

Equity in Health Care Expenditure in Nigeria

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Abstract

Equity is one of the basic principles of health systems and features explicitly in the Nigerian health financing policy. Despite acclaimed commitment to the implementation of this policy through various pro-poor health programmes and interventions, the level of inequity in health status and access to basic health care interventions remain high. This paper examines the equity of health care expenditure by individuals in Nigeria. The paper evaluated equity in out-of-pocket spending (OOP) for the country and separately for the six geopolitical zones of the country. The methodological framework rests on Kakwani Progressivity Indices (KPIs), Reynold-Smolensky indices and concentration indices (CIs) using data from the 2004 Nigerian National Living Standard Survey (NLSS) collected by the National Bureau of Statistic. The results reveal that health financing is regressive with the incidence disproportionately resting on poor households with about 70% of the total expenditure on health being financed through out-of-pocket payments by households. Poor households are prone to bear most of the expenses in the event of any health shock. The catastrophic consequences thus push some into poverty, and aggravate the poverty of others. The paper therefore suggests that the country's health financing systems must be such that allows people to access services when they are needed, but must also protect household, from financial catastrophe, by reducing OOP spending through risk pooling and prepayment schemes within the health system.

Keywords: Equity, Health care expenditure, Health Financing, Out-Of-Pocket Health payment.

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1. Introduction

The link between health status and economic progress has been well documented in several literatures. Health is an important determinant of factor productivity and economic growth and countries with high health status are often associated with good economic performance. However, unequal access to good health care has been identified as a major factor limiting the health care status in many developing countries. These can be physical or financial access. In developing countries, financial access to healthcare becomes important as many poor persons do not have enough resources to seek for adequate health care. This raises concern about equity in health care delivery. Studies on equity rest on the premise that health care ought to be distributed according to need rather than willingness and ability to pay (Cuyler, 2001).

Unfortunately, inequalities between the poor and the better-off persist. The poor tend to suffer higher rates of mortality and morbidity than do the better-off. They often use health services less, despite having higher levels of need and notwithstanding their lower levels of utilization, the poor often spend more on health care as a share of income than the better-off. Indeed, some non-poor households may be made poor precisely because of health shocks that necessitate out-of-pocket spending on health. If universal access to health care is an objective of development, then inequalities in health must be resolved. Health and health care are integral to people's capability to function and determine their ability (Sen, 2002).

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The structure of financing of health care services can be associated with multiple adverse effects on household living standards these include severely threaten their income sufficiency; disrupt their positions in the socioeconomic hierarchy, thus exacerbate overall inequalities in the distribution of income (Van Doorslaer, 1999). It must be noted that the public component of total health expenditure are important contributors to improved health outcomes (Anyanwu and Erhijakpor, 2007). During the past decade the health indicators for Nigeria such as child mortality and life expectancy have worsened. One million Nigerian children under five years of age die annually, the main cause of death in children under five are attributed to neonatal causes, communicable diseases, malaria and pneumonia (National Bureau of statistics, 2006). Life expectancy was age 42 years for women and 41 years for men (World Health organisation Report, 2003) by the year 2000, life expectancy for men was 47 years and by 2008 it rose to 49 years. For females it was 48 years and by 2008 it rose to 49 years (World Health Statistics, 2010). An estimated 3.5 million Nigerians are infected with HIV and access to prevention, care and treatment is minimal see (Wright and Gaag, 2008). These poor health outcomes could be attributed to the low level of public spending on health services within the country.

Equity is one of the basic principles of health systems and features explicitly in the Nigerian health financing policy. Despite acclaimed commitment to the implementation of this policy through various pro-poor health programmes and interventions, the level of inequity in health status and access to basic health care interventions remain high. The burden of health-care financing in Nigeria lies mainly on individuals, with private expenditure equalling 70 percent of total health expenditure and out of pocket expenditure on health totalling 90 percent of private expenditure. The country has relatively high prepaid expenditure for its level of GDP but this hides the differences between the poor and non poor who are less likely to be insured and more vulnerable to health risk (Soyibo, 2009). It been observed that the poor households spend seven times more than the rich households on total per capita health expenditure (National Living Standard Survey 2003/2004). This raises concern that poor individuals needing hospital care are either not seeking care due to the prohibitive cost or are receiving care that may be considered substandard in terms of quality. The poor provision and delivery of public health services and the attendant user charges for almost every item of treatment in the public health system has encouraged the explosion of private medical practice in Nigeria. In some states private provision of health facilities constituted over 75 percent of total health facilities (Ichoku, 2005). Most of these are located in the urban areas (Ogunbekun et al, 1999). And their user fees are very expensive and unaffordable to those within the low income group.

