

## Bridging the Health Insurance Gap: Understanding Knowledge, Attitudes and Enrolment Determinants among Informal Sector Workers in Osun State, Nigeria.

<sup>1,2</sup>Faramade I.O., <sup>3</sup>Tajudeen W.A., <sup>3</sup>Olowookere P.A., <sup>4</sup>Afolabi A.S., <sup>5</sup>Akinpelu A.A., <sup>6</sup>Olowookere I.O., <sup>1,2</sup>Omisore A.G.

<sup>1</sup>Department of Community Medicine, Faculty of Clinical Sciences, Osun State University, Osogbo, <sup>2</sup>Department of Community Medicine UNIOSUN Teaching Hospital Osogbo, Osun State, <sup>3</sup>Department of Public Health, Faculty of Basic Medical Sciences, Osun State University, Osogbo, <sup>4</sup>Department of Obstetrics and Gynaecology, Faculty of Clinical Sciences, Osun State University, Osogbo, <sup>5</sup>Osun Health Insurance Agency, Osogbo Osun State., <sup>6</sup>Department of Public Health, Adeleke University, Ede Osun State.

Corresponding Author: Waliu Adesegun Tajudeen; [tajudeenwaliu85@gmail.com](mailto:tajudeenwaliu85@gmail.com)

### ARTICLE INFO

#### Article History

**Received:** 18 February, 2025

**Accepted:** 03 September, 2025

**Published:** 06 September, 2025

#### Corresponding Author:

Waliu Adesegun Tajudeen

#### Technical Information

**How to Cite:** Faramade I.O. et al. Bridging the Health Insurance Gap: Understanding Knowledge, Attitudes and Enrolment Determinants among Informal Sector Workers in Osun State, Nigeria: SLJM 2025;Vol 2(1) pp 27-34  
<https://doi.org/10.69524/sljm.v2i2.198>

**Editor-in-Chief:** Prof. Kehinde S. Oluwadiya, University of Sierra Leone Teaching Hospitals Complex, Freetown, Sierra Leone.

**Copyright:** © 2025, Faramade I.O. et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

**Funding:** No funding was received for this study.

#### Ethical Consideration

**Conflict of interest:** The authors declare they have no conflicts of interest that are directly or indirectly related to the research.

## ABSTRACT

**Background:** Health insurance is a risk-pooling mechanism to mitigate catastrophic healthcare costs and reduce out-of-pocket spending, which correlates with poverty. In Nigeria, the informal sector constitutes about 58.2% of the economy. Thus, high enrolment in this sector would protect a significant portion of the population from catastrophic health expenses. This study aims to assess the perceptions and determinants of enrollment in the Osun State Health Insurance Scheme (OHIS) among different occupational groups within the state's informal economy.

**Methods:** This descriptive cross-sectional study used a multi-stage sampling technique to recruit 390 participants from the informal sector, using a self-designed, pretested, interviewer-administered questionnaire. Data were analysed using IBM SPSS Statistics version 20. The chi-square test and logistic regression were used to determine associations between categorical variables, and the level of significance was set at 5%.

**Results:** This study comprised predominantly males (53.8%), with a mean age of  $37.35 \pm 11.80$  years. Despite high awareness (65.9%), overall knowledge of the health insurance scheme was poor (76.2%). Enrolment rates were low (10.5%), most respondents exhibited unsupportive attitudes (76.2%) and negative perceptions (93.1%). However, 49.5% expressed willingness to enrol. Supportive attitudes and good knowledge significantly influenced enrolment status (AOR: 6.654 and 4.394, respectively).

**Conclusion:** This study indicates that enrolment status in the informal sector was significantly associated with attitudinal, cognitive, demographic, and economic factors. To enhance enrollment rates, the implementation of comprehensive educational initiatives is recommended to increase awareness and understanding of health insurance schemes.

**Key words:** Osun Health Insurance Scheme, Informal, Economy, Perception.

## 1. INTRODUCTION

Health insurance scheme is a financial system whereby people individually or in groups (called members) contribute to a fund or purchasing institution, which is in charge of procuring covered services from providers for the benefit of the scheme's members<sup>1</sup>. It is a complementary healthcare financing policy designed to attain Universal Health Coverage (UHC). UHC was proposed by the World Health Organization (WHO) to promote increased access to quality healthcare and combat the financial implications of out-of-pocket (OOP) health payments<sup>2</sup>. OOP health payments are capable of making households incur catastrophic health expenditures and this can exacerbate the level of poverty<sup>2</sup>. The informal economy is defined as all economic activities by workers and economic units that are in law or practice not covered or insufficiently covered by the formal arrangements<sup>3</sup>. It is characterized by small or undefined workplaces, unsafe and unhealthy working conditions, low levels of skills and productivity, low or irregular incomes<sup>4</sup>. Additionally, is considered unsafe to the populace, and is seen as a hindrance to the development of the economy by many<sup>4</sup>. Approximately 93% of global informal employment is concentrated in developing countries, with Africa accounting for about 85%

of informal employment<sup>5</sup>.

In Nigeria, only about 3% of the general population is enrolled in the National Health Insurance Scheme<sup>6</sup>. According to WHO and World Bank Statistics, over 90% of Nigerians pay OOP for healthcare. This is a major issue, as OOP health payments are capable of making households incur catastrophic health expenditures, affecting a household's ability to purchase essential non-medical goods and services and pushing families into the poverty line<sup>7</sup>. In 2019, 344 million people globally were dragged further into extreme poverty and 1.3 billion into relative poverty due to OOP health expenses<sup>8</sup>.

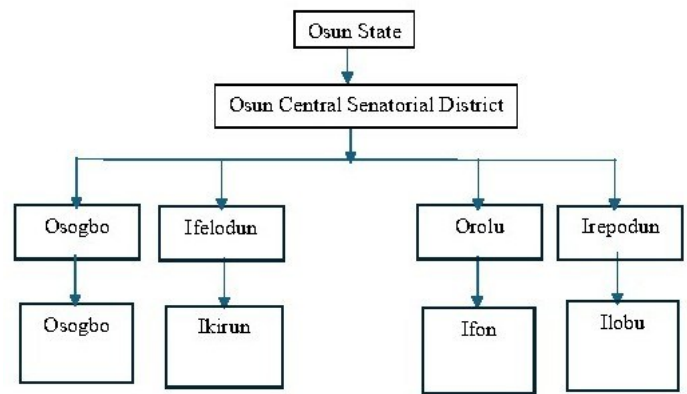
According to WHO, 80% of Nigerians face impoverishment due to healthcare costs<sup>9</sup>. With Nigeria's informal sector comprising 58.2% of GDP (reaching 94% in Osun State), low insurance enrolment in this sector contributes to increased disease burden, mortality, health inequity and economic stagnation, while hindering Universal Health Coverage goals<sup>7,10</sup>. The Osun Health Insurance Scheme (OHIS), established in 2018, initially enrolled 150,000 beneficiaries from a state population of 4.7 million. Current enrolment stands at 205,305 against an estimated 2024 population of 5.5 million, indicating persistently low coverage rates<sup>11</sup>.

