farmers in Edo State who are aware of public health hazard of using pesticide is 53years.

Above half (53.95%) of sampled respondents were educated up to tertiary level. This implies that majority of the respondents had formal education in the study area. This is high but similar to Eze *et al.* (2020) ^[10] study finding that 33% of the respondents in their study area had tertiary education in Imo State. On occupation of the respondents, farmers were 87.64% constituting the modal class. This implies that respondents are predominantly farmers. Part-time farmers were 34.83% while full-time farmers were 65.17%. This implies that most of the respondents are full time farmers, hence; farming is a major source of revenue in the study area. The mean of the respondent years of experience was 18years. They may have developed ways of managing their households' health problems and having better knowledge in the areas of farming activities.

Table 1: Demographic characteristics of rural dwellers

Characteristics	Categories	Freq (n=178)	%	Mean
Sex	Female	34	19.10	
	Male	144	80.90	
Marital status	Single	8	4.49	
	Married	155	87.08	
	Divorced	1	.56	
	Widow	6	3.37	
	Widower	8	4.49	
Age (years)	<25	3	1.69	
	25-35	19	10.67	
	36-50	74	41.57	
	51-65	66	37.08	52 years
	>65	16	8.99	
Educational Level	None	4	2.25	
	Primary	45	25.28	
	Secondary	33	18.54	
	Tertiary	96	53.93	

Occupation	Civil servant	15	8.43	
	Farming	156	87.64	
	Trading	6	3.37	
	Public servant	1	.56	
Farming status	Part –time	62	34.83	
	Full-time	116	65.17	
Farming experience (years)	<10	23	12.92	
	10-15	51	28.65	
	16-20	52	29.21	17.96
	21-30	33	18.54	
	>30	19	10.67	

Field Survey data, 2024

Awareness of NHIS Services

Table 2 shows that sampled rural dwellers were aware that NHIS offers several healthcare services such as Maternal and Child HealthCare and Family Planning (89.52%), Immunization against infectious diseases (87.10%), Provision of essential drugs (79.03%), Appropriate treatment of common diseases and injuries (65.32%) and others: Prevention and control of locally endemic and epidemic diseases (34.68%), Education and preventing health problems/prevention (30.65%), Promotion of food supply and proper nutrition (14.52%). Majority (89.52%) of respondents were aware that NHIS render services like: Maternal and child health care and family planning in the study area. Meanwhile, respondents who were not aware that Maternal and child health care and family planning

(10.48%), Immunization against infectious diseases (12.90%), Provision of essential drugs (20.97%), Appropriate treatment of common diseases and injuries (34.68%), Prevention and control of locally endemic and epidemic diseases (57.72%), Adequate supply of basic sanitation (65.32%), Education and preventing health problems/prevention (69.35%) and Promotion of food supply and proper nutrition (69.35%). This is in line with Osunde *et al.* (2023) ^[20] who reported that majority (89.0%) of the residence in their study area were aware of the NHIS in Benin City Edo State, Nigeria. However, some respondents were not aware of some services provided by NHIS such as: Promotion of food supply and Proper nutrition services in the study area.

Table 2: NHIS services awareness among rural dwellers

Services	Aware		Not Aware	
	Freq	%	Freq	%
Maternal and child health care and family planning.	111	89.52	13	10.48
Immunization against infectious diseases.	108	87.10	16	12.90
Provision of essential drugs.	98	79.03	26	20.97
Appropriate treatment of common diseases and injuries.	81	65.32	43	34.68
Prevention and control of locally endemic and epidemic diseases.	52	42.28	71	57.72
Adequate supply of basic sanitation.	43	34.68	81	65.32
Education and preventing health problems/prevent.	38	30.65	86	69.35
Promotion of food supply and proper nutrition.	18	14.52	106	85.48

*Multiple responses, Field Survey data, 2024

Perception on the Benefits of NHIS Services

The result for respondents' perceived benefits of NHIS services (Table 3) indicated that The majority (79.03%) of the sampled rural dwellers perceived NHIS services to have helped to save lives, has positive effect on the people's social economic activities (74.19%), helped to attend promptly to patients (70.16%), NHIS services' centers in the community is have a positive effect on the peoples' health (66.94%), NHIS services have helped the community members to have more time for their family/social economic

activities (46.77%), NHIS services have helped the community people to save more money that would have been used to travel for health treatment (40.32%), NHIS services have helped to reduce patients going outside the community to access health care services (25.81%) and the services have helped to attract more residents to the community (16.13%). This suggests that respondents perceived NHIS services useful and beneficial in diverse areas especially as related to health, family and social economic lives while some have contrary views.

Table 3: Perceived benefits of NHIS among rural dwellers

Benefits	Yes		No	
	Freq*	%	Freq	%
NHIS services have helped to save lives?	98	79.03	26	20.97
NHIS services has a positive effect on the people's Social economic activities	92	74.19	32	25.81
NHIS helped to attend promptly to patients	87	70.16	37	29.84
NHIS services centre in your community have a positive effect on the people's Health	83	66.94	41	33.06
NHIS has helped the community members to have more time for their farming/social economic activities	58	46.77	66	53.23
NHIS has helped community people to save more money that would have been used to travel for health treatment Etc.	50	40.32	74	59.68
NHIS helped to reduce patients going outside the community to access healthcare services	32	25.81	92	74.19
NHIS attracted more residents to the community	20	16.13	104	83.87

*Multiple responses
Field Survey data, 2024

Willingness to access NHIS services

Table 4 Shows result for sampled rural dwellers' willingness to access NHIS services. Those who were willing to access NHIS services were 82.0%. This suggests that majority of them are willing to access NHIS services in the study area. This agrees with Osunde *et al* (2023) ^[20] who reported that 77.5% expressed willingness to enrol in NHIS in Benin City Edo State, Nigeria.

