Awareness and Willingness to Pay for Osun Health Insurance Scheme in Rural Areas of the State

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Direct Research Journal of Public Health and Environmental Technology

Direct RESEARCH JOURNALS

Vol. 11(1), Pp. 42-52, February 2026

https://journals.directresearchpublisher.org/index.php/drjphet; https://www.ajol.info/index.php/drjphet

Research Article
ISSN: 2734-2182

Received 30 August 2025, Accepted 15 December 2025, Published 20 February 2026

ABSTRACT

Accessing quality health care services at affordable costs with easy mode of payments is a serious problem especially among the already impoverished rural households in Nigeria. This study examined the health status, awareness and willingness to pay (WTP) for Osun Health Insurance Scheme (OHIS) among rural farming households in Osun State. A three-stage sampling technique was employed to select 583 rural farming households from six (out of thirty) Local Government Areas in the State. The primary data collected with the aid of structured questionnaire were analyzed using descriptive statistics and a logistic regression model. Majority (61.1%) recorded two morbidities in three months, malaria was the most reported illness (90.6%), radio jingles was the most popular source of awareness about the OHIS (96.1%) and households' monthly health expenditure was N15,260.72± N6,644.94. The WTP calculated from the single-bounded dichotomous format was N4,170.47 while WTP from response to open-ended CV survey was N1,216.12 per person per month. The explanatory variables that significantly influenced the willingness to pay include the sex, age, and years of schooling of household heads, household size, marital status, awareness of NHIS and OHIS, perceived workability, prefer OHIS, and affordability of the premium. Others are the frequency of sickness, sleeping under insecticides-treated nets (ITNs), a household member suffering ailment, bronchitis/tuberculosis and arthritis. It is concluded that the respondent households are willing to pay more if OHIS could be rendering more quality health services through her accredited healthcare service providers. Proper awareness creation via radio stations and open campaigns by the OHIS team to educate rural households on the need to key into this laudable scheme; and close monitoring of the OHIS-accredited healthcare providers to guarantee quality healthcare services delivery are recommended.

Keywords: *Health insurance, awareness, willingness-to-pay, rural households, Contingent, valuation, Health Financing*

Citation: Adekanye, J.O., Atoyebi, J.O., Salami, T.A., & Adesugba O. J. (2026). Awareness and Willingness to Pay for Osun Health Insurance Scheme among Rural Farming Households in Osun State, Nigeria. *Direct Research Journal of Public Health and Environmental.* Vol. 11(1), Pp. 42-52.
https://doi.org/10.26765/DRJPHET10516686

INTRODUCTION

Accessing quality health care services at affordable costs with easy mode of payments is a serious problem especially among the already impoverished rural households in Nigeria due to preponderance of catastrophic out - of - pocket health expenditure which accounts for more than 70% of health expenses in the country. Onoka *et al.* (2011) reported that almost 70% of the total expenses on health are private, where out-of-pocket expenditure accounts for 90%. The implication of this exorbitant out-of-pocket expenditure is that accessing

health facilities can put a remarkable financial burden on families. Paying for treatment through out-of-pocket spending predisposes households to catastrophe, and may adversely affect their health seeking patterns, especially the poor and those living in rural areas. They may even be consuming less than the required amount of treatment or opt for cheap but inappropriate treatment. Hence, access to affordable healthcare continues to be a challenge for most Nigerians due to high levels of poverty and payments often made through out-of-pocket. As the cost of healthcare rises, it has become increasingly imperative for people to obtain health insurance to maintain access to preventive and emergency healthcare services. Health insurance is a social security system that guarantees the provision of needed health services to persons on the payment of token contributions at regular intervals. It is one of the mechanisms for providing financial protection from the costs of using healthcare services. It is a key pillar of universal healthcare and the protection it offers is extremely important as research from the World Bank and World Health Organization (WHO) revealed that 100 million people are pushed into extreme poverty on an annual basis due to healthcare expenses.

Nigeria has the highest out-of-pocket health spending and poorest health indicators in the world (Gustafsson-Wright and Schellekens, 2013) and this has been the propelling force for the Nigeria government to initiate the National Health Insurance Scheme. Its policy was drafted in 1997 and its legal framework signed into law in Act 35 of 1999 Constitution of the Federal Government of Nigeria and launched for implementation on 16th June, 2005. NHIS is to provide social health insurance in Nigeria where health care services of contributors are paid from the common pool of funds contributed by the participants of the Scheme. It is a pre-payment plan where participants pay a fixed regular amount. The funds are pooled, allowing the Health Maintenance Organizations (HMOs) to pay for those needing medical attention.