This study differs from previous research by focusing on the informal sector, which has not been extensively examined in Osun State. This study assessed the level of knowledge, enrolment status, attitude, perception, and other determining factors of enrolment in the state's health insurance scheme (OHIS/OHIA) among different occupational groups in the informal economy in Osun State. This study aimed to build on previous research by assessing the listed variables of these groups in relation to the state's health insurance scheme and identifying additional factors that influence enrolment.

## 2. MATERIALS AND METHODS

This study was a descriptive cross-sectional study design carried out in four Local Government Areas (LGAs) in one of the three senatorial districts available in Osun State. A multi-stage sampling technique was employed, utilising the population lists of various occupational groups obtained from the LGA headquarters of the four selected LGAs. The study population was workers from the informal sector in Osun State, such as market traders, artisans and self-employed individuals. Participants needed to be at least 18 years old and have worked in their current informal job for one year or more to be eligible. The study excluded those who were not officially registered with their occupational associations.

The sample size was calculated using Fischer's formula ( $n = (Z^2 \cdot pq) / d^2$ ) for descriptive study 12 with  $p$  as 0.60, being the proportion of the people from the informal sector that are knowledgeable about health insurance in Edo State 13, and  $Z = 1.96$ , corresponding to a 95% confidence level. The sample size derived from this calculation was 406; after adjusting for a 10% non-response rate, it is then rounded up to 410, out of which 390 were found suitable for analysis. A multistage sampling technique was used to select the respondents. At the first stage, simple random sampling was used to select one of Osun State's three senatorial districts. Second, four out of the ten Local Government Areas (LGAs) in the chosen senatorial district were randomly selected. Using the occupational group lists obtained from each LGA headquarters, researchers identified two major towns per LGA. Data collection was conducted during scheduled meetings of registered occupational



**Figure 1: Flow Chart Showing the Sampling Techniques**

associations in these towns, where each respondent was conveniently interviewed individually using a research questionnaire (see Figure 1).

The research instrument used for data collection was a semi-structured interviewer-administered questionnaire. The questionnaire was developed by the researchers based on a comprehensive review of relevant literature<sup>14-16</sup>. The questionnaire consists of six sections. Section A sought the socio-demographics of the characteristics; Section B assessed the level of knowledge of the health insurance scheme and benefits; Section C was on enrolment in the health insurance scheme status; Section D was on attitude towards enrolment in health insurance scheme; Section E was on the perception towards enrolment in health insurance scheme; and Section F sought the factors that determine enrolment status in health insurance scheme.

### 2.1 Data Analysis and Recorded Measures

Data analysis was performed using IBM SPSS Statistics 20.0, with results presented in tables and charts. Statistical significance was determined using chi-square tests and logistic regression, with  $p < 0.05$  considered significant at 95% confidence level.

The knowledge assessment consisted of 8 questions, including 2 multiple-choice items, with a maximum possible score of 19 points. Each correct answer earned one point, while incorrect answers earned zero. Respondents scoring 10 or above were classified as having good knowledge, while those scoring below 10 were classified as having poor knowledge of the health insurance scheme<sup>16</sup>. Attitudes were measured using 8 questions, with scores ranging from 0-16. Scores of 9 or above indicated a supportive attitude, while scores below 9 indicated an unsupportive attitude<sup>16</sup>. Perceptions were assessed through 7 questions, with scores ranging from 0 to 7. Scores of 4 or above indicated positive perception, while scores below 4 indicated negative perception<sup>17</sup>.

### 2.2 Ethical Considerations

Ethical clearance was obtained from the Health Research and Ethics Committee (HREC), Osun State University (UNIOSUNHREC 2024/PBH/059). Informed consent was obtained from participants before the administration of the questionnaires. Participation was voluntary, and data collected were kept strictly confidential.

### 2.3 Data Availability Statement

The data that support the findings of this study are openly available in Zenodo at <http://doi.org/10.5281/zenodo.14395165>, 18 in CSV format.

**Table 1: Socio-demographic Characteristics (n=390)**

| Variable                                             | Sub-Variables          | Frequency (n) | Percentage% |
|------------------------------------------------------|------------------------|---------------|-------------|
| Age Group (in years)                                 | < 30                   | 118           | 30.3        |
|                                                      | 30-39                  | 105           | 26.9        |
|                                                      | 40-59                  | 153           | 39.2        |
|                                                      | 60 and above           | 14            | 3.6         |
| Mean Age: 37.35, S.D: 11.80, Min=18, Max=74          |                        |               |             |
| Gender                                               | Male                   | 210           | 53.8        |
|                                                      | Female                 | 180           | 46.2        |
| Occupation                                           | Barbing                | 26            | 6.7         |
|                                                      | Hairdressing           | 29            | 7.4         |
|                                                      | Tailoring              | 104           | 26.7        |
|                                                      | Bus driving            | 50            | 12.8        |
|                                                      | Commercial Bike Riding | 38            | 9.7         |
|                                                      | Others                 | 143           | 36.7        |
| Religion                                             | Christianity           | 183           | 46.9        |
|                                                      | Islam                  | 202           | 51.8        |
|                                                      | Others                 | 5             | 1.3         |
| Tribe                                                | Yoruba                 | 349           | 89.4        |
|                                                      | Non-Yoruba             | 41            | 10.6        |
| Marital Status                                       | Currently Married      | 262           | 67.2        |
|                                                      | Not Currently Married  | 128           | 32.8        |
| Average Monthly Income (₦)                           | Less than 30,000       | 71            | 18.2        |
|                                                      | 30,000-50,000          | 202           | 51.8        |
|                                                      | Above 50,000           | 117           | 30.0        |
| Average Monthly Income of Spouse (₦) (n=262)         | Less than 30,000       | 56            | 21.4        |
|                                                      | 30,000-50,000          | 117           | 44.7        |
|                                                      | Above 50,000           | 89            | 33.9        |
| Family Size                                          | 1-3                    | 152           | 39.0        |
|                                                      | 4-6                    | 187           | 47.9        |
|                                                      | > 6                    | 51            | 13.1        |
| Number of Children Less Than 18 Years of Age (n=284) | None                   | 45            | 15.8        |
|                                                      | 1-3                    | 209           | 73.6        |
|                                                      | 4-6                    | 27            | 9.5         |
| Average Family Monthly Health Expenditure (₦)        | > 6                    | 3             | 1.1         |
|                                                      | Less than 5,000        | 217           | 55.6        |
|                                                      | 5,000-10,000           | 101           | 25.9        |
|                                                      | 10,001-15,000          | 24            | 6.2         |
|                                                      | Above 15,000           | 48            | 12.3        |