Previous studies on equity carried out for Africa in general and Nigeria in particular have centred around the relationship between government expenditure and its effect on health outcomes, the relationship between Health expenditure, Health outcomes and poverty (Anyanwu and Erijakpor, 2000; Ichoku, and Fonta, 2006; Riman, 2000; Riman and Akpan, 2010; Mutangadura, 2000; Castro-Leal et al, 2000 and Ichoku, 2005). Equity-debate in general and particular in the context of Nigeria has been so far parochial in character; lacking coherent and detailed evidence, appropriate definitions and measures against which to evaluate and judge equity features which include the progressivity and the redistributive nature of the current health care financing and payment arrangements. It is therefore important to investigate health equity using a nationally representative household survey data with emphasis on the six geopolitical zones within the country. This study therefore utilises the NLSS (Nigerian living Standard Survey) to examine equity in health expenditure by employing the methodology of the Kakawani index and Reynold-Smolensky index in determining the progressivity and the redistribution impact of health care expenditure systems in Nigeria. Consequently, this paper investigates the level of equity in health care payments/expenditure in Nigeria. The second section presents the Nigerian health care system alongside a brief literature review. The third section presents the methods and data while the fourth section presents the empirical results on progressivity for the finance sources and financing system. The paper is concluded in Section five.

2. Brief Profile of Health and Health care Financing and Expenditure in Nigeria

Nigeria is a federation of one federal, 36 States and 774 local government areas. Each tier of the federation has its separate health assignment, functions and financing structure. All the tiers of government are therefore involved in health care financing. Over the years, local government areas have focused on primary health care while the States and federal government have focused on secondary and tertiary health care respectively.

Health services are provided by both private and public sectors. From private sector, there are non-governmental organization, private for-profit providers, community-based organization and religious and traditional care givers. Government assumes the responsibility of health service provision in public sector. The provision of health services in public sectors are at three levels namely the Primary, Secondary and Tertiary.

Given the governance structure, health care is financed by both the public and the private sector. Within the public sector, all the three levels of government are involved. Incidentally, government financing of health

expenditure has over the years contributed less than 20% of total health financing in the country while out of pocket financing have consistently been higher than 67 percent of total health financing in the country (Soyibo et al, 2009).

The expenditure pattern reveals that the budgetary allocation to health care in Nigeria is very low. In 1997, total expenditure on health as % of the GDP was 4.6% (Table 1). The figure rose to 6.6% in 2005 and latter fell to 5.8 in 2009. The actual total expenditure for 1997, 2001, 2005 and 2009 stood at 134,522, 256,283, 972,921 and 1,596,573 (in million naira), respectively. The figure is an indication of poor commitment of the nation to improved health provisions and deliveries. Of the total expenditure on health (THE), the available data shows that private expenditure constitutes higher proportion- more than 2 times of what government spent. Government expenditure on health (GGHE) was 23.5% and 36.3% of the total health expenditure in 1997 and 2009. However, for the same period, private expenditures (PvtHE) made up 76.5% and 63.7% of the total health expenditure.

Table 1: Indicators of Health Expenditure in Nigeria

	1997	2001	2005	2009
Total expenditure on health as % of GDP	4.6	5.2	6.6	5.8
External resources on health as % of THE	0.3	5.6	3.7	4.9
General government expenditure on health (GGHE) as % of THE	23.5	31.4	29.2	36.3
Private expenditure on health (PvtHE) as % of THE	76.5	68.6	70.8	63.7
GGHE as % of General government expenditure	7.1	3.2	6.4	6.4
Private insurance as % of PvtHE	2.8	6.5	3.1	3.1
Out of pocket expenditure as % of PvtHE	94.6	91.4	95.8	95.6
Total expenditure on health/capita at exchange rate	14	18	53	69
Total expenditure on health/capita at Purchasing Power Parity (NCU per US\$)	55	63	115	136
General government expenditure on health/ cap x-rate	3	6	15	25
General government expenditure on health/ capita at Purchasing Power Parity (NCU per US\$)	13	20	33	50

Source: <http://www.who.int/nha/country/nga/en/>

Allocations to health in the national budget is very insignificant and each of the 3-tier of government is made to take responsibility for its own health delivery, the federal government at the tertiary level, state government at secondary level and local government at primary level. In addition to low budget, there had been decrease in the proportion spent on health from the total government expenditure, from 7.1% that was spent on health in 1997 to 3.2% in 2001 before it rose marginally to 6.4% in 2009. Out of pocket expenditure constitutes the largest part of total private expenditure on health. It constituted about 94.6% of the total private expenditure on health (PvtHE) in 1997 and by 2009 it was 95.6% of the total private expenditure on health (PvtHE).