The objectives of NHIS are to: ensure that every Nigerian has access to good healthcare services; protect families from the financial hardship of huge medical bills; limit the rise in the cost of healthcare services; and ensure equitable distribution of healthcare costs among different income groups, among others. Under the National Health Insurance Act 2008, the NHIS also started a Rural Community-Based Social Health Insurance Program (RCSHIP) in 2010. However, those covered by the NHIS were mostly in the public / formal sector i.e. federal government employees in addition to some largely unreliable and unsustainable, small community-based health insurance programs available to some in the informal sector. With NHIS, less than five percent of the country's population is covered by health insurance since the NHIS was not mandatory, except for the public servants in the pay-roll of federal government and staff of some organized private sectors. The NHIS operation was also centralized in a decentralized nation of 37 federated, semi-autonomous States, who for various reasons, had not keyed in to the nationally managed scheme. With the poor coverage of the health insurance scheme, it was clear that the NHIS was not doing what it was envisioned to do. The operations of the NHIS still leaves large gaps among the poor and informally employed as most of the people in the informal sector do not have health insurance, despite their willingness to participate in such schemes (Van Damme *et al.,* 2004). It is generally assumed that the implementation and expansion of a health insurance scheme in the informal sector in developing countries like Nigeria remains a challenge.

Hence, the need for decentralization of the scheme, as the decentralization will allow the States to envision and establish health insurance schemes at the States level that better meet the needs of their people. In 2015, Nigeria's National Council on Health decided to decentralize the National Health Insurance Scheme (NHIS) and a ray of hope emerged through the approval of one percent from the Consolidated Revenue Fund by the federal government in the 2018 budget as the key to the provision of basic healthcare for all Nigerians, irrespective of their financial status. The move was to make possible the funding of projects, programmers and policies towards the goal of attaining the Universal Health Coverage (UHC) in Nigeria by 2025. The goal, according to the World Health Organization (WHO) was to ensure that all people and communities obtain the health services that they desire without undergoing financial hardship. One of the most significant outcomes of the approval of the one percent consolidated revenue fund was the emergence of State Health Insurance Schemes (SHIS) across the federation. Several States, including Osun State have launched and are operating their locally-developed health insurance schemes. Osun Health Insurance Scheme (OHIS) was launched in April 2019 to protect families from the financial hardship of huge medical bills. The scheme is aimed at providing affordable and quality health services to the residents of the state. Towards the successful take-off of the scheme, the State government then approved the release of N150 million as take-off for the State's Health Insurance Scheme.

The grant was meant for the establishment of Osun Health Insurance business and zonal offices across the 30 LGAs, 1 Area office and 37 LCDAs. Also, it was meant to aid the employment of ad-hoc personnel, provision of operational vehicles, conduct of vulnerable research and enrollment of vulnerable population, among others. It was also meant to be used for the installation of necessary ICT infrastructure for health insurance operations, as well as for advocacy and sensitization of the populace on capacity building. Under the scheme in the State, enrollee means any person and eligible dependent(s) who pays or is being paid for, the required contribution. It is made compulsory for all public servants in the payroll of the State government and government had since commenced the deduction of premium of 1.5 percent of basic salary of public servants and also three percent contribution of government to public servants' premium. Also, dependent

mean spouse and four (4) biological children (including legally adopted children) under the age of eighteen (18). Additional/Extra dependents mean other biological and non-biological children aside the initial four, additional spouse(s) and aged parents paying premium as determined by the agency. Beneficiaries of the scheme includes individuals and families from various works of life such as civil servants, members of the organized private sector, students enrolled under The Student Health Insurance Programmed (T-SHIP). As at 31st December, 2024, OHIS has 281,343 enrollees. This figure includes 97,447 public servants; 101,726 vulnerable people; 73,166 students and only 9,004 enrollees from non-formal sectors including farmers. The scheme is currently in partnership with 473 health facilities across the State. The list of healthcare facilities comprising of 332 focal primary healthcare facilities, 15 comprehensive health centers, 1 specialist hospital, 1 teaching hospital and 124 accredited private healthcare facilities (OHIA, 2025).

Objectives of the Study

The main objective of this study was to examine the awareness and willingness to pay for Osun health insurance scheme among rural farming households in Osun State, Nigeria.

The specific objectives were to:
i. profile households' members sickness frequency, hospital visits and monthly health expenditure;
ii. examine the level of awareness of the Osun Health Insurance Scheme (OHIS) among the rural farming households in Osun State;
iii. estimate the amount willing to pay for OHIS by the respondents' households; and
iv. analyze the determinants of willingness to pay for Osun Health Insurance Scheme.

METHODOLOGY

Study Area

This study was carried out in Osun State, Nigeria. The State, with a population of about 4.43 million people in 2022 as projected from NPC 2006 and reported by NBS (2023) have Osogbo as the capital city with other majortowns such as Ile-Ife, Ilesa, Iwo, Ede, Ila-Orangun, Ikirun, Ejigbo, Oyan, Okinni among others. There are 30 Local Governments Areas (LGAs) and 1 Area Office in the State. There are orthodox, alternative and traditional healthcare systems in the State in which the LGAs are mostly responsible for the management of primary healthcare facilities. The informal sector in the State comprised the small and medium enterprises, self-employed artisans and farming households. The typical features of rural households in Osun State are that majority of them have low education qualification, poor awareness and inadequate knowledge of most of the government programmers that were designed to benefit them while they also lack employments welfare packages. Before the commencement of Osun Health Insurance Scheme, there was no health insurance programmed for the non-formal sector employees in the State while the existing National Health Insurance Scheme (NHIS) was only taken care of the federal workers and their dependents.