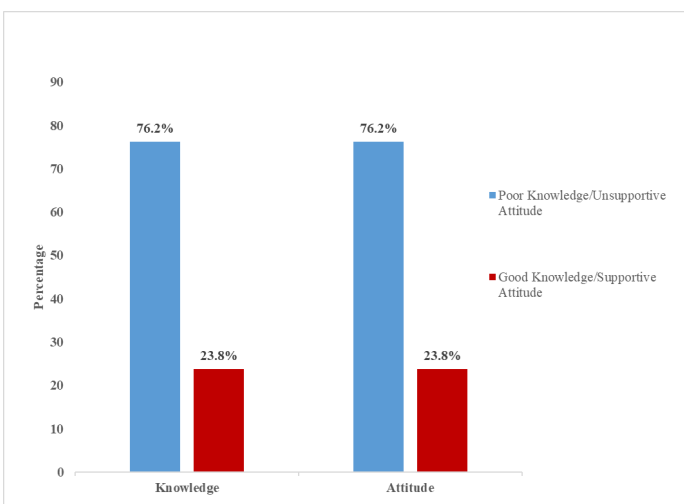
**Table 2: Factors Affecting Enrolment in Health Insurance Scheme**

| Variable                                                         | Sub-Variables                                           | Frequency (n) | Percentage% |
|------------------------------------------------------------------|---------------------------------------------------------|---------------|-------------|
| *Reasons for Non-Enrolment (n=349)                               | Inadequate Knowledge                                    | 131           | 37.5        |
|                                                                  | Lack of Trust in the Scheme                             | 49            | 14.0        |
|                                                                  | Financial Constraint                                    | 165           | 47.3        |
|                                                                  | Lack of Trust in the Government and Funding Authorities | 29            | 8.3         |
|                                                                  | Scheme is Unnecessary                                   | 18            | 5.2         |
|                                                                  | Process of Registration                                 | 17            | 4.9         |
|                                                                  | Religious Beliefs                                       | 16            | 4.6         |
|                                                                  | Others                                                  | 107           | 30.8        |
|                                                                  | No                                                      | 268           | 68.7        |
|                                                                  | Yes                                                     | 122           | 31.3        |
| Friends'/colleagues' experience will Encourage Enrolment (n=390) | No                                                      | 259           | 66.4        |
|                                                                  | Yes                                                     | 131           | 33.6        |
| Family Members' Experience Will Encourage Enrolment (n=390)      | No                                                      | 176           | 50.5        |
|                                                                  | Yes                                                     | 173           | 49.5        |

Despite high awareness (65.9%) of the insurance scheme, most respondents (76.2%) demonstrated poor knowledge and unsupportive attitudes (76.2%) toward the scheme (Figure 2). However, about half (49.5%) were willing to enrol for the health insurance despite notable negative (93.1%) perception towards the scheme (Figure 3).

A smaller family was associated with higher knowledge of health insurance, but the opposite was true for attitudes, which were more favourable in larger families. This relationship was statistically significant ( $p < 0.05$ ). Other factors influencing attitudes toward health insurance included average monthly income and family structure. Specifically, 50.0% of individuals from polygamous families and those earning between 10,000 and 15,000 units of currency showed a supportive attitude (Table 3).

Some sociodemographic factors influenced the respondents' perceptions. Significant associations were observed in some demographic variables such as gender, where males demonstrated a

**Figure 2: Respondent's Knowledge and Attitude Towards the Scheme**

### 3. RESULT

A total of 410 questionnaires were administered, while 390 were properly filled and suitable for analysis, giving a response rate of 95%. Respondents had a mean age of  $37.35 \pm 11.80$  years, with males comprising 53.8%. Tailors represented 26.7% of participants. Most respondents were Muslim (51.8%) and married (67.2%). Half (51.8%) earned between ₦30,000 and 50,000 monthly (equivalent to USD 18.69-31.15 as of 20th April 2025). The majority (73.6%) had 1-3 children under 18 years, and 55.6% reported monthly healthcare expenditure below ₦5,000 per family (Table 1).

At the time of the study, participation in the health insurance scheme was low, with only 10.5% of respondents enrolled. Of the 89.5% that were not enrolled, 47.3% attributed their lack of enrolment to financial constraints and 37.3% to a lack of knowledge. Also, 33.6% and 31.3% agreed that they would be encouraged to enrol depending on their families' and friends' experience with the scheme, respectively; only 49.5% were willing to enrol for the health insurance (Table 2)

**Table 3:** Knowledge and Attitude of Respondents on the Health Insurance Scheme Related to their Socio-Demographic Characteristics