In terms of resource pooling for health financing, health Insurance contribute a small proportion of health care financing in the country. Although the law establishing the National Health Insurance Scheme was enacted in 1999, the scheme did not take off until the middle of 2005. As at 2001, less than 10 percent of Nigerians are still covered by the Scheme. Most of those covered by the scheme are federal government workers whose premium are even paid by the government and not the workers. There have been efforts at introducing the community based health insurance, but these efforts are still at its infancy.

3. Literature Review

Most studies on the measurement and explanation of equity in health payment with emphasis on progressivity and the distributional impact of health payments, state that there are two key variables which have to be included in the analysis. These are the measurement of living standard and the health payment variables(Out of pocket expenditure on health, Taxes, Private Insurance and Social Insurance) (Wagstaff and Van Doorslaer, 1992). In most equity studies the out of pocket expenditure has been identified as the most regressive form of health care payment.

Wagstaff and Van Doorslaer,(1992) comparative study conducted on the health care financing system of ten developed countries revealed that while taxes were a mildly regressive form of health care financing amongst households, considering the social insurance, private insurance and out of pocket payments, the out of pocket payment expenditure on health was the most regressive form of health care payments. Studies also have shown that horizontal equity is also more worrisome amongst the poor segment of the population than the rich. Evidence from the results obtained from Nigeria suggests that the current method of financing health is not achieving the objective of income redistribution. People finance their health care needs in proportion to their ability to pay for such services. The results further show that there exists a significant amount of horizontal equity (unequal health care payments by people in the same group) .The more worrisome scenario is that there seem a wider variability in payment among the lowest income bracket than among other income bracket with the exception of the highest income bracket (Ichoku, 2005).

The result from the study conducted by Ichoku and Fonta, (2006), on the distributional impact of health care financing in Nigeria, using Enugu State as a case study, revealed that high incidence of catastrophic healthcare financing existed in the population. Prior to introducing the policy makers' aversion to catastrophic spending among the poor, the incidence of catastrophic head count was about 29 percent, and at 5 percent level of significance, the threshold implied that 29 percent of household that financed healthcare within the period spent about 5 percent of their income for the purpose of healthcare. The paper showed further that healthcare spending was pro-rich and thus regressive in its redistributive effect, with the presence of vertical as well as horizontal inequalities. Hurst (1985), using the United States data and tabulation method showed that the proportion of income contributed to health care financing by the various income categories declined as one moved from the lowest to the highest income category. The result showed that there were substantial income redistributions which were pro-rich implying that the poor bore the greater burden of ill health and were more likely to make greater health payments.

Equity-debate in general, and in the context of Nigeria particular has been limited. This can be traced to the perception amongst economists that, since questions of equity are value-laden, research on them should be necessarily normative in character (Le Grand, 1999) and this has caused many economists to shy away from its' study. In their review of the status of research on equity, which has been undertaken by economists in developed countries up to the year 2000, most authors, whose research works constituted a major reference on the subject during the last two decades, have argue that while the question of what equity is all about is indeed a normative question, the questions of whether equity, defined in a specific sense, has been achieved, or has increased, or tends to be higher in one type of health care system than other, lie firmly within the realm of positive economics (Abu-Zahien,2009).

In the studies, on progressivity and the distributional analysis of health financing, there has been raging controversies on the appropriate methodology to be employed by authors ranging from the aggregation approach of (Shakarishvili, 2006) and Hurst (1985); the Kakwani index and Suit index of progressivity (Wagstaff and Van Doorslaer, 1992), and the disaggregate analysis (Abu-Zaineh, 2009). Those who are in support of the Aggregation approach which entails tabulation of health payments by income groups advocate that they are useful for determining the progressivity of health financing system changes within a country over a given period of time and the proportion of income spent on health by the household but critiques have labelled it inadequate for analyzing progressivity in the finance of health care. It has been observed that such tabulation do not enable one to answer the question of how much more (or less) progressive one system or source of finance is than the other. At best they can indicate whether a system is progressive, regressive or proportional (Wagstaff and Van Doorslaer, 1992). However, the aggregation methodology makes it impossible to determine whether a country has a more progressive or regressive health payment system (i.e out-of-pocket payment) relative to those of other countries. They also argue that it does not allow for comparative analysis of the progressivity of the health payment system within a country (Shakarishvili, 2006).