Sampling Procedure

This is a cross-sectional study among households who belong to informal sector of economy, majorly, rural farming households in Osun State and the study was carried out with the use of a self-administered structured questionnaire. A three-stage sampling technique was adopted in which the first stage involved a random selection of 2 LGAs from each of the three (3) ADP zones in the State, making a total of six (6) LGAs. In the second stage, five villages were randomly selected from each of the six (6) selected LGAs, making a total of thirty (30) villages. The third stage was the random selection of twenty (20) households from each of the selected 30 villages. In all, a total of 600 rural farming households were interviewed for this study but 17 questionnaires were discarded due to incomplete and inconsistent information. Hence, 583 questionnaires with complete information were used for the analysis.

Sources and method of data collection

Primary data for this study were collected with the aid of well-structured questionnaire. A face-to-face interview as well as Contingent Valuation (CV) methods were employed to collect willingness-to-pay data. The contingent valuation method (CVM) is a technique used in economics to estimate the value people placed on goods or services that don't have a market price. It's often used for environmental or public goods. The questionnaire which was divided into four (4) sections were administered to the household heads or their representatives. Section A of the questionnaire focused on socio-economic characteristics of the respondents: age, sex, marital status, household size, level of education, farm enterprise, total farm income as well as the household's assets; section B sourced information on respondents' source(s) of information on health insurance, awareness of the availability of health insurance, how health insurance operates, their knowledge and attitudes towards health insurance; section C focused on respondents' access to and use of healthcare services, constraints to access healthcare services including Osun Health Insurance Scheme while section D focused on the respondents' willingness-to-pay for the Osun health insurance scheme and the amount willing to pay.

Scenario for Eliciting WTP for OHIS

Single-Bounded Dichotomous Choice (SBDC) approach

was used in the study where respondents in the survey were presented with one bid amount to which they were permitted to respond with either a yes or no to show their willingness-to-pay or not to pay. The format is called "single-bounded" because it only uses one bid amount, and "dichotomous" because respondents can only answer in one of two ways (yes or no). An iterative bidding process, a method commonly used in contingent valuation to elicit willingness-to-pay values from respondents was employed to assess the maximum willingness-to-pay for the schemes. After explaining the concepts of the health insurance scheme to the respondents, they were then presented with an initial bid amount for the Osun Health Insurance Scheme and they were to indicate whether they are willing to pay that amount or not. Based on their response, the bid amount is adjusted (increased or decreased) in subsequent rounds. This was braced with questions that were able to produce more information for those who do not pick a 'yes' for either the first or second option. This was to enable respondents to pick lower amounts (as low as zero) or higher amounts (higher than the stated options in the questionnaire). This final naira amount is interpreted as the respondent's willingness-to-pay. The starting bid was ₦1000 which concur with Ogundeji *et al.* (2019) in the study that examined the factors that influence the willingness and ability to pay for social health insurance in six (6) selected local government areas in Kaduna state, Nigeria.

Data Analysis

Data collected were subjected to descriptive analyses, logit and an ordinary least square regression model.

Logit model

The purpose of the logit model was to estimate the mean WTP. Farming households were given an initial bid value at random in which they may accept or reject. In the logit model, the dependent variable is dummy variable yes/no. Following Gujarati (2004), the logit model is expressed as follows:

$$\text{Logit}(P\{y\}) = \beta_0+\beta x_1+\varepsilon_1 \quad (1)$$

Where:

P(y) = probability that a farming household is willing to pay for OHIS

β_0 = constant term
β_1 = regression coefficient of estimate or logit parameter
x_1 = initial bid value (posed at random)
ε_1 =error term of logit regression

In accordance with Gujarati (2004), both probit and logit models provide similar results, thus for comparative computational simplicity, logit model was employed for the estimation. The mean willingness is formulated as:

$$E(WTP)=\frac{1+\exp\beta_0)}{\beta_1} \quad (2)$$

Where:

β_1=bid coefficient
β_0=constant term.

Farming households' willingness to pay for insurance premium can be specified as follows:

$$WTI = \propto + \sum_{j=1}^{n} \beta_i X_i + \varepsilon_i \quad (3)$$

Where *WTI* is a dichotomous dependent variable expressing individual willingness to take up insurance policy,

WTI = 1 (for insurance takers),

WTI = 0 (for non-insurance takers).

X_j……..X_n represents variable factors and ε_i is the random variable accounting for unobserved factors, α and β are parameters to be estimated.

The empirical model (logit model) for farming households' interest in enrolling with Osun health insurance scheme can then be formulated as:

$$Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3+ \beta_4X_4+ \beta_5X_5 +\beta_6X_6+ \beta_7X_7 +\beta_8X_8 +\beta_9X_9 +\beta_{10}X_{10} +\beta_{11}X_{11} + \beta_{12}X_{12} +\beta_{13}X_{13} +\beta_{14}X_{14} + \beta_{15}X_{15} +\beta_{16}X_{16} + \beta_{17}X_{17} +\beta_{18}X_{18} + \beta_{19}X_{19} +\beta_{20}X_{20}+ \beta_{21}X_{21} + \beta_{22}X_{22} + \varepsilon_i \quad (4)$$

Y=dichotomous dependent variable of farming households' willingness to take up Osun Health Insurance Policy.