| Variables                                                   | Knowledge    |             | Statistics<br>$\chi^2$ , $p$        | Attitude               |                     | Statistics<br>$\chi^2$ , $p$        |
|-------------------------------------------------------------|--------------|-------------|-------------------------------------|------------------------|---------------------|-------------------------------------|
|                                                             | Poor (n=297) | Good (n=93) |                                     | Unsupportive (n = 297) | Supportive (n = 93) |                                     |
| <b>Age</b>                                                  |              |             |                                     |                        |                     |                                     |
| < 30                                                        | 89 (75.4)    | 29 (24.6)   | $\chi^2 = 0.846\eta$<br>$p = 0.839$ | 100 (84.7)             | 18 (15.3)           | $\chi^2 = 8.028\eta$<br>$p = 0.45$  |
| 30-39                                                       | 78 (74.3)    | 27 (25.7)   |                                     | 78 (74.3)              | 27 (25.7)           |                                     |
| 40-59                                                       | 120 (78.4)   | 33 (21.6)   |                                     | 108 (70.6)             | 45 (29.4)           |                                     |
| 60 and Above                                                | 10 (71.4)    | 4 (28.6)    |                                     | 11 (78.6)              | 3 (21.4)            |                                     |
| <b>Gender</b>                                               |              |             |                                     |                        |                     |                                     |
| Male                                                        | 165 (78.6)   | 45 (21.4)   | $\chi^2 = 1.464$<br>$p = 0.226$     | 157 (74.8)             | 53 (25.2)           | $\chi^2 = 0.485$<br>$p = 0.486$     |
| Female                                                      | 132 (73.3)   | 48 (26.7)   |                                     | 140 (77.8)             | 40 (22.2)           |                                     |
| <b>Occupation</b>                                           |              |             |                                     |                        |                     |                                     |
| Barbing                                                     | 21 (80.8)    | 5 (19.2)    | $\chi^2 = 5.245\eta$<br>$p = 0.630$ | 20 (76.9)              | 6 (23.1)            | $\chi^2 = 9.468\eta$<br>$p = 0.221$ |
| Hairdressing                                                | 20 (69.0)    | 9 (31.0)    |                                     | 23 (79.3)              | 6 (20.7)            |                                     |
| Tailoring                                                   | 78 (75.0)    | 26 (25.0)   |                                     | 78 (75.0)              | 26 (25.0)           |                                     |
| Bus Driving                                                 | 41 (82.0)    | 9 (18.0)    |                                     | 33 (66.0)              | 17 (34.0)           |                                     |
| Bike Driving                                                | 27 (71.1)    | 11 (28.9)   |                                     | 25 (65.8)              | 13 (34.2)           |                                     |
| Others                                                      | 110 (76.9)   | 33 (23.1)   |                                     | 118 (82.5)             | 25 (17.5)           |                                     |
| <b>Religion</b>                                             |              |             |                                     |                        |                     |                                     |
| Christianity                                                | 138 (75.4)   | 45 (24.6)   | $\chi^2 = 2.780\eta$<br>$p = 0.249$ | 139 (76.0)             | 44 (24.0)           | $\chi^2 = 0.047\eta$<br>$p = 0.977$ |
| Islam                                                       | 154 (76.2)   | 48 (23.8)   |                                     | 154 (76.2)             | 48 (23.8)           |                                     |
| Others                                                      | 5 (100.0)    | 0 (0.0)     |                                     | 4 (80.0)               | 1 (20.0)            |                                     |
| <b>Tribe</b>                                                |              |             |                                     |                        |                     |                                     |
| Yoruba                                                      | 265 (75.9)   | 84 (24.1)   | $\chi^2 = 1.024\eta$<br>$p = 0.599$ |                        | 82 (23.5)           | $\chi^2 = 3.245\eta$<br>$p = 0.197$ |
| Non-Yoruba                                                  | 32 (78.1)    | 9 (21.9)    |                                     | 267 (76.5)             | 11 (26.8)           |                                     |
| <b>Marital Status</b>                                       |              |             |                                     |                        |                     |                                     |
| Currently Married                                           | 203 (77.5)   | 59 (22.5)   | $\chi^2 = 3.210\eta$<br>$p = 0.523$ | 195 (74.4)             | 67 (25.6)           | $\chi^2 = 6.230\eta$<br>$p = 0.183$ |
| Not Currently Married                                       | 94 (73.5)    | 34 (23.5)   |                                     | 102 (79.7)             | 26 (20.3)           |                                     |
| <b>Average Monthly Income (₦)</b>                           |              |             |                                     |                        |                     |                                     |
| Less than 30,000                                            | 52 (73.2)    | 19 (26.8)   | $\chi^2 = 0.407$<br>$p = 0.816$     | 57 (80.3)              | 14 (19.7)           | $\chi^2 = 0.893$<br>$p = 0.640$     |
| 30,000-50,000                                               | 155 (76.7)   | 47 (23.3)   |                                     | 153 (75.7)             | 49 (24.3)           |                                     |
| Above 50,000                                                | 90 (76.9)    | 27 (23.1)   |                                     | 87 (74.4)              | 30 (25.6)           |                                     |
| <b>Family Setting (n=262)</b>                               |              |             |                                     |                        |                     |                                     |
| Monogamous                                                  | 181 (76.7)   | 55 (23.3)   | $\chi^2 = 1.583$<br>$p = 0.453$     | 182 (77.1)             | 54 (22.9)           | $\chi^2 = 10.795$<br>$p = 0.005 *$  |
| Polygamous                                                  | 22 (84.6)    | 4 (15.4)    |                                     | 13 (50.0)              | 13 (50.0)           |                                     |
| <b>Family Size</b>                                          |              |             |                                     |                        |                     |                                     |
| 1-3                                                         | 107 (70.4)   | 45 (29.6)   | $\chi^2 = 7.073$<br>$p = 0.029 *$   | 124 (81.6)             | 28 (18.4)           | $\chi^2 = 17.976$<br>$p < 0.001 *$  |
| 4-6                                                         | 145 (77.5)   | 42 (22.5)   |                                     | 146 (78.1)             | 41 (21.9)           |                                     |
| > 6                                                         | 45 (88.2)    | 6 (11.8)    |                                     | 27 (52.9)              | 24 (47.1)           |                                     |
| <b>Number of Children Less Than 18 years of age (n=284)</b> |              |             |                                     |                        |                     |                                     |
| None                                                        | 36 (80.0)    | 9 (20.0)    | $\chi^2 = 6.251\eta$<br>$p = 0.181$ | 32 (71.1)              | 13 (28.9)           | $\chi^2 = 7.466\eta$<br>$p = 0.113$ |
| 1-3                                                         | 156 (74.6)   | 53 (25.4)   |                                     | 159 (76.1)             | 50 (23.9)           |                                     |
| 4-6                                                         | 25 (92.6)    | 2 (7.4)     |                                     | 16 (59.3)              | 11 (40.7)           |                                     |
| > 6                                                         | 2 (66.7)     | 1 (33.3)    |                                     | 2 (66.7)               | 1 (33.3)            |                                     |
| <b>Average Family Monthly Health Expenditure (₦)</b>        |              |             |                                     |                        |                     |                                     |
| Less than 5,000                                             | 172 (79.3)   | 45 (20.7)   | $\chi^2 = 7.123$<br>$p = 0.068$     | 174 (80.2)             | 43 (19.8)           | $\chi^2 = 21.394$<br>$p < 0.001 *$  |
| 5,000-10,000                                                | 69 (68.3)    | 32 (31.7)   |                                     | 83 (82.2)              | 18 (17.8)           |                                     |
| 10,001-15,000                                               | 16 (66.7)    | 8 (33.3)    |                                     | 12 (50.0)              | 12 (50.0)           |                                     |
| Above 15,000                                                | 40 (83.3)    | 8 (16.7)    |                                     | 28 (58.3)              | 20 (41.7)           |                                     |