Table 4: Respondents' willingness to access NHIS services

	Frequency	Percent
No	32	18.0
Yes	147	82.0

Field Survey data, 2024

Reasons for Willingness to Access NHIS Services

Table 5 show results for reasons rural dwellers were willing to access NHIS. Some of the reasons were that NHIS services will help everyone have access to good health care services (94.52%), NHIS will help to protect families from financial hardship of huge medical bills (93.15%), NHIS will help to limit the rise in the cost of health care services (90.41%), NHIS will enable patients to have easy access to drugs (88.36%) and will help patients to have quick attention/treatment from medical personnel in NHIS Centres (87.67%).

Table 5: Reasons for willingness to access NHIS Services

Reasons	Yes		No	
	Freq*	%	Freq	%
NHIS will help every Nigerian to have access to good health care services	138	94.52	8	5.48
NHIS will help to protect families from financial hardship of huge medical bills.	136	93.15	10	6.85
NHIS will help to limit the rise in the cost of health care services.	132	90.41	14	9.59
NHIS will enable patients to have easy access to drugs.	129	88.36	17	11.64
NHIS help patients to have quick attention/ treatment from medical personnel in NHIS Service centres.	128	87.67	18	12.33

Field Survey data, 2023

*Multiple responses

Socio-Economic Characteristics and Willingness to Access NHIS Services

Logit regression was used to determine the relationship between socio-economic characteristics of the respondents and their willingness to access NHIS services (Table 6). The likelihood ratio chi-square test (69.72) is significant at 5% level which means that the independent variables have a significant influence on the dependent variable, willingness to access NHIS services. The goodness of fit test is not significant at 5% level. The goodness of fit test chi-square value is 296.26, is not significant at 5% level, which implies that the model is best fit for the goodness representation of real life data and therefore, can be relied upon. The coefficient of determination using the Nagelkerke coefficient values is 0.531 which means that 53.1% of the respondents' likelihood of accessing NHIS services is accounted for by the independent variables in the logit model. Base on the chi-square value at 5% level only two variables are significant, namely, the health challenges faced by the respondents as well as the level of awareness of NHIS services. The relationships for parameters estimates of these two variables are significant at 1% and 5% level

respectively. The odd ratio for health challenges (0.92) implies a negative relationship between the level of health challenges faced by the respondents and their willingness to access NHIS services. The coefficient implies a negative relationship between health challenges faced by the respondents and their willingness to access NHIS services. The odd ratio which is 1.08 is a negative coefficient of -0.8 and the willingness to access is 0.08 which means that respondents who are faced with less health challenges are 8% more likely to be willing to access NHIS services. The relationship of NHIS services aware by the respondents and the willingness to access NHIS services is negative that is $b = -0.561$ but significant which means that the respondents who are less aware of NHIS services are 57% more willing to access the NHIS services. This is an unexpected result but was the reality on ground at the field level in that the respondents who are less aware of NHIS services were willing to access their services when compared with those respondents that are more not aware of NHIS services. This a serious issue that management of NHIS should address as it clearly indicates dissatisfaction among the clients or assessors of NHIS services presently.

Table 6: Rural dwellers' socio-economic characteristics and willingness to access NHIS services

Parameter	Coefficient (b)	Wald=Chi-Square	Df	Prob. Level	Odd ratio
Constant	0.614	0.112	1	0.738	1.848
Sex	0.597	0.669	1	0.413	1.817
Age (years)	0.022	0.769	1	0.380	1.022
Educational Level	-0.012	0.001	1	0.971	0.988
Farming status	-0.347	0.258	1	0.611	0.707
Farming experience (yrs)	0.036	1.049	1	0.306	1.036
Income level	-0.244	1.119	1	0.290	0.783
Health challenges (BP)	-0.086	8.313	1	0.004*	0.918
Awareness of NHIS	-0.923	1.597	1	0.206	0.397
NHIS services awareness	-0.561	6.449	1	0.011*	0.571

Response rate: Willing to access (82.0%); not willing (18%)

Nagelkerke coefficient of determination = 0.531

Goodness of Fit test (Chi-square) = 296.26, df = 166; $p > 0.05$

Likelihood Ratio Chi-Square test = 69.72; df = 9; $p < 0.05$

Field Survey data, 2024

Conclusion and Recommendations

Based on this study findings, it was concluded that respondents' common source of information was television and radio and were credible as channels of information in the study area. The majority of the sampled rural dwellers were willing to access NHIS services but were not fully aware of the services that are rendered by NHIS. Health challenges (BP) ($p > 0.004$) and NHIS awareness by the farmers ($p > 0.011$) of the rural dwellers sampled were most significant in the relationship between socio-economic characteristics and willingness to access NHIS services. Therefore, the study concludes that farmers are willing to access NHIS services in the study area. Based on the findings of the study, it was recommended that; The National Health Insurance Scheme should regularly organize sensitization programmes on health challenges and awareness on NHIS available services to promote arable crop farmers' access to NHIS services in study areas.

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