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# Determinants of Healthcare Expenditure among Households in Nigeria

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**Abstract**

*The optimal goal of any economy is to provide accessible, quality and an uncompromising healthcare system. While trying to achieve this goal, the health system should be such that it ensures households are insured against adverse consequences of healthcare expenditure. In Nigeria, the primary means of funding healthcare is out-of-pocket. The consequences of out-of-pocket (OOP) healthcare expenditure on household's state of economic can be alarming and catastrophic, especially on low income earning households and those lacking healthcare insurance scheme.*

*Poor households can be further pushed into penury, they may cut down on the consumption of essential items such as food and clothing, and may abstain from medical care, thus perpetuating the cycle of illness and disability. The study finds it crucial to investigate and understand why household is still the major financier of healthcare service in Nigeria.*

*The Grossman (1972) human capital theory provided the theoretical framework for the study. Data was obtained from the Harmonized Nigeria Living Standards Survey (HNLSS), 2010, produced by the National Bureau of Statistics. The HNLSS covered 77,400 households across the six geopolitical zones. A logit model was estimated to examine the determinants of healthcare expenditure in Nigeria.*

*The findings reveal that increase in household age, and education is positively associated with demand for healthcare. Household size, female-headed household, urban household, religion and agricultural workers negatively affects demand for healthcare.*

*Emphasis on measures geared towards providing financial support to reduce the burden of healthcare spending among households should be intensified by the government.*

**Keywords: HealthcareExpenditure, Household**

## Introduction

Health determines the state of wellbeing of individuals in the society and is essential for the productivity of any nation, therefore, a necessity in the quest for development that can be sustain overtime (Olaniyan, Onisanwa, & Oyinlola, 2013). While health is a necessity in the attainment of economic development, it is a product of aggregate performance of an economy at a given time. The interlink between health and sustained economic development is obvious, thus, to raise the quality of life and ensures increase productivity, adequate provision and access

to preventive, curative and affordable health system must be provided (World Health Organization (WHO), 2018).

People with good state of health tend to be more productive in carrying out economic activities thereby attracting higher remuneration, they tend to abstain less from work owing to injury or sickness, and such workers have more work hours as well as participate in the labour force for a longer duration than individuals with poor health status. Healthy people attain higher educational qualification through increasing scholastic performance that aids productivity, attracts higher income, raises the capacity to save and facilitates investment (Bayati, Akbarian, & Kavosi, 2013; Onisanwa& Olaniyan, 2019). The more the savings, the more the fund available for investment, thereby facilitating growth and development of the economy. The rising growth rate in the economy of some developing countries has been attributed to improvement in the life expectancy at birth (Miladinov, 2020).

The optimal goal of any economy is to provide accessible, quality and an uncompromising healthcare system. While trying to achieve this goal, the health system should be such that it ensures households are insured against adverse consequences of healthcare expenditure (Amaghionyeodiwe, 2009; Elgazzar et al., 2010). In most developing countries, such as Nigeria, the main source of funding healthcare is out-of-pocket. The consequences of out-of-pocket (OOP) healthcare expenditure on household's state of economic can be alarming and catastrophic, especially on low income earning households and those lacking healthcare insurance scheme (Nyman& Trenz, 2016; Aregbeshola& Khan, 2018).

The OOP spending can be catastrophic if it takes a large share of the household's income, hence, the consequence could be adverse. For instance, poor households can be further push into penury due to direct private payment for health service, households may cut down on the consumption of essential items such as food and clothing (Onisanwa& Olaniyan, 2019). Also, households sometimes may not seek medical care rather than to confront the consequences of healthcare spending, thereby perpetuating the cycle of illness, disability, and poverty (Kimani, 2014).

Out-of-pocket (OOP) payment for health at point of service is viewed by many as a system of funding healthcare that lacks equity, because it impose an unequal adverse economic cost on different social class, particularly the low income households and the elderly (Kimani, 2014). Under such condition, household will bear the financial burden and when the medical bills outweighs the capacity to pay at the point of need, it can prevent individual or household from seeking healthcare at the appropriate time or even gives rise to complete avoidance of healthcare. Consequently, low-income household are often compelled to ration scarce resources among basic necessity of life.