$\eta$ : Likelihood Ratio, \*: Statistically significant

higher proportion of positive perception (11.0%) compared to females (2.2%). Religion was significantly associated with enrolment status, with Christians having higher enrolment rates (14.8%) than Muslims (6.9%). Family size emerged as a significant factor for both perception and enrolment – larger families (>6 members) exhibited more positive perception (17.6%) and higher enrolment rates (33.3%) compared to smaller households. Furthermore, monthly income was significant with enrolment status, as respondents earning above ₦50,000 showed notably higher enrol-

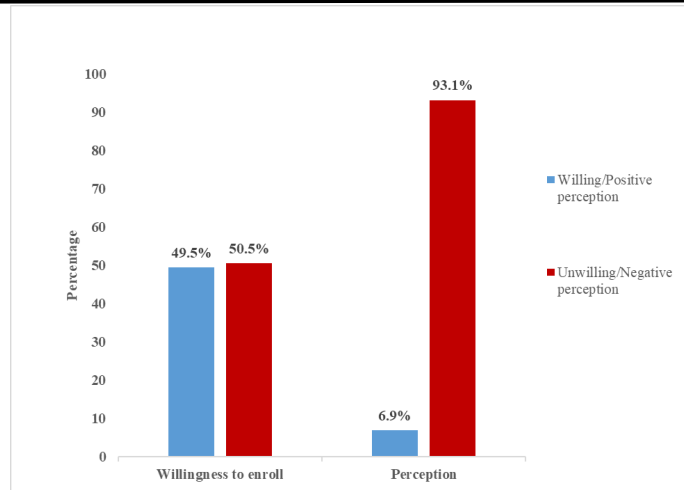
ment rates (20.2%) compared to lower income brackets (Table 4). Respondents with supportive attitudes demonstrated markedly higher enrolment rates (28.0%) compared to those with unsupportive attitudes (5.1%). Similarly, respondents with good knowledge of the HIS showed higher enrolment (24.7%) than those with poor knowledge (6.1%) (Table 5). Multivariate analysis revealed several significant predictors (Table 6). For attitude towards OHIS, larger families (>6 members) were three times more likely to show supportive attitudes (OR=3.280,



CI:1.229-8.755,  $p=0.018$ ) compared to smaller families (1-3 members). Higher monthly health expenditure was strongly associated with supportive attitudes, as families spending ₦10,001-15,000 were four times more likely ( $OR=4.159$ , CI:1.714-10.094,  $p=0.002$ ) to demonstrate such attitudes, while those spending over ₦15,000 were twice as likely ( $OR=2.478$ , CI:1.235-4.972,  $p=0.011$ ). Regarding knowledge, larger families (>6 members) were three times less likely to have good OHIS knowledge ( $OR=3.154$ , CI: 0.126-0.796,  $p=0.014$ ). For enrolment status, middle-aged groups showed a higher likelihood of enrolment (30-39 years:  $OR = 4.803$ ,  $p = 0.014$ ; 40-59 years:  $OR = 4.037$ ,  $p = 0.029$ ) (table 6).

## 4. DISCUSSION

This study revealed that overall knowledge was poor, as more than two-thirds had poor knowledge (which is similar to the previous studies on NHIS and CBHI, where inadequacy was reported among the majority <sup>16,19</sup>), despite two-thirds having heard of NHIS, this could be due to a lack of comprehensive understanding of the scheme's mechanism. This underscores the need for targeted educational campaigns to improve awareness and knowledge of



**Figure 3: Respondents' Willingness to Enroll and their Perception towards the Scheme**

health insurance. This could be done through community-based workshops and media campaigns tailored to the informal sector since this approach has proven effective in addressing miscon-

**Table 4: Association Between Socio-Demographic Characteristics and Health Insurance Scheme Perception and Enrolment Status Among the Respondents**