Independent variables

X_1=sex of the household head (male =1, female = 0),
X_2=age of household head (years),
X_3=household size,
X_4=household head' marital status,
X_5=years of education of household head (years of schooling)
X_6=household annual farm income (N)
X_7=aware of NHIS (yes =1, 0 otherwise),
X_8=aware of OHIS (yes =1, 0 otherwise),
X_9=belief health insurance scheme is workable (yes =1, 0 otherwise),
X_{10}=prefer insurance (yes =1, 0 otherwise) and
X_{11}=can afford the OHIS charges (yes =1, 0 otherwise),
X_{12}= at least, a member of the household has chronic illness (yes =1, 0 otherwise)
X_{13}=frequency of household members falling sick (number

per month for all household members),
X_{14} = household monthly health expenditure
X_{15} = members sleeping under ITNs
X_{16}=household members frequency of hospital visit.
X_{17}=at least, a member of the household suffers ailment
X_{18}= at least, a member of the household has recurrent peptic ulcer (yes =1, 0 otherwise)
X_{19}= at least, a member of the household is diabetes (yes =1, 0 otherwise)
X_{20}=at least, a member of the household has hypertension (yes =1, 0 otherwise),
X_{21}= at least, a member of the household has TB or bronchitis (respiratory diseases) (yes =1, 0 otherwise)
X_{22}= at least, a member of the household has arthritis (yes =1, 0 otherwise)

Ethical consideration

Participation in this study was made voluntary and consent of the respondents were sought through verbal informed consent before completing the questionnaire. Ethical approval to conduct the study was obtained on 5 December, 2025 from the Osun State Ministry Health, Health Research Ethics Committee with approval number OSHREC/PRS/569T/786.

RESULTS AND DISCUSSION

Households' members' sickness frequency and hospital visits and monthly health expenditure.

Table 1 shows the frequency of falling sick and the frequency of visiting hospital by the sick household member in the past three months prior to the interview. Less than 1% (0.7%) did not fall sick at all, while 5.5% fell sick once. Majority (61.1%) of the respondent households recorded two morbidities within the period while 32.8% recorded three morbidities.

There was no serious difference between the number of times household members fell sick and the frequency of hospital visits which suggests that most of the sicknesses were reported in the hospitals, even some visit hospitals for general check-up to ascertain his/her health status and prevent sudden sickness.

Kind of sicknesses reported by the households in the past three months.

Table 2 shows the nature of sickness that made households to visit hospitals in the past three months. In multiple response option, the findings show that majority households to visit hospitals in the past three months. In a multiple response option, the findings show that majority (90.6%) went to receive treatment for malaria, being the commonest sickness in the tropical region of the world. Also, 8.5% were in hospital to be treated for injuries received from accidents. 60.0% went to the hospital to receive treatment for stomach ache while 59.5% were in hospital to get treatment for headache. 53.5% and 51.6% went to the hospitals to receive treatment for arthritis and diarrhea/dysentery, respectively. 24.7% went to receive treatment for abnormal blood pressure. While eye injury and dental problem took 30.2% and 21.4% to the hospitals, respectively. This finding shows that majority have more than one reasons to visit health centers and they went to the health centers when they begin to experience symptoms of certain sicknesses and only few (15.1%) went for medical check-up as a preventive measure against sicknesses.

Households' monthly health expenditure

Table 3 shows the distribution of monthly expenditures on health. The estimated mean household monthly health expenditure was ₦15,260.72±₦6,644.94. The results show further that 21% spent less than ₦10, 000 on the health of their household members monthly. However, the highest amount of ₦30, 000 and above was spent by only 4.1% of the respondents. Also, majority (42.9%) spent between ₦10, 000 and ₦19, 999 monthly on the health of their household members. Also, 31.2% of the households spent ₦20,000-₦29, 999 per month on the health of their household members. The mean monthly health expenditure is approximately ₦183, 128.64 per annum which is equal to 8.1% of their annual farm income. This indicates that health expenditure in the study area is catastrophic. Health expenditure becomes catastrophic when it exceeds 5% of household's annual income (Onwujekwe *et al.,* 2010), especially in a country like Nigeria where many households are poor, already living below the poverty line. At that level, households may not have money to spend on any other household needs apart from food. Infact, some scholars have argued that the threshold for assuming catastrophe may be between 2% and 5% (Onoka *et al*., 2011; Ichoku, Fonta and Onwujekwe, 2009).

Respondents' awareness of health insurance schemes

Table 4 revealed that 97.3% of the respondents were aware of the OHIS scheme compared with 70.8% for the NHIS. This might not be unconnected with regular radio jingles and business centers established across the State by the OHIS in addition to the advertisement in local languages unlike the NHIS. Increased awareness of the benefits and mechanics of health insurance schemes in Nigeria is strongly correlated with a higher willingness to pay. Study by Akinyemi *et al.* (2021) revealed that in a particular survey among federal civil servants in Ibadan, self-reported awareness of the respondents towards NHIS was high as 95.2% of them reported being aware of the scheme. When people are adequately informed about a scheme, they are more likely to be willing to enroll and pay

Table 1: Number of times households' members were sick and frequency of hospital visits in the month preceding this interview.