A major concern in funding healthcare via out-of-pocket is the economic burden of such spending on household welfare overtime (Akhigbemidu,2017). This view is premised on the unpredictability of OOP payment; the size of the OOP expenditure when weigh against household resources and the unseasonal frequency in relation to

income. Given the absence of egalitarian system of income distribution and high prevalence of poverty in Nigeria, low-income household tend to be adversely affected.

Under-utilization of healthcare resources is another issue bedeviling the developing world. It is imperative to understand the factors which determines the utilization of healthcare resources by household, in order to attain the goal of adequate access to healthcare. Therefore, policymakers in pursuit of health care for all citizens must promote policy that helps alleviate the burden of OOP spending, in order to improve human wellbeing.

A vital role of government at all levels in any economy is to ensure that it reduces the burden of high household healthcare expenditure. However, in Nigeria, budgetary allocation to the health sector is apparently inadequate, thereby leading to poor health condition and households tend to incur direct medical expenditure, thus limiting access to medical facilities by the highly susceptible low-income individuals and households (Olasehinde& Olaniyan, 2017). This partly explains the reason behind the sluggish achievement of the desired target of the Sustainable Development Goals (SDGs), and the poor implementation of the National Health Insurance Scheme (NHIS) among others.

Meanwhile, the factors that determines the usage or otherwise of health services are numerous and vary among households. Such decisions are influenced by the purchasing ability of the consumer, the cost of the health care and the opportunity cost between cost of medical care and household non-medical expenditure (Su, Pokhrel, Gbangou, &Flessa, 2006; Ebaidalla & Ali, 2019). However, there is no consensus as to what inform the choice of healthcare service and the degree to which the factor influenced the demand for healthcare. Hence, it is imperative to consider and carry-out empirical investigation on what determines household healthcare spending. Findings that emanate from such research can help in the pursuit of health care utilization for all.

The study finds it crucial to investigate and understand why household is still the major financier of healthcare service in Nigeria in spite the existence of a formal health insurance. Specifically, the study examines the socio-economic and demographic factors that influence demand for healthcare in Nigeria. Factors such as size of household, income, age of household head, and gender of household head are analyzed. Others are marital status, education level and religion of the household's head. The study focused on these healthcare factors because they are the main factors that influences demands for healthcare in Nigeria, based on reviewed literature.

The study contributes to literature on the determinants of healthcare expenditure among household in Nigeria by investigating the factors that influence the demand for healthcare at the micro level, specifically on household. It is necessary to take into consideration where bond in family union is stronger and the ratio of dependent population highest in an attempt to analyze utilization of healthcare in Nigeria, therefore, the need to study the determinants of healthcare expenditure at household level. Using Household Survey

data, the analysis is conducted at national level.

Methodologically, many studies (Amakom & Ezenekwe, 2012; Omotoso, 2014; Latunji& Akinyemi, 2018) on the determinants of healthcare expenditure are state-based analysis and limited to those who reported illness or injury, hence not a good yardstick for measuring determinant of healthcare for the Nigerian population. This study make use of General Household Survey (GHS) data that have socio-economic and geographical household's characteristics, and with a national coverage.

Furthermore, several studies (Olaniyan &Lawanson, 2010; Imoughel& Ismaila, 2013) on the determinants of household healthcare expenditure were carried out on a macro scale. While only few (Oyinpreye& Moses, 2014) have attempted to investigate determinants of healthcare at a micro level. Also, some studies (Adisa, 2015; Adam &Aigbokhaode, 2018) investigate the phenomena in Nigeria on a regional perspective. This study however seeks to bridge the identified gaps by investigating the determinants of healthcare expenditure by household at the national level using the 2010 (HNLSS) data. In order to achieve effective and efficient management of the health care system, it is important that policy makers are informed on the determinants of household healthcare expenditure in order to achieve effective and efficient management of the health care system in developing economies like Nigeria.

This study is structured into five sections, following the introduction is section two that provides a review of relevant literatures. The third section focuses on the research methodology and theoretical framework. Section four involves the presentation, interpretation and discussion of results. Lastly, section five, summarizes, concludes and gives policy recommendations.