| Variables                                            | Perception       |                 | Statistics                         | Current Enrolment Status |                   | Statistics                         |
|------------------------------------------------------|------------------|-----------------|------------------------------------|--------------------------|-------------------|------------------------------------|
|                                                      | Negative (n=363) | Positive (n=27) | $\chi^2$ , $p$                     | Not enrolled (n = 349)   | Enrolled (n = 41) | $\chi^2$ , $p$                     |
| <b>Age</b>                                           |                  |                 |                                    |                          |                   |                                    |
| < 30                                                 | 111 (94.1)       | 7 (5.9)         | $\chi^2 = 2.115$<br>$p = 0.549$    | 114 (96.6)               | 4 (3.4)           | $\chi^2 = 15.287$<br>$p = 0.002 *$ |
| 30-39                                                | 100 (95.2)       | 5 (4.8)         |                                    | 89 (84.8)                | 16 (15.2)         |                                    |
| 40-59                                                | 139 (90.8)       | 14 (9.2)        |                                    | 132 (86.3)               | 21 (13.7)         |                                    |
| 60 and Above                                         | 13 (92.9)        | 1 (7.1)         |                                    | 14 (100.0)               | 0 (0.0)           |                                    |
| <b>Gender</b>                                        |                  |                 |                                    |                          |                   |                                    |
| Male                                                 | 187 (89.0)       | 23 (11.0)       | $\chi^2 = 11.464$<br>$p = 0.001 *$ | 192 (91.4)               | 18 (8.6)          | $\chi^2 = 1.823$<br>$p = 0.177$    |
| Female                                               | 176 (97.8)       | 4 (2.2)         |                                    | 157 (87.2)               | 23 (12.8)         |                                    |
| <b>Occupation</b>                                    |                  |                 |                                    |                          |                   |                                    |
| Barbing                                              | 24 (92.3)        | 2 (7.7)         | $\chi^2 = 3.356$<br>$p = 0.850$    | 22 (84.6)                | 4 (15.4)          | $\chi^2 = 16.227$<br>$p = 0.023 *$ |
| Hairdressing                                         | 28 (96.6)        | 1 (3.4)         |                                    | 29 (100.0)               | 0 (0.0)           |                                    |
| Tailoring                                            | 99 (95.2)        | 5 (4.8)         |                                    | 88 (84.6)                | 18 (15.4)         |                                    |
| Bus driving                                          | 45 (90.0)        | 5 (10.0)        |                                    | 44 (88.0)                | 6 (12.0)          |                                    |
| Bike driving                                         | 34 (89.5)        | 4 (10.5)        |                                    | 36 (94.7)                | 2 (5.3)           |                                    |
| Others                                               | 133 (93.1)       | 10 (6.9)        |                                    | 130 (90.9)               | 13 (9.1)          |                                    |
| <b>Religion</b>                                      |                  |                 |                                    |                          |                   |                                    |
| Christianity                                         | 177 (96.7)       | 6 (3.3)         | $\chi^2 = 8.013$<br>$p = 0.018 *$  | 156 (85.2)               | 27 (14.8)         | $\chi^2 = 7.355$<br>$p = 0.025 *$  |
| Islam                                                | 182 (90.1)       | 20 (9.9)        |                                    | 188 (93.1)               | 14 (6.9)          |                                    |
| Others                                               | 4 (80.0)         | 1 (20.0)        |                                    | 5 (100.0)                | 0 (0.0)           |                                    |
| <b>Tribe</b>                                         |                  |                 |                                    |                          |                   |                                    |
| Yoruba                                               | 327 (93.7)       | 22 (6.3)        | $\chi^2 = 1.682$<br>$p = 0.573$    | 316 (90.5)               | 33 (9.5)          | $\chi^2 = 7.957$<br>$p = 0.019 *$  |
| Non-Yoruba                                           | 36 (87.8)        | 5 (12.2)        |                                    | 33 (80.5)                | 8 (19.5)          |                                    |
| <b>Average Monthly Income (₦)</b>                    |                  |                 |                                    |                          |                   |                                    |
| Less than 30,000                                     | 63 (88.7)        | 8 (11.3)        | $\chi^2 = 2.485$<br>$p = 0.289$    | 50 (89.3)                | 6 (10.7)          | $\chi^2 = 13.074$<br>$p = 0.004 *$ |
| 30,000-50,000                                        | 189 (93.6)       | 13 (6.4)        |                                    | 109 (93.2)               | 8 (6.8)           |                                    |
| Above 50,000                                         | 111 (94.9)       | 6 (5.1)         |                                    | 71 (79.8)                | 18 (20.2)         |                                    |
| <b>Family Size</b>                                   |                  |                 |                                    |                          |                   |                                    |
| 1-3                                                  | 146 (96.1)       | 6 (3.9)         | $\chi^2 = 9.084$<br>$p = 0.011 *$  | 204 (94.0)               | 13 (6.0)          | $\chi^2 = 17.433$<br>$p = 0.001 *$ |
| 4-6                                                  | 175 (93.6)       | 12 (6.4)        |                                    | 90 (89.1)                | 11 (10.9)         |                                    |
| > 6                                                  | 42 (82.4)        | 9 (17.6)        |                                    | 16 (66.7)                | 8 (33.3)          |                                    |
| > 6                                                  | 3 (100.0)        | 0 (0.0)         |                                    | 39 (81.2)                | 9 (18.8)          |                                    |
| <b>Average Family Monthly Health Expenditure (₦)</b> |                  |                 |                                    |                          |                   |                                    |
| Less than 5,000                                      | 203 (93.5)       | 14 (6.5)        | $\chi^2 = 2.719$<br>$p = 0.437$    | 204 (94.0)               | 13 (6.0)          | $\chi^2 = 17.433$<br>$p = 0.001 *$ |
| 5,000-10,000                                         | 96 (95.0)        | 5 (5.0)         |                                    | 90 (89.1)                | 11 (10.9)         |                                    |
| 10,001-15,000                                        | 22 (91.7)        | 2 (8.3)         |                                    | 16 (66.7)                | 8 (33.3)          |                                    |
| Above 15,000                                         | 42 (87.5)        | 6 (12.5)        |                                    | 39 (81.2)                | 9 (18.8)          |                                    |

¶: Likelihood Ratio, \*: Statistically significant

**Table 5:** Association Between the Enrolment Status and their Attitude, Knowledge and Perception of Health Insurance Scheme Among the Respondents

| Variables                 | Sub-variables         | Enrolment Status          |                      | Statistics                         |
|---------------------------|-----------------------|---------------------------|----------------------|------------------------------------|
|                           |                       | Not enrolled<br>(n = 349) | Enrolled<br>(n = 41) |                                    |
| Attitude of Respondents   | Unsupportive Attitude | 282 (94.9)                | 15 (5.1)             | $\chi^2 = 39.501$<br>$p < 0.001^*$ |
|                           | Supportive Attitude   | 67 (72.0)                 | 26 (28.0)            |                                    |
| Knowledge of Respondents  | Poor Knowledge        | 279 (93.9)                | 18 (6.1)             | $\chi^2 = 26.243$<br>$p < 0.001^*$ |
|                           | Good Knowledge        | 70 (75.3)                 | 23 (24.7)            |                                    |
| Perception of Respondents | Negative Perception   | 326 (89.8)                | 37 (10.2)            | $\chi^2 = 0.518$<br>$p = 0.472$    |
|                           | Positive Perception   | 23 (85.2)                 | 4 (14.8)             |                                    |

¶: Likelihood Ratio, \*: Statistically significant

ceptions and maximising benefits<sup>6</sup>. Respondents from monogamous families had more knowledge of NHIS compared to polygamous ones. This could be due to possible higher socioeconomic status among monogamous families, thereby allowing them to seek health insurance. Similarly, those from smaller family sizes had more knowledge of NHIS; this is probably because of resource availability and the ability to focus on individual family members. These associations were statistically significant. Additionally, efforts should concentrate on enhancing respondents' knowledge, as good knowledge increases the likelihood by four times (AOR:

4.3).