This led to the introduction of a more analytical approach in accessing the progressivity of health care financing system which involves employing progressivity indices such as the Kakwani index and suit index (Wagstaff et al, (1998). The Kakwani index of progressivity has been termed superior over the aggregation approach because it allows for cross country comparative analysis of the financing system progressivity and also allows for comparative analysis of progressivity of the health financing system with a country. Wagstaff and Van Doorslaer, (1992) in a comparative study conducted for ten countries employed the Kakwani and suit indices to measure the degree of progressivity both across countries and within the health financing system. In another study that examined whether health care reforms implemented in central and Eastern European countries throughout the 1990s and early 2000 have affected one of the most important aspect of the health system

precisely equity in its financing, the analysis of the progressivity of health care financing system were carried out using the Kakwani index (Shakarishvili, 2006).

However despite their current cardinal representation, there are other authors who advocate that an exclusive reliance on such summary measure of equity (i.e. Kakwani and suit indices of progressivity might not reveal the actual equity implications of health care financing across different groups of the population (Abu-zaihen, 2009). It's argued that the degree to which the progressive source of financing through pre-payment scheme are related to ability to pay (ATP) and thus the redistribution of income (from rich to poor) would not be clearly expressed. Using a single valued summary index would therefore lead to a masking effect, since it cannot tell us if, for instance, the observed weak (or insignificant), regressivity identified at the aggregate level was due to the low expenditure at low income levels; or if the observed progressivity identified overall was due to high proportion of income spent on health care by the better-off than the poor (Wagstaff, 2002).

Studies on the redistributive impact of health financing system have evolved from the use of simple tabulation method of Hurst (1985) to the use of more in depth analysis such as the Reynold-Smolensky (RS) index of redistribution (Lambert, 1993) and the Aronson-Johnson-Lambert method of decomposition (AJL). The proponent of the Aronson-Johnson-Lambert (AJL) argues that the Reynold-Smolensky measure of redistribution has a fundamental flaw underlining its assumption of lack of horizontal inequity. They argued that in practice this is not plausible because households at the same income level may vary widely in their healthcare payments due to the stochastic nature of illness thus horizontal inequity is more likely to be the norm than the exception. They also pointed out the problem of reranking which is not considered by the Reynold-Smolensky index. They observed that in many developing countries a common experience is that catastrophic health care payments may push an average income family below the poverty line behind families that it's ranked higher than before the illness. This reranking effect leads to people having different ranks in the pre- and post-payment periods (Ichoku, 2005; World Bank, 2001).

Another important issue that arises in the studies conducted on the progressivity and the redistribution impact of healthcare financing system is that the variables employed in the literature are described differently. This can be attributed to the peculiarity of the system for which the study was conducted. The estimation of progressivity and the redistributive impact of health care financing system requires the availability of appropriate information on two crucial variables: Standard of living as Proxy for Ability to Pay (ATP) and payments or contribution towards healthcare these include: out-of-pocket payment, taxes social insurance and private insurance.

In principle, the analysis of progressivity and distributional impact of health care finance requires examining all sources of health care funding and not only those payments that are made directly for health (Van Doorslaer, 1993). In the comparative study on equity in the finance of health care conducted for ten developed countries (Wagstaff and Van Doorslaer, 1992) four sources of finance were considered, these include; out-of-pocket payments, private insurance premium social insurance contribution and taxes. However most household survey data do not have complete information on all sources of funding or payments for health care in particular those on various tax payments (e.g. income tax, sales tax, etc) were usually not recorded in such type of survey, in such cases it's suggested that some approximation strategy be employed, for example the distribution of sales and excise tax burden can be estimated by applying product specific tax rate to disaggregated data on the pattern of household expenditure (Wagstaff et al, 1999).