**Literature Review**

Evidence of determinants of healthcare abounds in literature for low-income and high-income countries, however, there is limited studies on the determinants of healthcare expenditure among households in Nigeria with national coverage.

The studies of the determinants of healthcare generally relies on the Grossman (1972). The theory states that demand for healthcare is a derived demand. That is, people demanded for healthcare to have good health in return. The demand for healthcare is an input that helps mitigate the depreciation effect of health stock overtime.

According to Grossman, (1972), the demand for health is a demand for consumption of commodity that goes into individual's utility function, as well as an investment commodity that possess the capacity to raise the stream of healthy days/time. The model further outlines factors such as exercise, education, age and wage rate as the major determinants of demand for healthcare.

Another model that explains the usage of health care is the behavioural model (Andersen, 1995). The model is a conceptual model that demonstrates the determinants of health care consumption among individuals. According to the behavioural model, people's usage of

health service is as a result of three main factors, namely predisposing features, enabling facilities, and need. The predisposing characteristics are the sociocultural features of the people before the advent of illness. This is built on the notion that household's desire to demand for health service is a function of collection of demographic factors, social structure and their belief about the state of health, prior the sickness or injury.

According to Puteh & Almualm (2017) OOP is a regressive forms of healthcare financing that is not efficient and lacks equity. Meanwhile, it is the main source of funding medical care in low-income countries. OOP can be direct or indirect cost. Direct costs in the sense that they are associated with hospital bills for consultation, tests and medications. While the indirect costs include loss of income due to absenteeism from work associated with illness, transportation to health facilities, and cost of living of the caregivers.

Wellay*et al*. (2018) argued that both demand-side barriers and supply factors influenced the demand for health care services in Ethiopia. They found that severity of illness, having educated household head, distance of health facility from home, treatment quality, and cost of medication were the main determinants of health care.

Elgazzar et al. (2010) examined the economic consequences of out-of-pocket spending in some selected Middle East and North Africa (MENA) countries and found that OOP reduced the living standard in the region, with prevailing economic condition being the main determinant of demand for healthcare. Similarly, Kimani et al. (2016) concluded that economic poverty level among households in Kenya determined healthcare utilization, which is often catastrophic in nature.

Okunade et al. (2009) found that healthcare spending in Thailand is a function of household's permanent income and size of the household. Magazzino& Mele (2012) examined the determinants of health care expenditure in some selected regions in Italy. The study found that the level of unemployment, degree of urbanization, available beds in the hospitals, and the level of literacy had a significant impact on health care. In Burkina Faso, Su, Pokhrel, Gbangou, &Flessa(2006) individual opinion with respect to the illness, household influence, nature of the illness, and the choice of service providers. Others are price of health service, the household's earnings, as well as the opportunity cost of medical spending. Ke, Saksena, & Holly (2011) found that per capital income, foreign aid, population structure, pattern of the illness, and characteristic of the health system were the main factors that influence demands for health services in developing countries.

Mondal, Kanjilal, Peters, & Lucas (2010) investigate the determining factors of catastrophic health care spending and found that frequency of illness within a household, severity of the illness, history of chronic morbidity in the household, household size, and location either rural or urban influenced health spending in India. Babikir, A., Satty & Mwambi (2018) observed that out-of-pocket expenditure in South African is determines by the level of poverty, hospital bills, and medical supplies

Rous & Hotchkiss (2003) found that individual characteristics (education, age, and gender), household characteristics (good toilet, house size, income per capital, garbage disposal, good house), and community characteristics (urban, mountain or hills), as well as household head characteristics (age, education, and gender) influence household health care expenditure in Nepal. In Sudan, household's earnings, household size, household members above 65 years of age, and the highest level of education attainment of household's head are the main determinants of out-of-pocket health spending and catastrophic medical spending (Ebaidalla, 2019).

