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Original Research Article

Analytical study of participation dynamics in healthcare insurance plans for treatment of patients diagnosed with sexually transmitted diseases (STDs)

Godson Chukwuemeka Ajuzie[1,2], **Osah Martins Onwuka**[1]*, **Adaobi Linda Okerulu**[1]

[1]*Dept. of Human Physiology, Faculty of Basic Medical Sciences, Gregory University, Uturu, Abia State, Nigeria*
[2]*Dept. of Community Health, Centenary College of Health Science and Technology, Emohua, Rivers State, Nigeria*

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ABSTRACT

Objective: To conduct an analytical investigation into the dynamics of participation in healthcare insurance plan among individuals diagnosed with Sexually Transmitted Diseases (STDs), aiming to elucidate factors influencing enrollment and engagement.

Materials and Methods: This clinical-based descriptive survey was conducted at a Federal Medical Center, Nigeria; gathering data from pregnant women, nursing mothers, adolescents, and sex workers diagnosed with STDs. Volunteered participants were selected through simple arbitrary sampling. Data were analyzed using a binary probit model, where Pi = 1 if $p^* > 0$, indicates patient is a member of the insurance plan, and Pi = 0 otherwise; with the primary decision criterion based on the average score of insurance plan members.

Results: Total of 114 participants responded positively, comprising various demographics; sex workers displayed the highest awareness and participation (90.3%) in the health insurance plan. Conversely, adolescents showed the lowest levels (37.4%), likely due to limited literacy and income. Pregnant and nursing mothers demonstrated relatively high rates (62.6% and 81.5%); possibly due to routine antenatal care. Factors influencing participation include income, religion, literacy, and organizational experience. Marginal coefficients suggest higher participation probabilities for women and older household members, indicating greater hospitalization needs. Membership correlates with more frequent hospitalization at lower costs, influenced by age, STD type, gender, income, and village factors.

Conclusion: These findings highlight the intricate nature of participation dynamics in healthcare insurance among individuals diagnosed with STDs. They underscore the significance of mitigating mentioned socioeconomic disparities and demographic factors to promote greater enrollment and engagement in insurance plans.

1. Introduction

Sexually Transmitted Infections (STDs) are contagious diseases spread via sexual activity, involving the transmission of pathogens.[1] Prevalence rates are higher in developing countries, with approximately 340 million new cases annually,[2] mostly in these regions. Risk factors include multiple sexual partners, inconsistent condom use, and previous STDs. Nigeria faces significant challenges with STDs, particularly HIV/AIDS.[3,4] Lack of healthcare infrastructure and cultural barriers hinder control measures. Health insurance and public health education are crucial for STD prevention and management.[5]

Health insurance, a form of risk management, provides financial coverage for medical expenses incurred by

* *Corresponding author*.
E-mail address: osahmartinz@gmail.com (O. M. Onwuka).

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individuals. This shared risk mechanism spreads the burden among a large pool of people, enabling insurers to develop financing structures like monthly premiums or payroll taxes. Administered by entities like governmental agencies or private firms, health insurance encompasses various benefits including coverage for sickness, injury, medical expenses, disability, or accidental death. In low-income countries, health insurance schemes are increasingly recognized as essential for financing healthcare provision, aiming to improve access to quality healthcare services. Compared to user fees and other financing methods, insurance offers the advantage of pooling risks, thereby mitigating unforeseen healthcare costs through fixed premiums.[6] However, neither statutory social health insurance nor commercial schemes alone significantly increase coverage rates, particularly in rural and remote areas where transaction costs are prohibitive. Non-profit, mutual, community-based health insurance schemes have emerged in several countries, emphasizing solidarity and collective risk pooling. Although proponents argue these schemes can enhance healthcare access, studies suggest challenges such as small risk pools, adverse selection, subsidy dependence, and financial sustainability issues.[7] Additionally, the contextual factors influencing scheme effectiveness and their broader social benefits remain underexplored. Despite challenges, understanding the strengths and weaknesses of health insurance schemes is crucial for advancing equitable healthcare access and enhancing household risk management capacity. Hence, this study explores participation dynamics in healthcare insurance plans for patients with STDS, aiming to identify factors influencing enrollment and engagement, addressing gaps in understanding insurance uptake in managing STDS.

