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Factors Influencing Out-of-Pocket Medical Spending in Nigeria's South-South Geopolitical Zone

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Abstract

In this study, the 2018/2019 national harmonised living standard survey data is used to investigate the factors influencing out-of-pocket healthcare expenditure in the south-south geopolitical zone of Nigeria. The study uses the Heckman selection two-step model to infer that a person's likelihood of paying out-of-pocket for healthcare depends on a number of factors, including their state of residency, age of the household head, family size, per capita consumption expenditure, and adult equivalent weight. In addition, age, age squared, household size, household size squared, and per capita consumption spending serves as proxies for per capita income if an individual becomes ill and needs medical attention. These characteristics impact the amount of money that the patient must pay out-of-pocket for healthcare; older patients (those over 50) have higher out-of-pocket costs. Families with more than seven individuals typically have limited resources, which results in lower out-of-pocket healthcare costs. This indicates that medical care is a typical good. As a result, the analysis suggests that all households in the zone have access to a complete health insurance programme, regardless of where they live.4

Keywords:
Factors influencing, Harmonised living and healthcare Services

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Background to the Study

Being a developing nation, Nigeria has a large population living in rural regions, the majority of whom work in the unofficial sector. As a result, many of them may not have access to third-party funded healthcare services like the health insurance programme. Furthermore, because the healthcare payment system is biassed in favour of market forces, it is possible that most individuals will not be able to afford significant healthcare services, and even if they can, the results might be disastrous for the welfare of the family. The World Health Organisation (2011) said that between 2002 and 2009, Nigeria's private healthcare spending as a proportion of GDP climbed from 2.91 to 3.71. Analogously, in 2010 the nation's aggregate public healthcare expenditure as a proportion of total expenditure was 37.89. The value ranged from a minimum of 20.76 in 1996 to a top of 41.17 in 2008. Spending on public healthcare in this context includes nutrition programmes, family planning services, emergency medical assistance, and healthcare services; it does not, however, include funding for sanitary facilities or water supplies.

Given the foregoing, Nigeria has experienced extremely low population health as indicated by a number of health metrics. Nonetheless, all categories have shown a decline in death rates when comparing the 2019 National Demographic Health Survey (NDHS) data with estimates from the 2013 NDHS to the 2010 NDHS. Infant mortality decreased from 100 deaths per 1,000 live births in the 2003 NDHS to 75 deaths per 1,000 live births in 2008 and then to 69 deaths per 1,000 live births in the 2019 NDHS (NBS, 2019). The under-5 mortality rate decreased from 201 deaths per 1,000 live births in the 2003 NDHS to 128 deaths per 1,000 live births in the 2013 NDHS.

Additionally, according to the 2013 NDHS preliminary data, just 38% of births in Nigeria are attended by a qualified healthcare professional, and 36% of deliveries occur in a medical facility. Differences in delivery care based on the mother's background factors reveal that women from rural areas and those with lower levels of education had lower odds than other women of receiving trained provider support during delivery and of giving birth in a medical institution. For instance, mums in urban areas are far more likely (67%) than mothers in rural areas (23%) to receive support from a qualified practitioner during childbirth. The probability of obtaining support from a proficient healthcare practitioner during childbirth also rises significantly based on the mother's educational attainment; this percentage rises from 12% for mums with no education to 93% for mothers with at least secondary school (NBS, 2013). These figures are staggering. They not only demonstrate the extreme disparity in health outcomes, but also the appalling condition of Nigeria's public health. Therefore, the purpose of this study is to investigate the factors that influence healthcare spending that is paid for out of pocket in Nigeria's South-South Geopolitical Zone.

Literature Review

Edeh (2022) examined the proportion of families that experience catastrophic health expenses was calculated and compared using the fixed percentage and rank-dependent

thresholds, which explored dynamics in catastrophic health care cost in Nigeria. The factors linked to catastrophic health costs were examined using the logistic regression model. The study's conclusions suggest that reducing the gap in economic status between families and boosting insurance coverage are essential steps in lowering the likelihood that Nigeria's impoverished would have to face catastrophic medical costs. The factors influencing Kenyan health insurance system selection were investigated by Kiplagat et al. (2013). They demonstrated that household size, employment status, wealth index, and education level are significant factors in determining health insurance ownership and choice, and that many people are prevented from enrolling in health insurance plans due to a lack of awareness by using a multinomial logit model on the Kenya Demographic Health Survey (KDHS) for the years 2008–2009.