In Nigeria, Aregbeshola& Khan (2018) identified socioeconomic and demographic factors as the forces responsible for rising catastrophic health expenditure in Nigeria. Using a double-hurdle model with dependent errors, Riman & Akpan (2012) identified the spatial distribution of health facilities as a factor that influence health seeking behavior of household. Aregbeshola& Khan (2020) examined the determinants of out-of-pocket expenditure in Nigeria, found that educational attainment of household's head, large household size, employed household's head, households in South East region of Nigeria, using government owned hospital/clinic, and households that report chronic illness are the main determinants of out-of-pocket spending. Oluwatimilehin (2014) revealed that level of education and place of residence are the main factors that account for household demand for health care in Kenya.

Olasehinde& Olaniyan (2017) investigate the factors responsible for health spending in Nigeria using household level data. The study reveals that house size, income and gender of household head significantly affect health expenditure in Nigeria. Also, marital status and employment type influence both rural and urban households demand for health care.

In a similar study, Adam &Aigbokhaode (2018) found that level of income, education attainment, and marital status of household's head are the major predictors of demand for healthcare among households. Latunji& Akinyemi (2018) found that health seeking behavior among public workers in Ibadan is influenced by affordability, efficient service delivery, closeness to healthcare facilities, and availability of essential drugs are the factors that informed choice of health services.

Ibukun & Komolafe (2018) found that level of income, employment status, residential area, and the choice of medical facility are the determinants of catastrophic health expenditure in Nigeria. Also, Olaoye (2019) found that consultation fees, size of household, medicine and health insurance, as well as number of days admitted in the hospital are the major determinants of healthcare expenditure in Nigeria.

## Methodology

This study is anchored on the theory of planned consumer behavior as developed by (Ajzen, 1985, 1991, 2005, 2012). The theory focused on the specific consumer behavior of interest as against the overall utility of a product. In this study, the theory proceed as follows: consider a household that wants to maximize utility by choosing

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whether to seek health care or ignore treatment, subject to resource constraints. The preference for health facility, (1) over non-treatment, (0) implies $u_1 \text{ f } u_0$. That is, households would always choose treatment over non-treatment in the face of illness or any other health challenges. This research employed the binary Logistic Regression model of the form

$$\Pr(Y = 1 | X) = G(X\beta) \quad (1)$$

in determining the determinants of demand for healthcare expenditure in Nigeria.

Equation 1, express the conditional probabilities of $Y = 1$ (household seeking health care) given elements of vector $X$. $X$ is the vector of the independent variables that determines the demand for health (see Table 1 for description of variables). It can further implies, the utility household derives from seeking health care in the face of illness is higher than abstaining from treatment. The probability function of seeking treatment in the face of illness is specified as

$$\lambda(X\beta) = \frac{\exp(X\beta)}{1 + \exp(X\beta)} \quad (2)$$

Equation 2 is the cumulative (logistic) distribution function (cdf). It values ranges between zero and one. $\lambda$ is a non-linear function of $X\beta$, which implies it cannot be estimated using the ordinary least square (OLS). The model will be estimated using the Maximum Likelihood estimator because the error follows a standard logistic distribution.

**Data**

This paper utilizes the Harmonized Nigeria Living Standards Survey (HNLSS), a cross-sectional data set collected by National Bureau of Statistics (NBS) in 2010. It is an abridged survey that serves as a follow up to both the Core Welfare Indicator Questionnaire Survey (CWIQ 2006) and the Nigeria Living Standard Survey (NLSS 2004). This is a secondary data that captures household characteristics that include socio-economic, demographic and geographical distribution of households.

## 4. Presentation and Discussion of Results

This section provides the descriptive statistics of the variables used in the study and estimates of logit regression analysis.

**Table 1: Descriptive Statistics of Members in the Model**

| VARIABLES | DESCRIPTION | PERCENTAGE |
|---|---|---|
| Dependent variable | | |
| Demand for health | | 8% |
| **Explanatory variables** | | |
| Age | Age of expressed log of years | 6% |
| Household size | | |

