Abuja Journal of Economics & Allied Fields, Vol. 8(4), Dec., 2018
Print ISSN: 2672-4375; Online ISSN: 2672-4324

Exploring the Determinants of Out- of- Pocket Expenditure on Healthcare in Kaduna Metropolis, Nigeria: Evidence from a Household Survey

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Abstract

The objective of this paper is to explore the determinants of out- of- pocket spending from the analysis of households in Kaduna Metropolis, Nigeria. Using a logit model of regression approach and a sample of 225 households in the study area. The paper however, found evidence to suggest cost of patient's admission due to illness, quality of health care services, households' income, costs of drug due to illness and pattern of disease have positive and significant influence on how the out- of- pocket expenditure impacted on health care services in Kaduna Metropolis, Nigeria. The results also suggest that free health care services, social health insurance have a negative and significant influence on how out- of- pocket expenditure impacted on health care services in the study area. Based on these findings, it is obvious that there is a need to reduce the magnitude of disease occurrence in the study area. The cost of drug owing to payment for health care services and inadequate social insurance can be minimized by improving access to free health care services and increasing health care financing. This will reduce the burden of out- of- pocket spending and the level of health care service delivery will also increase. More so, there is also the need for government to regulate the activities of health care providers thereby enhancing and improving health financing through social health insurance like NHIS.

Keywords: Out- of- Pocket; Health Care; Microenterprises; Logit Model; Kaduna Metropolis; Nigeria.
JEL Codes: I12

1. Introduction

Over the years, the expenditure on healthcare is one of the critical topics being discussed in most of the literatures in health economics not only in developing countries buy also in developed economies. Health care financing in many countries of the world is still characterized by the dominance of out-of-pocket (OOP) expenditures and the inadequate prepayment policy such as social health insurance. This is owing to the fact that most of the households in such nations do not have full health insurance coverage thereby compel to incurring of huge medical expenditures whenever a household falls ill. Several studies have shown economic consequences of health hazards across different economies to review public policies on healthcare system. The Health policies are thus not only concerned with improving health status of population but also to protect households from financial catastrophe of illness (Peters *et al.*, 2002).

However, health is consider as an important variable in economic discourse as an essential input for sustainable economic growth and development. Studies such as Collins (2015) opined that healthy citizens directly result in economic growth as they are available to conduct effective activities in the workforce. World Health Organization (WHO, 2005) report also indicates it is possible for health to affect economic growth directly through labour productivity and the economic burden of illness. All these arguments are strongly backed by labour productivity hypothesis which suggests individuals who are healthier have higher returns to labour input than those without. More so, impairments in household's Health could seriously affect consumption and severely disrupt household welfare for more serious and chronic illnesses. Some studies examining out-of-pocket (OOP) healthcare expenditure at household level and conclude that (OOP) healthcare spending have an effect that can lead to poor health on economic wellbeing of

household. This formed a growing consensus in which OOP spending in the healthcare system has considered to be a significant mechanism towards impoverishing several households in developing economies such as Nigeria.

One of the most important factors in determining the quality of human capital and as well for promoting economic growth is health. Bukenya, (2009) healthcare expenditure can be credited to prolong life expectancy, reducing morbidity, and reducing infant mortality rates. Therefore, greater private health spending in form of out- of- pocket expenditure is capable of provoking disease epidemics and declining productivity. On the basis of this evidence, this study will model out- of-pocket expenditure at household level to examine an insight towards assessing the policy implication on private healthcare expenditure.

The objective of this paper is to examine the determinants of out- of- pocket (OOP) health care expenditure of households in Kaduna Metropolis, Nigeria. This study is motivated by the fact that despite the importance of health in human existence, only few or little studies were conducted on the measurement of households' out- of- pocket expenditure in health care. Therefore, this study aimed at contributing more to the literature in this area of research and reference for policy making in this area of study.

After the introduction, the rest of the paper is structured to include the second section which is the review of related literature. The third, is the methodology of the paper while the fourth part discusses the empirical results and findings and the last section was the conclusions and recommendations.

2. Review of Related Literature

Several literatures have examined the relationship between health expenditure and economic growth using various approaches and models. Kabuga and Aliyu (2017) investigated the dynamic effect of health care expenditure on economic growth in Nigeria for time series data covering the period 1986 to 2016. Using the bound testing for cointegration approach, the paper found evidence to suggest existence of long run cointegration between total healthcare spending, human capital, demographic changes and economic growth within the study period in Nigeria. The study also used Autoregressive Distributed Lag (ARDL) technique to test for short and long run parameter estimates and the paper find evidence to suggest total healthcare spending is negatively related to economic growth in the short run but positive related to economic growth in the long run. The paper also found that the parameters of total health spending are statistically insignificant in both short and long run level of analysis and the findings suggest policy makers should pay more attention to improve health care system and health status of the population so as to raise labour productivity and output level of the economy.