Regarding the attitude of the respondents towards NHIS, the majority (76.2%) had an unsupportive attitude towards the scheme. This finding appears logical, as positive attitudes typically stem from adequate knowledge and understanding of an initiative. The observed attitudinal pattern aligns with a previous study among artisans in Lagos, where 87.7% of respondents exhibited negative attitudes toward the scheme<sup>16</sup>. This consistency in unfavourable attitudes across different studies suggests a systematic challenge to the scheme's acceptance. The use of social networks and community leaders to promote trust could enhance acceptance in this

**Table 6:** Binary Logistics Regression of Outcome Variables and Socio-Demographic Predictors (n=390)

| Outcome Variable           | Variable                                             | Odds Ratio   | p-value           | Confidence Interval |        |
|----------------------------|------------------------------------------------------|--------------|-------------------|---------------------|--------|
|                            |                                                      |              |                   | Lower               | Upper  |
| Attitude Towards Enrolment | <b>Family Setting</b>                                |              |                   |                     |        |
|                            | Monogamous                                           | 1            |                   |                     |        |
|                            | Polygamous                                           | 1.273        | 0.661             | 0.432               | 3.750  |
|                            | Not applicable                                       | 1.115        | 0.777             | 0.525               | 2.371  |
|                            | <b>Family Size</b>                                   |              |                   |                     |        |
|                            | 1-3                                                  | 1            |                   |                     |        |
|                            | 4-6                                                  | 1.159        | 0.703             | 0.542               | 2.476  |
|                            | > 6                                                  | 3.280        | <b>0.018*</b>     | 1.229               | 8.755  |
|                            | <b>Average Family Monthly Health Expenditure (₦)</b> |              |                   |                     |        |
|                            | Less than 5,000                                      | 1            |                   |                     |        |
| Knowledge on OHIS          | 5,000 – 10,000                                       | 0.887        | 0.705             | 0.477               | 1.649  |
|                            | 10,001 -15,000                                       | 4.159        | <b>0.002*</b>     | 1.714               | 10.094 |
|                            | Above 15,000                                         | 2.478        | <b>0.011*</b>     | 1.235               | 4.972  |
|                            | <b>Family size</b>                                   |              |                   |                     |        |
|                            | 1-3                                                  | 1            |                   |                     |        |
|                            | 4-6                                                  | 0.689        | 0.135             | 0.422               | 1.123  |
|                            | > 6                                                  | <b>0.317</b> | <b>0.014*</b>     | 0.126               | 0.796  |
|                            | <b>Current Enrolment Status</b>                      |              |                   |                     |        |
|                            | <b>Age</b>                                           |              |                   |                     |        |
|                            | <30                                                  | 1            |                   |                     |        |
| Current Enrolment Status   | 30-39                                                | 4.803        | <b>0.014*</b>     | 1.374               | 16.792 |
|                            | 40-59                                                | 4.037        | <b>0.029*</b>     | 1.150               | 14.170 |
|                            | 60 and above                                         | 0.000        | 0.998             | 0.000               |        |
|                            | <b>Tribe</b>                                         |              |                   |                     |        |
|                            | Yoruba                                               | 1            |                   |                     |        |
|                            | Non-Yoruba                                           | 0.431        | 0.053             | 0.184               | 1.009  |
|                            | <b>Average Family Monthly Health Expenditure (₦)</b> |              |                   |                     |        |
|                            | Less than 5,000                                      | 1            |                   |                     |        |
|                            | 5,000 – 10,000                                       | 2.913        | <b>0.033*</b>     | 1.088               | 7.800  |
|                            | 10,001 – 15,000                                      | 11.944       | <b>&lt;0.001*</b> | 2.976               | 47.930 |
|                            | Above 15,000                                         | 4.793        | <b>0.006*</b>     | 1.568               | 14.651 |
| Current Enrolment Status   | <b>Attitude towards OHIS</b>                         |              |                   |                     |        |
|                            | Unsupportive Attitude                                | 1            |                   |                     |        |
|                            | Supportive Attitude                                  | 6.654        | <b>&lt;0.001*</b> | 3.229               | 13.713 |
|                            | <b>Knowledge of OHIS</b>                             |              |                   |                     |        |
|                            | Poor Knowledge                                       | 1            |                   |                     |        |
|                            | Good Knowledge                                       | 4.394        | <b>&lt;0.001*</b> | 2.160               | 8.937  |

context. Studies have shown that peer influence and community endorsement play a crucial role in health insurance uptake<sup>20</sup>. Half of the respondents from polygamous families and large families greater than six had more supportive attitudes. Larger families often experience a higher financial burden due to the cost of healthcare for multiple family members. The NHIS, by providing health coverage, can help alleviate these costs, making it particularly appealing to families who might otherwise struggle to afford medical care for all members<sup>21</sup>. In addition, tailored interventions, such as family-based insurance packages offering discounted premiums or additional benefits for dependents, could further encourage enrolment among larger families. This approach has proven successful in similar contexts, including Ghana's National Health Insurance Scheme, where family-based enrolment significantly increased coverage. Higher-income respondents showed greater NHIS support, likely because they had more disposable income available to pay insurance premiums. However, we should direct our focus towards improving the attitude of respondents, as a supportive attitude boosts the likelihood of enrolment by seven times.

The majority of respondents (93.1%) held a negative view of the scheme, although males were more positive than females. Families with more than six members displayed a more favourable perception of NHIS, suggesting that larger family sizes may enhance the likelihood of enrolment in the health insurance programme, which is similar to Kofoworola et al.'s study, where 70.0% had a good perspective of NHIS services<sup>23</sup>.

Despite low understanding and negative attitudes toward the scheme, nearly half (49.5%) of respondents were willing to enrol, indicating that educational interventions could enhance both attitudes and enrolment. Higher enrolment was found among individuals aged 30-59, certain occupations (like tailors and barbers), those earning over 50,000, and larger families. Financial constraints and family members' experiences, along with knowledge and attitude towards NHIS, also influenced enrolment, which is similar to a study on CBHIS<sup>19</sup>. To address financial barriers, policymakers could consider introducing subsidised premiums or income-based sliding scale contributions for low-income informal workers. Evidence from Kenya's health insurance scheme indicates that subsidised premiums can significantly improve enrolment among low-income populations<sup>24</sup>. Additionally, microinsurance models, which allow for small, flexible payments, could be explored to cater to the irregular income patterns of informal sector workers<sup>25</sup>. The trend suggests that these groups prioritise health coverage due to age-related health concerns, family responsibilities, and job uncertainties, with financial capacity and understanding of NHIS benefits likely impacting their decisions.

#### 4.1 Conclusion

This study revealed high levels of poor knowledge, unsupportive attitudes, and negative perceptions. Family size correlated with respondents' knowledge, while family setting, size, monthly health expenditure, and income were linked to their attitudes. Additionally, certain sociodemographic factors influenced enrolment status, along with attitudes and knowledge about NHIS. To address these issues, it is recommended to implement initiatives aimed at improving respondents' knowledge and attitudes, including educational campaigns, behavioural change efforts, community outreach, and financial incentives.