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| | | |
|---|---|---|
| Sex of head of household | | |
| Female | =1 if female, 0 otherwise | 46% |
| Place of residence | | |
| Urban | =1 if urban resident, 0 otherwise | 37% |
| Marital status | =1 if monogamous, 0 otherwise | 28% |
| Monogamous | | |
| Polygamous | =1 if polygamous, 0 otherwise | 44% |
| Religion | | |
| Christian | =1 if Christians, 0 otherwise | 43% |
| Muslim | =1 if muslim, 0 otherwise | 57% |
| Education | | |
| Primary | =1 if primary education, 0 otherwise | 31% |
| Secondary | =1 if secondary education, 0 otherwise | 16% |
| Post-secondary | =1 if post-secondary education, 0 otherwise | 5% |
| Employment | | |
| Self-employed | =1 if self-employment., 0 otherwise | 64% |
| Paid-employed | =1 if paid-employment., 0 otherwise | 7% |
| Self employed (non-agric) | =1 if self-non-agric., 0 otherwise | 12% |

### 4.1 Determinants of Household Healthcare Expenditure in Nigeria

Table 2 shows the likelihood ratio (LR) statistics and the predicted probability of positive outcome for each level of analysis. The predicted probability is the predicted outcome for binary variables defined as 0 to1. The difference between the predicted outcome and actual outcome is used to explain the overall model performance. This difference is related to the concept of

goodness of fit of a model such that models with good fit indicate smaller differences between the predicted and observed outcomes**.**

The findings show the extent to which socioeconomic variables included in the regression analysis affect the probability of demanding for health care in Nigeria.

**Table 2: Results of Odds Ratio, Logistic Coefficient and Marginal Effect**

| VARIABLES | odd ratios | logit coefficient | marginal effect |
|---|---|---|---|
| demand_health | (dependent variable) | | |
| Age | 4.064*** | 1.402*** | 0.0628*** |
| | (0.0573) | (0.0141) | (0.000563) |
| hh-size | 0.0662*** | -2.715*** | -0.122*** |
| | (0.00174) | (0.0263) | (0.00106) |
| Female headed hh | 0.0264*** | -3.634*** | -0.163*** |
| | (0.000943) | (0.0357) | (0.00135) |
| Urban | 0.0972*** | -2.331*** | -0.104*** |
| | (0.00386) | (0.0397) | (0.00169) |
| Monogamous | 71.05*** | 4.263*** | 0.191*** |
| | (4.010) | (0.0564) | (0.00239) |
| Polygamous | 0.00731*** | -4.918*** | -0.220*** |
| | (0.000510) | (0.0697) | (0.00292) |
| Christainity | 0.000105*** | -9.157*** | -0.410*** |
| | (0.000142) | (1.342) | (0.0600) |
| Muslim | 0.0155*** | -4.165*** | -0.186*** |
| | (0.0208) | (1.340) | (0.0600) |
| Primary | 0.976 | -0.0240 | -0.00108 |
| | (0.0196) | (0.0201) | (0.000900) |
| Secondary | 1.108*** | 0.103*** | 0.00461*** |
| | (0.0277) | (0.0250) | (0.00112) |
| post_secondary | 1.167*** | 0.155*** | 0.00692*** |
| | (0.0477) | (0.0409) | (0.00183) |
| self_employ | 0.0114*** | -4.470*** | -0.200*** |
| | (0.000710) | (0.0621) | (0.00265) |
| paid_employment | 464.4*** | 6.141*** | 0.275*** |
| | (35.69) | (0.0768) | (0.00309) |
| Self-agric_nonagric | 0.00365*** | -5.612*** | -0.251*** |

| | | | |
|---|---|---|---|
| | (0.000259) | (0.0708) | (0.00298) |
| Constant | 40.75*** | 3.707*** | |
| | (54.68) | (1.342) | |
| Observations | 294,564 | 294,564 | 294,564 |

*** p<0.01, ** p<0.05, * p<0.1

*Source: Authors' computation*

### 4.2 Interpretation of the Marginal and Odd Ratio

This study empirically examines the determinants of household healthcare expenditure in Nigeria using HNLSS. Logistic model was employed to estimate factors that influence demand for healthcare by household, the study reported the marginal effects of Logit regression. The identified variables in the study include socio-economic characteristics of household like age, household size, household headed by female; geographical distribution of household (urban); marital characteristics (monogamy and polygamy) of household; religion (Islam and Christianity), highest education level of household (primary, secondary and post-secondary), and occupation type.