2. Materials and Methods

2.1. Study design, sampling, sample size

A clinical-based descriptive survey was conducted at the Federal Medical Centre (FMC) Owerri from February to March 2023. FMC, located at 105 Hospital Road, Orlu Rd, Owerri, Imo State, Nigeria, began as a colonial dispensary in 1903, evolving into a district hospital, then a general hospital, before attaining federal medical center status in 1995, boasting a 700-bed capacity. Despite its growth, the population remained stable since 1995.[8] The participation rate for interviews exceeded 90%. Sampling targeted various patient categories, including pregnant women, nursing mothers, adolescents, and sex workers. The study encompassed individuals aged 14 and above, employing a simple arbitrary sampling technique. Three days of group discussions were held, with ten questions posed regarding STDs. On the fourth day, 114 participants responded positively, forming the sample pool. Sampling focused on infected subjects, constituting 0.285% of the total survey participants.

2.2. Data acquisition and analysis

The study employed a comprehensive approach to data collection, primarily utilizing 30 questions, questionnaires, and group discussions to investigate Participation Dynamics in Healthcare Insurance Plans for Patients Diagnosed with STDs at FMC Owerri. Prior to experimentation, the questionnaires were validated by the researcher and supervisor; preliminary examination involved distributing 30 questionnaires at FMC Owerri, as well as re-dispersion after two weeks interval to assess its clarity and content. The analysis aimed to identify any obscurities in the questionnaire's structure and content. Reliability assessment of the instrument involved statistical analysis of field responses to determine correlation coefficients. Various data collection techniques were adopted based on the study's objectives, including internet research and literature review. Data analysis employed a binary probit model, with Pi = 1 indicating membership in the insurance plan and Pi = 0 denoting otherwise. The mean score of patients enrolled in the insurance plan served as the decision criterion. This research underscores the significance of meticulous data collection methods and their influence on informed decision-making processes in healthcare insurance planning.

3. Results

3.1. Awareness and participation dynamics among STD diagnosed individuals in health insurance plans

The study (Table 1) highlights significant variations in awareness and participation levels concerning health insurance coverage for STD treatment across demographics. Notably, sex workers showed the highest rates at 90.3%, while adolescents exhibited lower levels at 37.4%, possibly due to literacy and income limitations. Conversely, pregnant and nursing mothers displayed above-average awareness and participation (62.6% and 81.5%, respectively), likely influenced by regular engagement with antenatal care. The insurance policy's inclusion of STD treatment within antenatal care likely contributed to heightened awareness and participation in this demographic.

Table 1: Awareness and participation dynamics among STD diagnosed individuals in health insurance plans

Category of patient	% of membership	Medical service	Level of awareness
Adolescent	37.4%	Hospitalization	Low
Pregnant women	62.6%	Antenatal	Medium
Nursing mothers	81.5%	Antenatal	High
Sex workers	90.3%	Hospitalization	Very high

3.2. Factors affecting participation in health insurance schemes

This study (Table 2) presented individual-level determinants of participation in Health Insurance Schemes, focusing primarily on income. Income, measured as household expenditure per member annually, is assumed to positively influence participation, with wealthier individuals more likely to participate. Religion also correlates positively with enrollment. Experience in local organizations further enhances the likelihood of joining a Health insurance scheme. Additionally, health status, as indicated by the household's STD ratio, is considered to control for adverse selection. Results from probit analysis demonstrate significant positive effects of income, religion, and organizational membership on participation.