4. Methodology

The theory utilised in this study draws from the public finance theory that health care should be financed according to ability to pay (Musgrave R.A and Musgrave P.B 2004). In order to examine how health care payments are linked to ability to pay, we sought to estimate indices of progressivity in health care payments. This simple approach of measuring progressivity of health payments involves calculating the health payments as a proportion of total income by the income group. The second approach involves comparing the share of total income received by each income decile, with the share that the deciles contribute to the population's health care payment. For this paper, the focus will be on the former analysis which involves calculating the proportion of total income spent on healthcare. Households are grouped into income deciles. Then, the average total income for each decile is computed and the average total out-of-pocket healthcare spending by each decile calculated. Finally, the percentage of the total income spent on healthcare by each decile is then determined. Two of the widely utilised measures are the Kakwani and Reynolds-Smolensky indices. Since the study deals with the measurement of equity in health expenditure, therefore the aggregation method will be employed to determine the proportion of total income spent by the poor and better-off households on health care. The Kakwani measurement progressivity will be used to determine and compare the level of progressivity in health payments.

To determine whether the health payment system creates vertical income redistribution, the Reynolds - Smolensky Methodology will be used to test for vertical income inequality.

4.1 Kakwani Measure of Progressivity (KPI)

The Kakwani Index of Progressivity assigns a numeric value to progressivity and thus permits comparative analysis of the health payments when a financing system is equitable the Kakwani Index is positive (with a maximum value of 1) and negative (with a maximum value of -2) when a financing system is inequitable. Proportionality is reflected in a Kakwani Index of 0. KPI summarises the extent to which the distribution of payments, LT, departs from proportionality. Proportionality being measured against the distribution of pre-payment income, LX and involves comparing the concentration index of payment, CT, with the Gini coefficient of income inequality, GX. The KPI is, thus, used as a summary measure of proportionality of payments vis-à-vis pre-payment income. The presence of disproportionality of payments on pre-payment income, implies that the former which is the health payment exert dis-equalising effects on the latter which is the income (Abu-Zaihen, 2009).

The Index can be illustrated graphically by two curves. One of the curves is the Lorenz curve (showing the degree of income inequality in a society) and the second is the payment concentration curve (indicating the cumulative proportion of the population, Ranked from the lowest to the highest income, in relation to the cumulative proportion of Healthcare payments). On the Kakwani graphs the vertical axis measures the cumulative proportion of income and payments, while the horizontal axis measures the cumulative proportion of the population. Thus, if the payment concentration curve lies above the Lorenz curve, one can conclude that the lower income brackets contribute a greater proportion of total healthcare financing than the proportion of income they receive, and that the system is therefore inequitable. If the concentration curve lies below the Lorenz curve, it indicates an equitable system. If the concentration curve lies on the Lorenz curve, it indicates direct proportionality. It is also possible for the financing curve to cross the Lorenz curve. This suggests that the financing system is mixed i.e. is regressive for some income groups and progressive for others. If the financing curve crosses the Lorenz curve, negative and positive values cancel each other out, and the overall index is ambiguous (Shakarishvili, 2006).

The Kakwani index is defined as twice the area between a payments' concentration curve and the Lorenz curve and is calculated as, $\pi K = C - G$, where C is the health payments concentration index, and G is the Gini coefficient of the ATP variable. Thus, for a given pre-payment income distribution, LX, and health care payments schedule, LT, the two summary indices can be defined and assessed mathematically as follows:

$$KPI = 2 \int_0^1 [Lx(r) - LT(r)] dr = CT - GX \dots \dots \dots (i)$$

4.2 Reynolds-Smolensky Index (RS)

The RS index is used to capture any potential modification in income-inequality that is induced by health care payments. This is measured through comparing the Gini coefficients of pre-payment income-inequality, GX, with the concentration index of post-payment income inequality, CX-T. Arithmetically, while the value of the RS index lies in ranges of (-1, 1) the KPI index is in the range of (-2, 1). A positive (negative) value of the indices for the RS index indicates a pro-poor (pro-rich) vertical redistribution effect of a payment scheme. Lastly, a zero value indicates proportionality, thus implying that the payment scheme does not have any impact on income-inequality. Thus, for a given pre-payment income distribution, LX, and health care payments schedule LX-T, the Reynolds-Smolensky redistribution index is defined as twice the area between the Lorenz curve for prepayment income LX and the concentration curve for the post payment income LX-T. This can be expressed mathematically as:

$$RS = 2 \int_0^1 [LX - T(r) - LX(r)] dr = GX - Cx - T \dots \dots \dots (ii)$$

4.3 Data Source

The information used in this study is based on findings from the Nigerian Living Standard Survey (NLSS) data collected by the National Bureau of Statistics (NBS)). The NLSS sample design is a two-stage stratified sampling. At the first stage, clusters of 120 housing units called Enumeration Area (EA) were randomly selected from each State and the Federal Capital Territory (FCT, Abuja). The second stage involved random selection of