Frequency of sickness	Number of respondents	Percentage	Frequency of hospital visit	Number of respondents	Percentage
0	04	0.7	0	4	0.7
1	32	5.5	1	24	4.1
2	356	61.1	2	346	59.8
3	191	32.8	3	202	34.9
4	0	0.00	4	3	0.5
Total	**583**	**100**		**583**	**100**

Source: Field survey, 2025.

Table 2: Kind of sicknesses reported by the households in the past three months.

Kind of sickness	Frequency*	Percentage of total
Check up	88	15.1
Malaria	528	90.6
Blood pressure	144	24.7
Head ache	347	59.5
Dental problem	125	21.4
Eye injury	176	30.2
Diarrhea/Dysentery	301	51.6
Injury from accident	46	7.9
Stomach ache	350	60.0
Typhoid fever	92	15.7
Arthritis: back pain, knee or muscular pain	312	53.5

*Multiple response option; Source: Field survey, 2025.

Table 3: Distribution of households by monthly health expenditure.

Expenditure Categories (₦)	Frequency	Percentage of total
Less than 10,000	127	21.8
10,000-19,999	250	42.9
20,000-29,999	182	31.2
30,000 and above	24	4.1
Total	**583**	**100**
Mean = 15,260.72		
Std dev. = 6,644.94		
Min. = 4,000		
Max. = 30,000		

Source: Field survey, 2025.

Table 4: Distribution of respondents by awareness of health insurance schemes.

Awareness	NHIS		OHIS	
	Frequency	percentage	Frequency	percentage
Yes	413	70.8	567	97.3
No	170	29.2	16	2.7
Total	**583**	**100**	**583**	**100**
Sources of awareness				
Electronic media	10	1.7	16	2.7
Radio jingles	63	10.8	560	96.1
Television	257	44.1	251	43.1
Billboards	322	55.2	23	3.9
Others: (Leaflets/journal; Town hall meetings; and Health centres).	73	12.5	8	1.4

*multiple response option
Source: field survey, 2025

Table 5: Respondents perception of OHIS as a health insurance scheme.

Perception	Frequency *	Percentage of total
The scheme is workable	447	76.7
Prefer health insurance OHIS	560	96.1
Can afford the cost involve in enrollment	386	66.2
Willing to enroll with OHIS	511	87.7

*multiple response option,
Source: Field survey, 2025

premiums. However, Olugbenga-Bello and Adebimpe (2010) in another study revealed that two thirds of the respondents were aware of NHIS but very few as well have so far benefited from NHIS. On the sources of awareness of the two health insurance schemes for comparison, in a multiple response option, radio jingle was the most effective tool used by OHIS to create awareness as 96.1% of the respondents claimed that they got to know OHIS through radio jingles. Only 10.81% got to know NHIS through radio jingles. 55.2% of the respondents got to know NHIS through billboards whereas only 3.9% got to know OHIS through billboards. However, there was no serious difference between the level of awareness created through television as 44.1% and 43.1% claimed that they got to know NHIS and OHIS through television jingles. Because of the rural nature of the study area, radio jingles seem to be the most effective means of creating awareness about government programmers**.**

Respondents' perception of OHIS as a health insurance scheme

In a multiple response option, (Table 5) presented the respondents perception of OHIS as a health insurance scheme. The table reveals that 76.7% were of the opinion that the scheme is workable that is, the scheme can work under the Nigerian policy environment. 96.1% of them also prefer health insurance OHIS. Also, 66.2% noted that they can afford the cost involve in enrollment with OHIS while 87.7% of the respondents were willing to enroll for the scheme.

This implies that the monthly premium, to a large extent, was not going to constitute barriers to participation. Perceptions significantly impact the willingness to pay for health insurance in Nigeria, as positive perceptions of affordability and benefits lead to higher willingness, while negative perceptions like lack of trust, poor awareness, and the belief that it is not necessary lead to a lower willingness to pay.

Perceptions about the scheme's value, the perceived risk of a catastrophic health event, and confidence in the management of funds also influence participation and premium payment decisions. Poor awareness or lack of awareness about the scheme's existence, benefits, and how it works can lead to low willingness to pay.

Estimates of the Mean WTP value using logistic regression model

In estimating the mean willingness to pay, the initial bid value was regressed with the dependent dummy variable of the willingness to pay. The mean willingness to pay obtained from the single-bounded dichotomous format is as presented in the (Table 6).

Table 6. Logit regression model on mean willingness to pay

Variables	Coefficients	Std. dev	t-value	p-value
Constant	1.488428	0.2960234	5.03	0.000
BID	0.0004057	0.0002408	1.69	0.092

Source: Field survey, 2025

Recall that:

Logit $(p\{y\}) = \beta_0+\beta x_1 +\varepsilon_1$ (in equation 1)

Where:

P(y) = probability that a household is willing to pay
β_0 =1.488428
β_1 = 0.0004057
x_1 =initial bid value (posed at random)
ε_1=error term of logit regression

Therefore:

$$E(WTP) = \frac{\ln (1+ \exp(\beta_0))}{\beta_1}$$

$$= \ln \frac{(1+\exp (1.488428)}{0.0004057}$$

$$= \frac{\ln (1+4.430125884)}{0.0004057}$$

$$= \frac{\ln 5.430125884}{0.0004057}$$

$$= \frac{1.69196231673}{0.0004057}$$

= ₦4,170.47 per person per month

$$\text{Open ended (bid by respondents)} = \frac{\text{Total sum of willingness to pay}}{\text{Total number of respondents' households}}$$

$$= \frac{709000}{583}$$

= ₦1216.12 per person per month

Thus, the mean WTP obtained from the single-bounded dichotomous format is ₦4,170.47 per person per month compared to the mean WTP of ₦1216.12 obtained from response to the open-ended CV survey (that is the amount households on their own responded to pay), which is lower than the mean value obtained from the closed-ended logit model estimates. This result indicates that the respondent households are willing to pay more if the health insurance through her healthcare service providers could be rendering more quality health services.