Table 2: Determinates of health insurance schemes participation

Variable	Description	Participation
Sex	Male; 1 = yes	+
Age group 1	Age (14 - 20 years)	+
Age group 3	Age (≥41years)	+
Literacy	Ability to read/write; 1 = yes	+
Other organization	in another group membership; 1 = yes	+
Relationship	Relationship to household; 1 = self, spouse, parents, children and otherwise	+
Religion	Christian house (1 = yes)	+
	Musclim house (1 + yes)	–
Income terzile	Lower terzile	–
	Middle terzile	±
	Upper terzile	+
Self – wealth	Self – classification of household (poor, average, rich)	–, –, +
STD – ratio	Number of cases of STDs per household in the last 6 months divided by number of household members	+
Frequency of STD	Number of cases of STDs of an individual in the last six month	+

+ indicate positive sign for participation decision, – indicate otherwise

3.3. Marginal coefficients of factors influencing participation in health insurance scheme at the household level

Analysis (Table 3) of factors influencing participation in health insurance at the household level reveals significant impacts of religion, income, organizational affiliation, and education on STD insurance. Demographic analysis indicates higher insurance probabilities for women and older individuals, aligning with STD risk profiles. However, marginal effects, though statistically significant, are minimal (<0.1%), complicating the diagnosis of severe adverse selection. This underscores the complexity of insurance dynamics and suggests the need for nuanced approaches to address coverage disparities and improve risk assessment strategies in healthcare policy.

3.4. Hospitalization probability, expenditure determinants, and correlates with health insurance membership

The study (Table 4) illustrated hospitalization probability, expenditure determinants, and correlates with health insurance membership, particularly in rural areas. Ogbaku demonstrated a higher effective demand for hospitalization, likely attributed to its well-established mutual system and proximity to healthcare facilities. Findings suggest that health insurance enhances healthcare access, especially in communities with existing mutual aid structures. Factors such as income, age, gender, and village effects significantly impact insurance uptake and healthcare utilization. Membership correlates with more frequent hospitalization at lower costs, influenced by age, STD type, gender, income, and village factors. Access to quality healthcare is achievable through effective insurance schemes supported by local institutions and financial backing from hospitals.

4. Discussion

The analytical investigation examines the intricacies of involvement in healthcare insurance programs tailored for individuals diagnosed with sexually transmitted diseases (STDs). It presents insights across diverse demographic groups, elucidating the discrepancies in awareness and participation regarding health insurance coverage for STD treatment. Table 1 demonstrates marked variations in participation rates, with sex workers exhibiting the highest engagement at 90.3%, possibly due to heightened awareness and improved access to healthcare services which corresponds to report.[9] Conversely, adolescents exhibit lower participation levels at 37.4%, likely influenced by factors such as limited literacy and income, which was also implied by previous study.[10] Pregnant and nursing mothers show above-average awareness and participation, potentially influenced by regular engagement with antenatal care, which includes STD treatment. Table 2 explores individual-level determinants of participation, emphasizing income as a significant factor. Wealthier individuals are more inclined to participate, indicating a positive association between income and enrollment.[11] Additionally, religion and involvement in local organizations exhibit positive correlations with enrollment, suggesting social and communal influences on participation.[12,13] Analysis in Table 3 reveals significant impacts of religion, income, organizational affiliation, and education on household-level participation in STD insurance. Demographically,

Table 3: Analysis of factors influencing participation in health insurance at the household level

Variable	Model 1	Model 2	Model 3
Constant	2.048 (0.541)	0.223 (0.155)	0.064 (0.197)
Sex (1 = male)	0.054 (0.083)	0.071 (0.083)	0.001 (0.083)
Age group 1 (age 14 - 20)	0.088 (0072)	0.085 (0.092)	0.079 (0.091)
Age group 3 (age 41 - 65)	0.087 (0.061)	0.079 (0.061)	0.101 (0.062)
Literacy (can read/write) 1 = yes	0.057 (0.063)	0.062 (0.063)	0.043 (0.063)
Other organization	0.180 (0.066)	0.183 (0.066)	0.120 (0.065)
Religion (1 = Christianity)	0.370 (0.085)	0.369 (0.085)	0.347 (0.083)
Income (expenditure per household member log)	0.167 (0.046)		
Income ferzile: lower		0.110 (0.063)	
Income terzile: upper		0.165 0.073)	
Self-wealth (self-classification of household): poor			- 0.254 (0.058)
Self-wealth rich			0.018 (0.113)
STD ratio (number of cases of illness per household divided by number of household members)	0.002 (0.088)	0.007 (0.088)	0.037 (0.086)