In their 2014 study, Odoh and Nduka looked at the factors that affected public health spending in Nigeria from 1977 to 2008. They demonstrated the cointegration of the following variables: population under the age of fifteen, death rate for children under five, per capita income, per capita health care spending, petroleum prices, and changes in government regimes. They also demonstrated the income inelasticity and positive correlation between public health care spending and GDP, suggesting that health care is a need rather than a luxury in Nigeria and that the military administration spends 75.59% less on health care than the civilian government. The authors arrived at the conclusion that civilian governance is more people-oriented and attentive to the healthcare requirements of the populace. They also found that government action, both direct and indirect, is necessary to enhance Nigerians' health.

Using information from the 2010 national harmonised living standard survey, Apere and Karimo (2014) investigated the factors influencing out-of-pocket healthcare costs in Nigeria's south-south geopolitical zone. The study indicates that a person's likelihood of paying out-of-pocket for healthcare is determined by a combination of factors including state of residency, adult equivalent weight, family size, age of the household head, per capita consumption expenditure, and adult consumption expenditure. This is based on the Heckman selection two-step model.

The factors influencing Gweru Urban Zimbabweans' involvement in health insurance were studied by Mhere (2013). He demonstrated, with the application of a probit model, that membership in health insurance schemes is significantly predicted by the household head's age, family size, education level, and presence of chronic conditions. In 31 chosen low-, middle-, and high-income nations, Hopkins (2010) compared the total health expenditures and the contributions of the public and private sectors. According to the data, governmental spending in all three categories of nations is more focused on curative treatment than on medicines, whereas low- and middle-income countries rely more on household out-of-pocket expenses.

Chen et al. (2012) investigated how Taiwanese patients decide which medical services to get, how cost affects these decisions, and what cost-cutting measures they take. 40 people

were gathered for nine focus groups, which included hypertensive patients from various levels of healthcare institutions (community, regional, and medical centres) in the Kao-Ping region of southern Taiwan. The three main reasons that participants visited various medical facilities were the reputation of the physicians, hospital levels, and the ease of registration and transportation. It was also found that participants could afford the present out-of-pocket expenditure and that this was not as significant as other factors in their decision-making. Patients who visited higher levels of medical institutions were thought to benefit financially from continuous prescription. They come to the conclusion that people with hypertension can afford the present out-of-pocket cost.

In order to assess if Nigerian families' out-of-pocket healthcare costs are catastrophic, Uzochukwu and Uju (2012) examined the data. By using intensity and incidence methods, they were able to demonstrate that 24% of Nigerian households experience catastrophic health expenditures. This problem was found to be more common among Nigeria's richest income quintiles, and as a result, most households that were previously on or above the poverty line saw their situation change to one of poverty. The factors that influence Iran's unexpected healthcare spending were studied by Abolhallaje et al. (2012). Using information from household expenditure surveys, they examined the proportions of household spending on major categories of goods and services in urban and rural regions as well as in groups of deciles. Both the out-of-pocket payment rate and the overall health spending rate were almost identical. Liu et al. (2003) investigated the relationship between healthcare spending and the number of people living in poverty in several rural areas of China using data from the 1998 China National Health Services Survey. They demonstrated that the proportion of rural households living below the poverty line rose by 44.3% as a result of out-of-pocket healthcare expenses.

In order to characterise the association between health care finance, health facility utilisation, and health outcome in Nigeria, Riman and Akpan (2012) used a multivariate analytical technique. They concentrated on women who were of reproductive age and had given birth to a child at least once in the previous five years. In the Nigerian state of Cross River, two rural and one urban local government area were included in the study using the stratified sample approach. The research findings indicate that there exists a correlation between elevated rates of newborn mortality and illness and a high frequency of out-of-pocket payments, as well as significant disparities and inequality in income distribution. Not insignificantly, the study also revealed a lopsided difference in the geographical distribution of health facilities, with a greater percentage of these facilities in urban rather than rural regions, which naturally led to low need for services. The United Republic of Tanzania's adult population's out-of-pocket health expenditures were examined by Brinda et al. (2014). Additionally, they looked into the frequency and related factors of household catastrophic healthcare costs. They demonstrated that age, gender, obesity, functional impairment, and visits to traditional healers were the main factors of out-of-pocket healthcare expenditures using multiple generalised linear and logistic regression models. Large households, the head of the household working as a manual labourer, chronically ill family members, violence against women in the home, and visits

from traditional healers were also linked to high catastrophic health costs in the United Republic of Tanzania.