There was a statistically significant relationship between healthcare expenditure and the age of household as well as household size. Increase in age within the household increases the likelihood of demanding for healthcare, this is because as people advance in age, the chances of them facing health challenges tend to rise as such an increase in the need for healthcare. The result corroborates the findings of Aregbeshola& Khan (2018) that found a positive relationship between age of household members and catastrophic health spending. Meanwhile, there was a negative statistical relationship between healthcare expenditure and household size. This result makes sense in Nigeria context in that, large household size is a common feature of locations with high incidence of poverty. Poverty constraint the capability of household to demand for health services. This result is in line with the work of Okunade et al. (2009) that reported a negative association between healthcare spending and family size in Thailand, however, it contradicts the finding of Olasehinde& Olaniyan (2017) that, found a positive and significant effect between healthcare and log of household size. The finding also reveals that, female headed household reduced the probability of spending on healthcare. This implies male headed household raises the chance of incurring more healthcare expenditure than household with female head. This does not corroborate the result of Aregbesola et al. (2009) that found a no significant relationship between male household head and rising demand for healthcare.

Result for place of residence shows that for an increase in the number of urban households, the likelihood of demanding for healthcare reduces. This can be attributed to the classification of households into urban and rural in Nigeria,

with the majority being classified as rural dwellers.

The result further reveled that, households' religious beliefs play an important role in explaining demand for healthcare in Nigeria. Christians and Muslims are significantly less likely to spend more on healthcare than those in the traditional belief.

Findings from the study further suggest that having higher educational attainment did not necessarily reduce the probability of household seeking healthcare in Nigeria. Similarly, having secondary education is significantly more likely to raise spending on healthcare relative to households without As a matter of fact the higher the level of education attainment the more the likelihood of seeking for healthcare. The findings suggest that education significantly influence demand for healthcare in Nigeria, this is because the higher the level of education the more inform the people are about the need to seek formal healthcare, and also, education tends to influence the income earning ability of household, thereby raising the chances of more educated household to finance healthcare.

Occupation types show differential effects on household healthcare spending, the employment statistics show that more Nigerian are self-employed relative to those in the paid employment. The findings further show that, households in the paid employment are more likely to spend on healthcare than those household that are self-employed.

Summary, Conclusion and Recommendations

This study employed logistic model to investigate the determinants of household healthcare expenditure in Nigeria. The findings reveal that increase in household age is positively and significantly associated with demand for healthcare. Also, explanatory variables like household size, female-headed household, urban household, religion (Islam and Christianity) negatively affects demand for healthcare. Education level of household is found to be positively associated with demand for healthcare resources even though households with only primary school attainment proves negative and significant compared to households with secondary and post-secondary school attainment. There exists a mix finding related to income of household. Household on self-employed in agric and non-agric prove negative and significant compared to household on paid employment. The empirical findings of this study tallied with some other studies (Olasehinde and Olaniyan, 2017; Su et al. 2006; Oluwatoyin et al. 2015, Wellay et al. 2018).

The empirical findings in this study suggest diverse policy implications for policy-making in Nigeria. This will offer pragmatic solution to excessive healthcare expenditure and enhance generally the welfare of individuals and households. There should be a form of social healthcare protection for aged household so as to reduce the burden of healthcare expenditure given that medical spending rises with age. Also, rural households tends to be more vulnerable to illness and disability compares to urban households. This tends to suggests that rural households have preference for healthcare if given the

resources. Hence, policy makers must do the needful to ensure equitable distribution of health facilities and reduce costs associated with seeking healthcare in the rural area.

Furthermore, there is need for adequate provision, sensitization and orientation of households on the importance of education, this will help mitigate the occurrence and spread of some diseases and ailments.

Certain number of gaps traced to data constraint of the HNLSS exists in this study. Ethnic and tribal variable can be included in studies relating to health. This is left out in the study due to difficulty in its measurement. Scope of healthcare expenditure can extend to preventive and rehabilitative care in addition to curative care, as well as other forms of healthcare services. Further studies can also be carried out in Nigeria considering the distribution of the country into six geo-political zones all with different healthcare seeking behavior.

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