Table 4: Presentation of hospitalization probability, expenditure determinants, and correlates with health insurance membership

Variable	Model 1a (hospital)	Model 1b (hospital)	Model 2a (expenditure)	Model 2b (expenditure)
Constant	03.01 (0.065)	0.137 (0.021)	4.611 (2.016)	9.445 0.642
Sex (1 = male) (2 = female)	(-0.014 0.007)	(-0.014) (0.006)	(0.370) (0.214)	0.401 (0.21)
Age group 1 (age – 20)	0.016	0.016	0.495	0.320
Age group 3 (age - 63)	0.022	0.022	0.008	0.141
Literacy (can read/write) (1 = yes)	0.107	0.010	0.07	0.035
(2 = no)	0.0007	0.007	0.243	0.239
Frequency of STD	0.007	0.008	0.02	0.03
Income (expenditure per household member)	0.015	-	0.441	-
Income terzile: lower		0.008		0.120
Income terzile: upper		0.008		0.238
Community characteristics				
Ogbaku (household belonging to Ogbaku Community. 1 = yes)	0.046 (0.022)	0.046 (0.022)	0.550 (0.067)	0.568 0.676
Umuchoke (household belonging to Umuchoke Community 1 = yes)	0.017 0.020	0.018 (0.020)	1.573 (0.643)	1.588 (0.643)

Significant at 0.05 levels

women and older individuals demonstrate higher insurance probabilities, aligning with STD risk profiles. However, marginal effects are minimal, highlighting the complexity of insurance dynamics and the challenge in identifying severe adverse selection. Table 4 investigates hospitalization probability, expenditure determinants, and their link with health insurance membership, particularly in rural settings. The study underscores the role of health insurance in enhancing healthcare access, especially in areas with established mutual aid structures. Factors such as income, age, gender, and village effects significantly influence insurance uptake and healthcare utilization.[14–16] Membership correlates with more frequent hospitalization at reduced costs, emphasizing the significance of effective insurance schemes supported by local institutions and financial backing from hospitals to ensure quality healthcare access. Overall, the study underscores the multifaceted nature of healthcare insurance dynamics and emphasizes the necessity for nuanced strategies to address coverage disparities and enhance risk assessment in healthcare policy.

5. Conclusion

The study delves into healthcare insurance involvement for STD patients, highlighting demographic variations. It reveals higher participation among sex workers and mothers, influenced by factors like income and social ties. Enhanced insurance leads to increased hospitalization at reduced costs, emphasizing effective policy strategies.

6. Author Contributions

Conception: GCA, OMO - Design: OMO - Supervision: GCA - fundings: -Materials: GCA, OMO, ALO - Data Collection and/or Processing: GCA, OMO, ALO - Analysis and/or Interpretation: OMO - Literature: ALO - Review: OMO, - Writing: OMO Critical Review: GCA, ALO.

7. Ethical reflections

The study was conducted following ethical guidelines, which included informing participants about the study's purpose and procedures, obtaining their consent, and ensuring the confidentiality of subjects.

8. Conflict of Interest

None.

9. Source of Funding

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Author biography

Godson Chukwuemeka Ajuzie, Gastrointestinal Physiology https://orcid.org/0009-0003-5791-3775

Osah Martins Onwuka, Human and Applied Physiology https://orcid.org/0000-0002-2451-4466

Adaobi Linda Okerulu, Body Fluid and Renal Physiology https://orcid.org/0009-0008-3187-8429

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