Other studies also used such approaches like bivariate or multivariate time series regressions for individual countries, and cross-section or panel data regression for regional or sub-regional countries to examine health care expenditure and economic growth. The country-specific study of Kurt (2015), assessed the direct and indirect effects of health expenditure on economic growth using Feder-Ram model though did not test for order of integration of each variable used in the series to check spurious correlation. The result of the finding indicated a direct impact of government health expenditure on economic in Turkey being positive and significant and its impact is negative and significant. But as the proxy for efficiency is added in the model, the study revealed that as not very significance differences occurred between government health sector and other sectors, the government health sector tends to be slightly more efficient. Moreover, Nasiru and Usman (2012) while employing an ARDL bounds testing approach found that long-run relationship exist between healthcare expenditures and economic growth. In using Granger causality test, they indicate a strong bidirectional relationship between health expenditures and economic growth though, they do not draw any inferences for the robustness of their elasticity estimates.

Some studies have also been conducted to assess the determinants of out- of- pocket (OOP) expenditure on health care in developing countries. Amakom and Ezenekwe (2012) analysed the implications of households catastrophic out of pocket (OOP) healthcare spending in Nigeria, using intensity and incidence methods, the findings of the study revealed that 24% of Nigerian households incurred catastrophic health expenditure and was more prevalent among the richest quintile in Nigeria thereby succeeded in changing the poverty level of most of the households to the lowest. The study

recommended expansion of social health insurance through National Health Insurance Scheme, ensure universal access and the provision of financial protection to the poor and vulnerable.

On the other hand, Bakare and Sanmi (2011) examined the relationship between health care expenditures and economic growth in Nigeria. Using Ordinary Least Square (OLS) method without checking for unit root the result revealed a significant relationship between health expenditures and economic growth. The study failed to indicate whether health care is a luxury good or necessity. While, Sulki and Cancer (2011) employed the use of a multivariate cointegration techniques for a series of data that include per capita GDP, per capita health expenditure and population in Turkey covering a period of 1984 to 2006, and find aggregate healthcare expenditure as less than one, but private health care expenditure is greater than one.

Also, Bukenya (2009) attempted to assess the level of potential non-stationarity of data by checking for the property of the data series used. However, in testing for unit root using Augmented Dickey Fuller (ADF), the study did not reveal the co- integration of the data used. As such, the author applied time series VAR approach to investigate possible dynamic relations between health care and economic growth in United States levels. Impulse response was therefore employed ascertain the positive relationship between personal health care expenditure changes and economic growth.

Other studies were also conducted using panel data analysis to determine income as the most significant factor in explaining the differences in the level and growth of total expenditures across various countries. Mehrara et al. (2012) assessed the relationship between health expenditures and economic growth for a sample of 13 Middle-East and North-African (MENA) countries using data covering the period of 1995 to 2005. The results of this findings provide a clue to conclude that the share of health expenditures to GDP decreases with economic growth. The results therefore suggest that health care is not considered a luxury good in MENA countries.

In contrast, Xu and Saksena (2011) and Baltagi and Moscone (2010), Dreger and Reimers (2005) employed a panel study of 21 countries in OECD covering the period of 1975 to 2001 to study the relationship between health care expenditures and GDP. The results of their findings were in consonance with a long run equilibrium relationship among health expenditures, GDP per capita and a proxy for medical progress therefore, suggests health care as a luxury good.

3. METHODOLOGY

Study Area and Methods

This study was conducted in Kaduna Metropolis, Nigeria. The Metropolis lies between latitudes $10^0$25'28" to $10^0$35'53" North of the equator and between longitudes, 7^0 21'49 to 7^0 30'00" East of the Greenwich Meridian. The study area covers almost 269.42km^2 consisting three local government areas of Chukun, Kaduna South and Kaduna North.

This research was carried out for about two periods whereby the first survey was conducted between October and November 2017 while the second study was conducted between July and August 2018 in order to increase the sample size of the study from the previous 180 to 275 households within the five Local Government Areas of Kaduna South, Kaduna North, Chukun, Doka, and Igabi.