Table 7: Logistic regression of the determinants of the willingness to pay for Osun Health Insurance Scheme.

Independent Variables	Odd ratio	coefficient	Std error	z	p>z	95% confidence intervals	
Sex	0.0317	-3.4477***	0.9761	-3.53	0.000	-5.3607	-1.5347
Age	1.0962	0.0924**	0.0433	2.13	0.033	0.00745	0.1773
Household size	2.8610	1.0506***	0.2468	4.26	0.000	0.5670	1.5343
Marital status	46.069	3.8252***	0.9221	4.15	0.000	2.0178	5.6325
Years of schooling	1.2207	0.1996***	0.0633	3.15	0.002	0.0755	0.3236
Farm income	1.0000	9.16e-07***	2.72e-07	3.37	0.001	3.83e-07	1.45e-06
NHIS awareness	0.0734	-2.6066***	0.7032	-3,71	0.000	-3.9848	-1.2285
OHIS awareness	5.2120	1.6517*	0.8623	1.92	0.055	-0.0385	3.3419
OHIS workable	7.2970	1.9842***	0.4975	3.99	0.000	1.0091	2.9593
Prefer OHIS	21.190	3.0583***	0.8461	3.61	0.000	1.4000	4.7166
Can afford OHIS	0.1410	-1.9584***	0.6045	-3.24	0.001	-3.1431	-0.7737
Chronic illness	0.9785	-0.0216	0.4753	-0.05	0.964	-0.9531	0.9010
Frequency of falling sick	0.4225	-0.8616*	0.4979	-1.73	0.083	-1.8373	0.1141
Monthly health expenditure	1.0001	0.0001***	0.00003	3.02	0.003	0.00004	0.0002
Sleeping under ITNs	27.3330	3.3040***	0.6353	5.20	0.000	2.0589	4.5491
Freq of Household members visiting hospital	1.286	0.2514	0.3860	0.65	0.515	-0.5052	1.0080
A household member suffering ailment	165.24	5.1076***	1.9082	2.68	0.007	1.3676	8.8477
A household member suffering ulcer	1.8110	0.5938	0.4593	1.29	0.196	-0.3063	1.4940
A household member suffering diabetes	1.665	-0.6722	0.6472	-1.04	0.299	-1.9406	0.5963
A household member suffering hypertension	0.4508	-0.7963	0.5616	-1.42	0.156	-1.8970	0.3044
A household member suffering Bronchitis / Tuberculosis	8.066	2.0895**	0.9297	2.25	0.025	0.2673	3.9117
A household member suffering arthritis	0.0051	-5.2441***	1.8715	-2.80	0.005	-8.9122	1.5760
Constant		-15.93048	3.2322	-4.93	0.000	-22.2655	-9.5955

***, ** and * are significant levels at 1%, 5% and 10% probabilities, respectively
Prob > chi2 = 0.000
Log likelihood = -112.44754
Pseudo R^2 = 0.4828

Determinants of willingness to pay for Osun Health Insurance Scheme (OHIS)

Table 7 presented the results of the logistic regression of the willingness to pay for Osun Health Insurance Scheme (OHIS). The model produced a good fit of the data with the Chi square value of the regression being statistically significant ($p<0.01$). Seventeen (17) out of the twenty-two (22) variables included in the model were significantly influenced the willingness to pay for the health insurance scheme. However, it is generally not recommended to interpret the coefficients of a logit model directly in terms of their magnitude or raw values since coefficients are in log odds, that is, they are on a log scale, making direct interpretation less intuitive. Interpretation is easier via odds ratios. Exponentiating coefficients gives odds ratios, that shows how a one-unit change in a predictor affects the odds of the outcome, which are more interpretable in terms of changes in odds of the outcome.