5 housing units from the selected EAs. A total of 600 households were randomly chosen in each of the States and the FCT, summing up to 22,200 households in all (FOS, 2004). However, some households did not fully complete the questionnaires. Out of the 22,200 households that were targeted, only 19,158 completed the survey. Therefore, data were available only on 19,158 households made up of 14,512 rural and 4,646 urban households. The survey appropriately weighted the households in order to avoid biased estimates of the parameters. The data set provided detailed record on household expenditure (which was used as a proxy for household income) and household characteristics.

Two key variables that are required for the study are the ATP and the health care payments. In principle, the analysis of progressivity and distributional impact of health care finance requires examining each and all source(s) of health care funding, and not only those payments that are made directly or “exclusively” for health care. In the comparative work on equity in the finance of health care in the context of developed countries (Wagstaff et al, 1992) four sources of health care finance are usually considered, these include; in addition to out-of-pocket payments, social insurance contributions, private insurance premiums, and taxes (both direct and indirect). For this study the only health payments considered were the out-of-pocket payments, because there was no data on private insurance and earmarked taxes payments towards health in Nigeria, also the survey data did not contain information on social insurance payments

4.4 Empirical Result

The result for the study on equity in health expenditure were presented for Nigeria and the six geopolitical zones within the country namely the, North-East; North West; North Central; South East; South West and the South-South Zones. Tables 2 and 3 present the per capita total expenditure, per capita out-of-pocket payment and per capita out-of-pocket payment as a percentage of per capita total expenditure respectively.

The results of the profile of out of pocket health expenditure by individuals are presented in Tables 2 and 3. The results indicate that for the whole Nigeria an individual in the lowest income deciles spends 45 percent on out-of-pocket health payment (Table 3). The result from the fifth income decile showed that while N7619.25 was spent on the average 8.33 percent of this amount was spent as out-of-pocket health payment. Per capita total expenditure in the highest income decile was N85, 334.90 and only 2 percent of this sum was used to finance out of pocket health payment. In a similar vein, the result from table 3 revealed that an individual in the lowest three income deciles in Nigeria spent an average of 27.33 percent of their per capita total expenditure on out-of-pocket payments for health while those in the middle three income deciles and higher three income deciles on the average spend 6.41 percent and 2.96 percent respectively.

Table 2: Per Capita Out of Pocket Health Expenditure (N) by Geopolitical Regions of Nigeria

	Nigeria		North East		Morth West		North Central		South East		South West		South-South	
	Total expd	Out of Pocket Expd (OOP)	Total expd	Out of Pocket Expd (OOP)	Total expd	Out of Pocket Expd (OOP)	Total expd	Out of Pocket Expd (OOP)	Total expd	Out of Pocket Expd (OOP)	Total expd	Out of Pocket Expd (OOP)	Total expd	Out of Pocket Expd (OOP)
1.	899.32	397.83	911.73	297.83	855.99	207.37	973.13	371.49	861.50	417.15	966.41	156.17	845.08	784.45
(Poorest)														
2	2,134.90	506.23	2,074.08	292.83	2,170.35	249.15	2,117.01	424.54	2,164.20	1,030.73	2,178.77	728.63	2,175.32	567.64
3	3,517.30	477.36	3,557.34	312.82	3,471.49	291.64	3,548.58	593.33	3,499.30	685.04	3,541.98	600.36	3,482.37	462.27
4	5,221.63	586.45	5,236.09	448.19	5,165.28	374.75	5,270.43	501.88	5,271.57	968.58	5,259.42	851.41	5,097.19	606.09
5	7,619.25	634.89	7,636.87	402.77	7,642.21	326.52	7,512.24	538.54	7,626.56	1,100.82	7,675.81	582.34	7,634.81	978.29
6	10,708.24	708.96	10,892.08	610.02	10,556.96	446.14	10,576.74	544.17	10,684.66	1,256.64	10,819.61	654.82	10,749.96	795.37
7	15,056.27	646.49	14,942.62	425.58	14,582.78	355.36	15,157.34	786.82	15,052.31	1,161.46	15,437.79	517.78	15,077.50	614.86
8	21,805.46	871.04	21,640.08	605.07	21,070.17	257.07	21,379.89	707.81	21,738.77	1,205.91	22,505.08	1,107.45	21,879.79	912.99
9	33,674.85	1,012.60	33,102.99	656.57	32,128.37	698.87	33,721.29	817.95	33,961.79	1,210.25	34,059.53	1,007.33	33,788.95	1,149.62
10.	85,334.89	1,516.95	81,920.90	1,550.90	82,506.28	593.06	74,283.06	1,150.34	84,350.81	1,571.12	89,462.78	2,049.64	87,288.83	1,412.45
(Richest)														
Average	18,583.50	727.83	13,021.61	464.79	11,422.41	347.34	12,637.87	593.99	17,690.87	1,038.29	29,266.06	989.62	28,005.86	921.80