Sampling Technique and Sample Size

This study used a multi-stage sampling method to select the sample respondents. The first stage involves stratification of the study area into eight local governments as units of sampling according to their geographical location in Kaduna. The second stage of sampling was the purposely selection of five local government areas (LGAs), namely, Kaduna South, Kaduna North, Chukun, Doka, and Igabi due to the nature of health care demand in the areas. Lastly, the study also randomly selected about 45 sample households from each LGAs to ensure equal representation of the entire population. The procedure however gives a total sample of 225 households in the selected 5 LGAs areas. Hence, this study employed a structured questionnaire to generate data.

Model Specification

Following Kabuga, Takuti and Ahmad (2018), this study used a logistic regression model to assess the determinants of out- of- pocket expenditure. The study employed the model because it is assumed the probability of whether out- of- pocket spending impacted on households' health care expenditure in Kaduna Metropolis or not. The model can however be expressed as follows:

$$\gamma_i = \beta_0 + \beta_1\chi_1 + \beta_2\chi_2 + \beta_3\chi_3 + \beta_4\chi_4 + \beta_5\chi_5 + \beta_6\chi_6 + \beta_7\chi_7 + \upsilon_i \quad (1)$$

Table 1: Definition of Variables used in the study

Variables	Types	Description
Y_i	Binary	If out- of- pocket expenditure impacted on the households' health care spending 1, if otherwise 0.
x_1	Continuous	Cost of patient's admission due to illness (per day)
x_2	Categorical	Quality of health care services
x_3	Continuous	Households' income
x_4	Continuous	Costs of drug due to illness
x_5	Continuous	Pattern of disease
x_6	Continuous	Free health care services
x_7	Continuous	Social health insurance

Source: Author's computation 2019

Variable Measurement

Dependent variable: This is measured as out- of- pocket expenditure which may have impacted on the health care services of households in Kaduna Metropolis, Nigeria. It is defined in binary form (Yes =1, No = 0), implies that If the out- of- pocket impacted on the health care spending of households then represented by 1, if otherwise 0.

Independent Variables: This paper used numerous or multiple independent variables to explain the feature of the dependent variable which are measured as follows:

Cost of patient's admission due to illness: this is a continuous variable and it is used to measure the amount to be paid by patients while on admission for certain illness. This is usually counted per day spent on admission.

Quality of health care services: the variable is a categorical one and was measured with aid of a Likert scale such as; excellent, very good, good, fair and poor.

Household's income: this is also a continuous variable, measured in Naira. The households were asked to state their monthly earnings to be compared with what was spend for health care services.

Costs of drug due to illness: it is a continuous variable and measured in monetary terms. The households were asked to state the amount required to spent on drug while on illness.

Pattern of diseases: this variable is also a continuous variable. It measured the type and magnitude of illness per period of time. The households were asked to state the type of illness they had in a recent period.

Free health care services: it is considered a continuous variable. It measured the type of health care delivery without making payment for it. The households were asked to state whether they enjoy any free health care service in the study area.

Social health insurance: it is a continuous variable. It measured the level of social health insurance package purchased by households. The respondents were asked to state whether they were covered by any health insurance package.

4 Results and Discussion

The study started by analysing the descriptive statistics of the respondent as indicated in Table 2. The results showed that on average, most (47.55%) of the households who bear the burden of out- of-pocket expenditure on health care services fall within the age bracket of 36-45, meaning the households are likely to be at their productive age. The study also revealed that majority (63.56%) of the households are males and most of them (68%) are married. Moreover, the result also suggests that most of households (45.33%) have at least secondary school education and majority of them (46.22%) are self-employed.

Table 2: Descriptive Statistics

Variables	Frequency	Percentage
Age		
18-25	15	6.67
26- 35	33	14.67
36- 45	107	47.55
46-55	48	21.33
>55	22	9.78
Gender		
Male	143	63.56
Female	82	36.44
Marital Status		
Married	153	68.00
Single	72	32.00
Level of Education		
Tertiary education	65	28.89
Secondary education	102	45.33
Primary education	33	14.67
Others	25	11.11
Occupation		
Employees	85	37.78
Self employed	104	46.22
Unemployed	36	16.00

Source: Field Work, (2019)

This study reported in table 4 a logistic regression model for the forecasting of the dependent variables from the independent variable. The model is however based on the binary outcome modelling where the interest is mostly on an odd ratio or marginal effect in with respect to the explanatory variables and not the sign of the coefficient as indicated in table 4.