Specifically, the negative coefficient (β=-3.4477) for sex of household head is significant ($p<0.01$) with the odd ratio (OR) of 0.0318 indicates that for males compared to females, the odds of being willing to pay for the health insurance scheme are much lower, that is the odd is about 0.0318 times those of females, or an approximately 96.82% decrease in odds compare to female headed households. The coefficient of age was positive (β=0.0924) and statistically significant ($p<0.05$) with the odd value of 1.0962. This implies that a unit increase in age of household head is associated with an increasing odd of willingness to pay for OHIS to the tune of approximately 1.0962 (or 9.62%). This suggests that as household heads get older; they are more likely to prioritize healthcare and health insurance due to increased healthcare needs as age progresses. The coefficient of household size was positive (β=1.0506) and statistically significant ($p<0.01$) with the odd value of 2.8610, implies that a unit increase in household size is associated with a higher odd of willingness to pay for OHIS to the tune of approximately 186.1%. This suggest that larger households are more likely to prioritize healthcare and health insurance due to increased healthcare needs and financial responsibilities associated with supporting more family members. Likewise, the coefficient of marital status of household head is positive (β=3.8252) and statistically significant ($p<0.01$) with the odd value of 46.069 indicates that being married compared to unmarried (single) is associated with a higher odd of willingness to pay for the OHIS to the tune of 4506.9%. This suggest that married individuals are more likely to prioritize healthcare and insurance due to increased financial responsibilities, family obligations, or shared healthcare needs with their spouse. They may also be more likely to have dual incomes, making health insurance more affordable and increasing their possibility of joining the health scheme. The coefficient of years of schooling was positive (β=0.1996) and statistically significant ($p<0.01$) with the odd value of 1.2207, implies that a unit increase in household head's years of schooling is associated with a higher odd of willingness to pay for OHIS to the tune of approximately 22.07%. This suggest that increasing household head's years of schooling is likely to increase his/her level of awareness and positive perception of the scheme, hence the willingness to participate in the health insurance

scheme. Likewise, the coefficient of farm income was positive (β=9.16e-07) and statistically significant (p<0.01). However, the odd ratio (OR) value of 1.0000 implies no significant association between the farm income and the willingness to pay for the Osun health insurance scheme in the study area. Hence, other factors are more influential in determining the willingness to pay for OHIS in the study area.

The coefficient of NHIS awareness was negative (β=-2.6066) and statistically significant (p<0.01) with the odd value of 0.0734, indicates that for households that are aware of the National health insurance scheme compared to those that were not aware, the odds of being willing to pay for the health insurance scheme are much lower, that is the odd is about 0.0734 times those households that were not aware, or an approximately 92.7% decrease in odds compare to those that were not aware of the NHIS. This is because increased awareness may lead to a better understanding of the limitations and weaknesses of the scheme, making individuals less likely to enroll.

On the contrary, the coefficient of OHIS awareness was positive (β=1.6517) and statistically significant (p<0.1) with the odd value of 5.2120, indicates that for households that are aware of the Osun health insurance scheme compared to those that were not aware, the odds of being willing to pay for the health insurance scheme are much higher, that is the odd is about 5.2120 times those households that were not aware, or an approximately 421.2% increase in odds compare to those that were not aware of the scheme (OHIS). This is because increased awareness about the new programmed that was locally conceived and structured to accommodate the people may convinced them the need to participate in such a scheme, making individuals eager to enroll.

Health insurance workability has positive coefficient (β=1.9842) and statistically significant (p<0.01) with the odd value of 7.2970. It implies that an increase in the perceived workability of the health insurance scheme is associated with a higher likelihood of enrolling in the health insurance scheme. The findings therefore suggested that for households that perceived the Osun health insurance scheme workable compared to those that hold other view, the odds of being willing to pay for the health insurance scheme are much higher, or approximately 629.7% increase in odds compare to those that do not see the health scheme (OHIS) as workable. This finding suggests that individuals are more likely to participate in a health insurance scheme if they believe it is well-designed, easy to navigate, and effective in providing coverage. The finding concurs with Oyekale (2012) who investigated the factors influencing households' willingness to pay for National Health Insurance Scheme (NHIS) in Osun State, Nigeria. The coefficient of preference for OHIS (prefer OHIS) was positive (β=3.0583) and statistically significant (p<0.01) with odd value of 21.190. This implies that preferring a health insurance scheme is associated with a higher probability of participating in the health insurance scheme. The findings therefore suggested that for households that preferred the Osun health insurance scheme compared to those that hold other view, the odds of being willing to pay for the health insurance scheme are much higher, or approximately 2109% increase in odds compare to those that do not show preference for the health scheme (OHIS).

In contrast, the coefficient of OHIS affordability (i.e can afford OHIS premium) was negative (β= -1.9584) and statistically significant (p<0.01) with the odd value of 0.1410, implies that household's ability to afford the OHIS premium is associated with a lower odd of willingness to pay for OHIS to the tune of approximately 0.1410 times (or 85.9%). This suggest that the households in such category may be entertaining fear of non-workability of OHIS and may not be ready to put their confidence in the scheme since they have enough money to seek better healthcare services elsewhere where they have more confidence. The coefficient of frequency of falling sick was negative (β= -0.8616) and statistically significant (p<0.1) with odd value of 0.4225. This implies that an increase in the frequency of falling sick is associated with a lower probability of participating in the Osun health insurance scheme. The findings therefore suggested that for households that have individual that falls sick often compared to those that do not have, the odds of being willing to pay for the health insurance scheme are much lower, it is about 0.4225 times lower, which is approximately 57.8% decrease in odds compare to those that do not have individual(s) that falls sick frequently. This is expected because those that were falling sick frequently may be the most vulnerable such as young children aged and the pregnant women who requires regular needs of medical checkup and treatment. The fear of non-workability will make people in this category not to put their confidence in the scheme. Since they need health services regularly, it will be a bit riskier if the system fails after their subscription. They may also be facing financial constraints due to loss income, or reduced productivity, leading to a decrease in the probability of willingness to pay for OHIS. Similar finding has been reported by Oyekale (2012) for NHIS in Osun State. The coefficient of monthly health expenditure was positive (β=0.0001) and statistically significant (p<0.01) with odd value of 1.0001. However, the odd ratio (OR) value of 1.0001 implies that there is no significant association between the household monthly health expenditure and the willingness to pay for the Osun health insurance scheme in the study area. Hence, other factors are more influential in determining the willingness to pay for OHIS in the study area.