Source: Nigerian Living Standard Survey, 2003/2004

Table 3: Per Capita Out of Pocket Health Expenditure as % of Per Capita Individual expenditure by Geopolitical Regions of Nigeria

	Nigeria	North East	North West	North Central	South East	South West	South South
1 (Lowest)	44.73	32.66	24.22	38.17	48.42	16.16	92.83
2	23.71	14.11	11.47	11.96	47.63	33.44	26.09
3	13.57	8.79	8.4	16.72	19.57	16.95	13.27
4	11.23	8.55	7.33	9.52	18.37	16.18	11.89
5	8.33	5.27	4.27	7.16	14.43	7.59	12.81
6	6.62	5.6	4.22	5.15	11.76	6.05	7.39
7	4.29	2.84	2.44	5.19	7.72	3.35	4.07
8	3.99	2.79	1.22	3.31	5.54	4.92	4.17
9	3.01	1.98	1.27	2.42	3.56	2.96	3.4
10(Highest)	1.78	1.89	0.72	1.54	1.86	2.29	1.61
Total	3.92	3.56	3.04	4.7	5.86	3.36	3.29

Source: Nigerian Living Standard Survey, 2003/2004

We further present our result by zones. Starting with the North-East Zone, we found that individuals in the lowest income decile on the average spent N911.73 and of this amount 32.66 percent was spent on out-of-pocket health payment while individuals in the fifth and highest income deciles spent N7, 636.87 and N 81,920.90 as their per capita total expenditure of these amounts 5.27 percent and 1.89 percent was spent as out-of-pocket health payment. The result of the share of total per capita expenditure vis-a-vis the share of health payment revealed that an individual in the lowest three income deciles spent an average of 18.52 percent of their per capita total expenditure on out-of-pocket health payment, compared to the average of 4.57 and 2.22 percent spent by those in the middle and highest income deciles.

In the case of the North-West Zone, on the average an individual in this region in the lowest income decile spent N855.99 as per capita total expenditure with 24.22 percent of the amount being spent as out-of-pocket health payment, while those in the fifth and highest income deciles on the average spent N7642.21 and N82506.28 respectively as per capita total expenditure with 4.27 and 0.72 percent of the sum spent as out-of-pocket health payment. For the North-west region the results revealed that on the average an individual in the lowest three income deciles spent 14.69 percent of their per capita total expenditure on out-of-pocket health payment as compared to the individuals in the middle and upper income deciles that on the average spent just 3.64 and 1.37 percent of their per capita total expenditure on out of pocket payments, thus showing that out of pocket was a regressive form of health payment in the region.

Furthermore, the results for the North-Central region revealed that on the average, an individual in the lowest income decile spent N973.13 as total per capita expenditure and 38.17 percent of this amount was spent as out-of-pocket health payment. The individuals in the fifth and highest income deciles spent N7, 512.24 and N74, 283.06 as total per capita expenditure and of this amounts 7.16 and 1.54 percent were spent respectively as the out-of-pocket payments towards health care. The results from table 3, further revealed that the lowest three income deciles spent 22.28 percent of their per capita total expenditure on out-of-pocket payment towards health while those in the highest and middle three income deciles spent 5.83 and 2.42 percent respectively. The result for the region showed that out-of-pocket payment towards health care was a regressive form of health care financing.