Methodology

Area of Study

Nigeria is divided into six geopolitical zones, one of which is the South South (often hyphenated as South-South). It refers to a section of the eastern coast of the nation that is both geographical and political. Akwa Ibom, Bayelsa, Cross River, Delta, Edo, and Rivers are its six constituent states. From the Bight of Benin coast in the west to the Bight of Bonny coast in the east, the zone spans along the Atlantic coast. Much of the Niger Delta, which is essential to the region's ecology and economic growth, is enclosed by it. Geographically speaking, the zone is split by the mangroves of Central Africa in the coastal far south, while the main inland ecoregions include the Nigerian lowland forests, the Niger Delta swamp forests, the Cross-Sanaga-Bioko coastal forests, and the Cross-Niger transition woods, which are arranged from east to west. Despite making up just around 5% of Nigeria's total area, the South South's substantial oil and natural gas deposits enable it to make a significant economic contribution to the country. With two of the largest oil refineries situated there—one in Warri, Delta State, and the other in Eleme, a local government unit in Rivers State. With over 26 million residents, the zone makes up 12% of the nation's total population.

Nature and Source of Data

The National Living Standard Survey (NLSS) of Nigerian homes, which was conducted between 2018 and 2019, provided secondary data for this study. The Federal Capital Territory as well as the six geopolitical zones (36 states) were included in the poll. In all, 34,900 houses nationwide and 1204 in the South-South geopolitical zone were served. The 1204 households in the zone were the subject of this investigation.

Model of the Study

People in impoverished nations typically only seek medical assistance when they believe they are unwell, and as a result, they may only spend money on their health when they really are ill and seek medical help. Individuals who claim being ill but did not seek medical attention or those who did not record seeking care incur no costs. Individuals who report unwell and seek medical treatment will incur different costs according to their disease. As a result, a big cluster at zero (0) and a right-skewed distribution of the remaining observations are frequently seen in healthcare spending data. In these situations, the conventional OLS is insufficient. The coefficients in the healthcare expense equation will be skewed if there are unobserved variables that are connected with the person's sense of disease and healthcare costs (Rous and Hotchkiss, 2003). Therefore, in order to account for sample selection bias, this study used the "Heckman two step" selection model. The Heckman selection model postulates that healthcare spending and its variables have the following underlying relationship.

Where: y_j is healthcare expenditure of the j^{th} household; X_j is health expenditure covariates and u_{ij} is the error term.

$$y_j = x_j\beta + u_{1j} \quad . \quad . \quad . \quad (1)$$

Spending on healthcare isn't usually tracked, though. Instead, it is noticed when a household member becomes ill and needs medical attention. Therefore, only when the following selection equation applies is healthcare spending seen.

$$z_j\gamma + u_{2j} > 0 \quad . \quad . \quad . \quad (2)$$

Where:

$$u_1 \sim N(0, \sigma)$$
$$u_2 \sim N(0, 1)$$
$$corr(u_1, u_2) = \rho$$

when conventional regression methods are used on (1), skewed outcomes will occur. Heckman offers asymptotically efficient, consistent estimates for every parameter in these kinds of models.

Discussion of Results

Table 1: Heckman Selection two-step Model estimates

	Healhtexp	Coef.	Stan. err	Z	p>|z|
Regression					
	Bayelsa	-77252.57	94191.85	-0.82016	0.215
	Cross-rivers	-13944.55	27945.42	-0.49899	0.524
	Delta	28543.18	24158.41	1.18150	0.810
	Edo	50421.54	120456.1	0.41859	0.881
	Rivers	312501.19	472105.2	0.66193	0.941
	Age	-52860	19929.12	-2.6527	0.001
	Age2	621.3015	153.3169	-4.0524	0.000
	Hldsize	1586470.7	305007.8	5.20141	0.000
	Hidsize2	-256812.73	41122.27	-6.2451	0.000
	Pxpdr	2.871325	0.576328	4.98210	0.000
	Constant	397452.2	412950.2	0.96247	0.451
Selection					
	Bayelsa	0.100850	0.14531	0.69402	0.248
	Cross-rivers	0.119549	0.05176	2.30967	0.022
	Delta	-0.647833	0.20081	-3.22595	0.001
	Edo	-0.159249	0.04071	-3.91214	0.000
	Rivers	-0.956484	0.35653	-2.68278	0.021
	Age	0.024329	0.00818	2.97440	0.001
	Hldsize	0.341656	0.10158	3.36342	0.001
	Pxpdr	0.102636	2.54613	4.31058	0.000
	Fa_adq	-0.311555	0.15507	-2.00914	0.041
	Constant	-5.783670	2.28866	-2.52709	0.023
Millls	Lambda	-211472.5	178992.5	-1.18146	0.119
	Rho	-0.667161			
	Sigma	421862.2			
	Lambda	-211472.5			
Number of observations		1204			
Cencored observations		684			
Uncencored observations		520			
Wald Chi2(10)		421.31			
Prob > chi2		0.0000			