The coefficient of sleeping under insecticides-treated mosquito nets (ITNs) was positive (β=3.3040) and statistically significant (p<0.01) with odd value of 27.3330. This implies that sleeping under ITNs is associated with a higher probability of participating in the health insurance scheme. The findings therefore suggested that for households that sleep under ITNs compared to those that do not, the odds of being willing to pay for the health insurance scheme are much higher, approximately 2663%

increase in odds compare to those that do not sleep under ITNs. Sleeping under ITNs prevent mosquito bites and reduce the chances of getting malaria by about 75%. In fact, Raghavendra *et al.* (2011) reported that ITNs proved to be two-fold as efficient as ordinary or untreated nets and provide more than 70% protection when compared with no net. Malaria alone is said to be responsible for not less than 70% of all patients in Nigeria hospitals (FMoH, 2007). Hence, such households can take more risks of putting their healthcare needs in the hands of Osun health insurance scheme with less negative consequences.

The coefficient of a household member suffering ailment was positive (β=5.1076) and statistically significant ($p<0.01$) with odd value of 165.24. This implies that households with at least a member suffering an ailment is associated with an increase odd of willingness to pay for OHIS to the tune of approximately 165.24 times compare with a household with no member suffering from an ailment(s). More specifically, the coefficient of a household member suffering from bronchitis / tuberculosis was positive (β=2.0895) and statistically significant ($p<0.05$) with odd value of 8.066. This implies that households with at least a member suffering from bronchitis / tuberculosis is associated with an increase odd of willingness to pay for OHIS to the tune of approximately 8.066 times compare with a household with no member suffering from bronchitis / tuberculosis. Likewise, the coefficient of a household member suffering from arthritis was positive (β=2.0895) and statistically significant ($p<0.01$) with odd value of 0.0051. This implies that households with at least a member suffering from arthritis is associated with an increase odd of willingness to pay for OHIS to the tune of approximately 0.0051 times compare with a household with no member suffering from arthritis.

Conclusion

The initiative by the State government to have her own State-based health insurance scheme is one of the recent efforts at safeguarding avoidance of catastrophic health expenditure in already impoverished households. It is expected that OHIS will have positive impacts on households' welfare by reducing financial burdens of diseases. The mean WTP calculated from the single-bounded dichotomous format was ₦4,170.47 while the mean WTP from response to the open-ended CV survey was ₦1216.12 per person per month. Meaning that the respondent households are willing to pay more if OHIS could be rendering more quality health services through her health service providers both at public and private facilities). The explanatory variables that significantly influenced the willingness to pay include the sex, age, and years of schooling of household heads, household size, marital status, awareness of NHIS and OHIS, perceived workability, prefer OHIS, and affordability of the premium. Others are the frequency of sickness, sleeping under insecticides-treated nets (ITNs), a household member suffering ailment, bronchitis/tuberculosis and arthritis.

The following were therefore recommended:

1.The need for proper awareness creation via local radio stations and open campaigns by the OHIS team to educate rural households on the need to key into this laudable scheme aims to reduce the heavy financial burden of out-of-pocket health expenditure. This will ensure that rural households benefit adequately from the health insurance scheme.

2.Osun Health Insurance Agency must intensify efforts to ensure that there are adequate frameworks and infrastructure to make the scheme workable and government must work on the current inadequacy of health infrastructures and personnel in rural health centers as this is currently hindering them from fully benefiting in the scheme.

3.There is need for close monitoring of the private OHIS-accredited healthcare providers to ensure that quality healthcare services are being rendered to the enrollees.

4.More enrollment centers should be created and more primary health centers need to be well equipped and accredited as Osun Health Insurance Scheme (OHIS) participating healthcare service providers.

Funding

This study was funded by TETFUND under the Institutions-Based Research (IBR) funding 2024. We so much acknowledged and appreciated the federal agency and Osun State College of Technology, Esa-Oke Management under the then Rector-Dr S.A.O. Adegoke, for his interest in this research work as well as the current Rector-Mr. S.A. Adewumi for his supports towards the success of this work.

Acknowledgements

We are grateful to the Executive Secretary, Osun Health Insurance Agency, Particularly the Executive Secretary, Dr. Rasaq Akintunde Akindele; Mr. Anthony Oyegoke (Deputy Director, Publication, Research and Statistics) and Mr. Akanbi Akinolu (Head of ICT, OHIA, Osogbo) for given us the necessary supports in gathering relevant information on OHIS activities. Also, we acknowledged the invaluable contribution of Dr. Tajudeen Jimoh (CMD, Honesty Medical Centre, Osogbo).

Declaration of Conflicting Interests

The authors hereby declared that no known potential conflicts of interest with respect to the authorship and /or publication of this article.

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