Table 3: Estimated Regression Coefficients

Variables	Logit	Marginal effect
Cost of patient's admission due to illness	0.343***	0.054
	(0.098)	(0.021)
Quality of health care services	0.440***	0.217
	(0.220)	(0.094)
Households' income	0.788***	0.691
	(0.331)	(0.252)
Costs of drug due to illness	1.053***	1.221
	(0.473)	(0.352)
Pattern of disease	-1.322***	1.051
	(0.621)	(0.497)
Free health care services	-0.749***	0.484
	(0.321)	(0.201)
Social health insurance	2.642***	1.427
	(1.214)	(0.672)
Constant	2.392***	
	(1.012)	
Number of obs = 225		
LR chi2(7) =122.72		
Prob > chi2 = 0.0000		
Pseudo R2 = 0.3734		
Log likelihood = -42.54236		

*Source: Researchers' computation (2019) using STATA 15. Figures in parenthesis are standard errors. The asterisks are p-values, implying ***significant at 1%, **significant at 5% and *significant at 10%.*

From table 3, the study finds a strong evidence to suggest existence of a significant relationship between the cost of patient's admission due to illness (per day) and how out- of- pocket expenditure impacted on household's health care services. The finding suggests that as the cost of patient's admission due to illness (per day) increase there is a likelihood that the out- of- pocket spending by households impacted on health care services in the study area. The finding indicates the probability that, ceteris paribus, as cost of patient's admission due to illness increases per day, the impact of out- of- pocket expenditure on household increases by approximately 0.054%.

The finding also reported that after controlling all other variables, quality of health care services is significant and positively related to how the out- of- pocket expenditure impacted on household's health care spending. The marginal effect suggests that the probability of out- of- pocket spending impacting on health care service increases by 0.22% as the quality of health care services by 1%.

The estimated result also indicates that households' income is significant and positively related to how the out- of- pocket expenditure impacted on health care services. While, the marginal effect suggests there is every probability that as the percentage of households' income increase by 1%, the impact of out- of- pocket expenditure on households' health care expenditure increases by approximately 0.7%.

It is also reported that an increase in the costs of drug due to illness is likely to have a significant effect on how the out- of- pocket expenditure impacted on household's health care spending. However, the finding suggests that an increase in the costs of drug due to illness is likely to have a significant impact on the health care spending of the households in Kaduna Metropolis. The marginal effect suggests that after holding all other variables constant, as costs of drug due to illness, there is every probability that the impact of out- of- pocket expenditure on health care expenditure increases by approximately 1.22%.

It is also shown in table 3 that, there are an inverse and significant relationship between the pattern of disease when households are subjected to out- of- pocket spending for a given type of disease and how it impacted on the health care expenditure in the study area. This suggests that as the pattern of disease changes for at least one hour per day, the probability of how the out- of- pocket expenditure impacted on households are likely to decreases by at least 1.1%. Interestingly, the findings in table 4 also indicates that, it is evident that as free health care services increase by one day, the probability of out- of- pocket expenditure impacting on the household's health care spending decreases by at least 0.5%.

The table 3 also revealed a significant and positive relationship between the social health insurance and how the out- of- pocket expenditure impacted on household's health care expenditure. The findings from the result indicates that the relationship is positive as the social health insurance increases, there is likelihood that the impact of out- of- pocket expenditure on health care services will also increase. The marginal effect suggests that as the social health insurance increases by one percent, the probability of how out- of- pocket expenditure impacted on health care services increases by at least 1.4%.

5. Conclusions

The objective of this paper is to explore the determinants of out- of- pocket expenditure on health care services of households. The paper however, used logit regression model and found evidence to suggest cost of patient's admission due to illness, quality of health care services, households' income, costs of drug due to illness and pattern of disease have positive and significant influence on how the out- of- pocket expenditure impacted on health care services in Kaduna Metropolis, Nigeria. The results also suggest that free health care services, social health insurance have a negative and significant influence on how out- of- pocket expenditure impacted on health care services in the study area.

Based on these findings, it is obvious that there is a need to reduce the magnitude of disease occurrence in the study area. The cost of drug owing to payment for health care services and inadequate social insurance can be minimized by improving access to free health care services and increasing health care

financing. This will reduce the burden of out- of-pocket spending and the level of health care service delivery will also increase. More so, there is also the need for government to regulate the activities of health care providers thereby enhancing and improving health financing through social health insurance such as National Health Insurance Scheme.

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