Source: Author's Computation

According to the results, families in the states of Bayelsa and Cross-Rivers have a higher likelihood than those in Akwa-Ibom of having to pay for healthcare out of pocket (to be selected). Families in the states of Delta, Edo, and Rivers are less likely than those in Akwa-Ibom to have to pay for healthcare out of pocket. Additionally, older-headed households with bigger families and greater per capita consumption expenditures are more likely to have to pay for healthcare out of pocket (to be picked); on the other hand, households with higher adult equivalent scales are less likely to be selected. With the exception of the Bayelsa State dummy, which was statistically not significant at all, all of these variables were significant at least at the 5 percent level. The following were the findings of the regression analysis. Considering that a household member becomes ill and

needs medical attention, while households in Delta, Edo, and Rivers states spend N28,543.18, N50,421.54, and N312,501.19 more on healthcare than families in the other States. Households in Bayelsa and Cross-River states spend N77,252.57 and N13,944.55 less than households in the other States. Additionally, older adults headed families spend N52,860 less on healthcare as long as they are under the age criterion of around 50 years. Larger families pay, on average, N1,586,470.7 more on healthcare out of their own pockets, as long as they do not exceed the threshold of 7 persons.

Additionally, the out-of-pocket cost of healthcare is N2.87 higher in households with higher per capita consumption expenditures. With the exception of the state dummies, which were statistically not significant at all, every variable was statistically significant at the 1 percent level. The findings suggest that in the south-south geopolitical zone of Nigeria, the primary factors influencing out-of-pocket health expenses are age, household size, and per capita consumer spending. People's health may decline as they become older and closer to retirement. As a result, as they get older, they spend more money on healthcare to address age-related health problems. Additionally, a family that has more than seven individuals is less able to take care of each other's health since they are more likely to spend their money on other consumer items in order to satisfy their fundamental demand for food. Additionally, healthcare is a standard good in the area, with homes that spend more on it since they can afford to, whereas the impoverished have less money to spare. This indicates that individuals desire to spend more on their health when their wealth rises. These are important policy concerns. The Heckman model is appropriate for the investigation, according to further data that revealed the absolute rho value to be smaller than unity. In addition, 684 of the 1204 people who were sampled had no out-of-pocket medical expenses; these individuals were censored, whereas the others who spent varied amounts on healthcare were not. At the 1 percent level, a Wald chi-square statistic of 421.31 is statistically significant due to its probability value of 0.0000. This suggests that the model is reliable and suitable for policy analysis since it demonstrates that the explanatory variables sufficiently captured differences in out-of-pocket healthcare expenditure and that the model as a whole is statistically significant.

Conclusion and Recommendations

This study comes to the conclusion that a person's likelihood of paying for their own medical treatment depends on a number of geographic factors, including the state in which they live, the age of the head of the household, the size of the family, the per capita consumption expenditure, and their adult equivalent weight. In addition, the factors that affect how much a person must pay out-of-pocket for healthcare when they get ill and seek medical attention include age, age squared, household size, household size squared, and per capita consumption expenditure, which is a proxy for per capita income. While households with more than seven individuals have less money to spare and so spend less on healthcare to be able to satisfy other fundamental requirements, elderly people (those over 50) spend more of their own money on healthcare. The fact that healthcare costs were shown to be income elastic further demonstrated the normalcy of healthcare in the zone. These highlight the necessity of a health insurance programme that is more focused on individuals.

Based on the data, this study suggests that all families in the zone have access to a complete health insurance programme, regardless of where they live. Governmental organisations and private businesses should be urged to implement comprehensive and mandatory health insurance programmes for their staff members. Since not every member of the programme will require substantial medical care at the same time, this will aid in risk sharing in situations involving serious health issues.

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