#### Conflict of Interest

None declared

#### Author's Contribution

**Ifedola Olabisi Faramade** – Data Curation, Investigation, Resources, Writing – Review & Editing Praise

**Waliu Adesegun Tajudeen** – Data Curation, Methodology, Formal Analysis, Writing of Original Draft, Supervision,

**Praise Abosede Olowookere** – Conceptualisation, Data Curation, Methodology, Validation, Project Administration. Resources, Writing Original draft

**Adegboyega Segun Afolabi** - Conceptualization, Data Curation, Formal Analysis, Project Administration, Supervision, Resources, Writing-Review & Editing

**Ayodeji Akinyemi Akinpelu** – Methodology, Resources, Writing – Review & Editing

**Isaac Olusegun Olowookere** - Investigation, Validation, Resources, Writing & Review & Editing

**Akinlolu Gabriel Omisore** – Investigation, Validation, Resources, Writing & Review & Editing

#### Acknowledgements

The authors acknowledge the support of Osun State University, the Osun Health Insurance Scheme, and all participants and contributors to this study.

## REFERENCE

1. Alawode GO, Adewole DA. Assessment of the design and implementation challenges of the National Health Insurance Scheme in Nigeria: a qualitative study among sub-national level actors, healthcare and insurance providers. *BMC Public Health*. 2021;21(1):1–12.
2. Erinoso O, Oyapero A, Familoye O, Omosun A, Adeniran A, Kuyinu Y. Predictors of health insurance uptake among residents of Lagos, Nigeria. *Popul Med*. 2023;5(July):1–7.
3. International Labour Organization. *Informal Economy*. ILO. International Labour Organization; 2024.
4. Bolaji S. Informal sector key driver of economic growth - Oyetola. *Punch Newspaper*. 2022.
5. International Labour Organization. More than 60 per cent of the world's employed population are in the informal economy. 2018.
6. Onasanya AA. Increasing health insurance enrolment in the informal economic sector. *J Glob Health*. 2020;10(1):1–5.
7. Aregbeshola BS, Khan SM. Out-of-pocket payments, catastrophic health expenditure and poverty among households in Nigeria. *Int J Heal Policy Manag*. 2018;7(9):798–806.
8. World Health Organization. *Universal Health Coverage (UHC)*. World Health Report. 2023.
9. World Health Organization. Trends in financial hardship due to out-of-pocket health spending in the WHO African Region [Internet]. WHO Webpage. 2024 [cited 2024 Dec 12]. p. e1-5. Available from: [https://www.afro.who.int/sites/default/files/2024-12/Regional\\_brief\\_v5.pdf](https://www.afro.who.int/sites/default/files/2024-12/Regional_brief_v5.pdf)

10. Adenekan A, Ekpenyong J, Carlson A, Sine J, Ilika F. Health Financing Landscape: Osun State, Nigeria. Palladium, Health Policy Plus. Washington DC; 2020.
11. Osun Health Insurance Agency. OHIS [Internet]. OHIS Webpage. 2024 [cited 2024 Nov 11]. p. e. Available from: <https://oshia.ng/>
12. Charan J, Biswas T. How to calculate sample size for different study designs in medical research? Indian J Psychol Med. 2013;35(2):121–6.
13. Osunde NR, Olorunfemi O, Oduyemi RO. Awareness, willingness, and challenges of the informal sector toward state National Health Insurance Services in Benin City, Nigeria. MGM J Med Sci. 2023;10(1):30–7.
14. Adewole DA, Adebayo AM, Udeh EI, Shaahu VN, Dairo MD. Payment for health care and perception of the national health insurance scheme in a rural area in Southwest Nigeria. Am J Trop Med Hyg. 2015;93(3):648–54.
15. Adewole DA, Akanbi SA, Osungbade KO, Bello S. Expanding health insurance scheme in the informal sector in Nigeria: awareness as a potential demand-side tool. Pan Afr Med J. 2017;27:e52.
16. Campbell PC, Owoka OM, Odugbemi TO. National health insurance scheme: Are the artisans benefitting in Lagos state, Nigeria? J Clin Sci. 2016;13(3):122–31.
17. Wang P, Li S, Wang Z, Jiao M, Zhang Y, Huang W, et al. Perceptions of the benefits of the basic medical insurance system among the insured: a mixed methods research of a northern city in China. Front Public Heal. 2023;11.
18. Olowookere P, Tajudeen W. Bridging the Health Insurance Gap: Understanding Knowledge, Attitude and Enrolment Determinants among Informal Sector Workers in Osun State. [Internet]. Zenodo; 2024. Available from: <https://doi.org/10.5281/zenodo.14395165>
19. Yusuf HO, Kanma-Okafor OJ, Ladi-Akinyemi TW, Eze UT, Egwuonwu CC, Osibogun AO. Health Insurance Knowledge, Attitude and the Uptake of Community-Based Health Insurance Scheme among Residents of a Suburb in Lagos, Nigeria. West Afr J Med. 2019;36(2):103–11.
20. James N, Acharya Y. Increasing Health Insurance Enrollment in Low- and Middle-Income Countries: What Works, What Does Not, and Research Gaps: A Scoping Review. Inq (United States). 2022;59.
21. Mohammed S, Aji B, Bermejo JL, Souares A, Dong H, Sauerborn R. User experience with a health insurance coverage and benefit-package access: Implications for policy implementation towards expansion in Nigeria. Health Policy Plan. 2016;31(3):346–55.
22. Nsiah-Boateng E, Prah Ruger J, Nonvignon J. Is enrolment in the national health insurance scheme in Ghana pro-poor? Evidence from the Ghana Living Standards Survey. BMJ Open [Internet]. 2019 Jul 1;9(7):e029419. Available from: <https://bmjopen.bmj.com/lookup/doi/10.1136/bmjopen-2019-029419>
23. Kofoworola AA, Ekiye A, Motunrayo AO, Adeoye AT, Adunni MR. National Health Insurance Scheme: An Assessment of Service Quality and Clients' Dissatisfaction. Ethiop J Health Sci. 2020;30(5):795–802.
24. Barasa E, Rogo K, Mwaura N, Chuma J. Kenya National Hospital Insurance Fund Reforms: Implications and Lessons for Universal Health Coverage. Heal Syst Reform [Internet]. 2018 Oct 2;4(4):346–61. Available from: <https://www.tandfonline.com/doi/full/10.1080/23288604.2018.1513267>
25. Will M, Groeneveld J, Frank K, Müller B. Informal risk-sharing between smallholders may be threatened by formal insurance: Lessons from a stylized agent-based model. Sarker MNI, editor. PLoS One [Internet]. 2021 Mar 19;16(3):e0248757. Available from: <https://dx.plos.org/10.1371/journal.pone.0248757>