For the south east region, on the average an individual in the lowest income decile spent N861.50 as per capita total expenditure and of this amount N417.15 was spent as out-of-pocket health payment. The individual in the fifth income decile on the average spent N7626.56 as per capita expenditure with only N1100.00 being spent as out-of-pocket health payment those in the highest income decile spent N84,350.21 with N1,571.12 of this amount spent in out-of-pocket health financing. The result from table 2 further revealed that the percentage of per capita total expenditure spent by an individual on out-of-pocket payment by the lowest three income deciles was 38.54 percent as compared to 11.30

percent and 3.65 percent spent by the middle and highest three income deciles this implied that for the region the out-of-pocket payment was a regressive form of health financing.

On the average, for the South-West region, an individual in the lowest income decile spent N966.41 as per capita total expenditure with 16.16 percent of the amount being spent as out-of-pocket health payment, while those in the fifth and highest income deciles on the average spent N7, 675.81 and N89,462.78 respectively as per capita total expenditure with 7.59 and 2.29 percent of the sum spent as out-of-pocket health payment. The result from table 3, revealed further that the percentage of per capita total expenditure spent by an individual in the lowest three income deciles was 22.18 percent as compared to the middle and highest three income deciles that were 5.66 and 3.39 percent respectively.

An individual from the South-South region who is in the lowest income decile on the average spent N845.08 as per capita total expenditure of this amount a staggering N784.45 spent on out-of-pocket health payments thus confirming that those in this decile spent approximately 93 percent of the per capita total expenditure on health care financing. Those in the fifth and highest income decile spent N7,634.81 and N87,288.83 respectively as per capita total expenditure and of this amounts 12.81 and 1.61 percent were spent in out-of-pocket health financing. The result from table 3, pointed out that on the average, an individual in the lowest three income deciles spends 44.06 percent of his per capita total expenditure on out-of-pocket payments for health. This is the highest for all the regions analysed as compared to the middle and upper three income deciles that spend just 8.09 and 3.06 percent respectively. In this region out-of-pocket payment as a means of health care financing was most regressive in this region with the poor spending 93 percent of their earning on out-of-pocket financing of health care.

Table 4 below shows the Kakwani and Reynolds-Smolensky index of out of pocket financing in Nigeria. The results show the value of these indices for Nigeria and the Six geopolitical zones within the country.

Table 4: The Kakwani and ReynoldSmolensky Index for Out-of-pocket.

REGION	Gini Coefficient (Pre-pymtincm)	Concn Index of OOP Pymt	Concn Index of Post-OOP PymtIncm	KPI	RS
Nigeria	0.608	0.214	0.625	-0.394	-0.017
North east	0.634	0.231	0.651	-0.403	-0.017
North West	0.563	0.139	0.576	-0.424	-0.013
North central	0.584	0.146	0.607	-0.439	-0.022
South east	0.615	0.156	0.643	-0.459	-0.028
South west	0.507	0.219	0.518	-0.288	-0.011
South South	0.581	0.155	0.596	-0.426	-0.015

Source: Nigerian Living Standard Survey, 2003/2004

The Kakwani index which measures the progressivity of the various payment systems and is calculated as the difference between the concentration index of health payments and the Gini coefficient of prepayment income and the Reynold- Smolensky index which is used to capture the vertical income inequality effect as measured by the difference between the Gini Coefficient of prepayment income and the concentration index of post payment income, indicate a kakwani index of -0.394 and the Reynold-Smolensky Index which reveals a “pro-rich” trend in the out of pocket payments for Nigeria With a value of -0.017.

5. Discussion of Findings

The findings of the aggregation result for Nigeria revealed that the poor spent more of their income in making out-of-pocket payments for health care than the better-off because the lowest three income deciles in the country spent 9 times more of their per capita total expenditure on health than the highest three income deciles, thus heightening the already existing inequality between the poor and the better-off. The result from the regions further confirmed that the poor spent a larger proportion of their income on health payments than the better-off with the south-south zone being the most affected with the poor (those in the lowest) income group spending approximately 93 percent of their income on out-of-pocket health payments.

The results from the Kakwani analysis for Nigeria showed that Out-of-Pocket health payment was a highly inequitable health financing system because the poor spend a larger proportion of their income on out-of-pocket payment towards health than the better-off. This result was similar to those obtained by (Wagstaff and Van Doorslaer, 1992 Shakarishvili, 2006 and Soyibo et al 2009). By geopolitical zones our results reveal that OOP health payment was most regressive in the South-East while the South-West was the least regressive zone. The regressivity of the out-of-pocket financing system implied that the poor in Nigeria spent a very large percentage of their income on out-of-pocket health payments than the better-off. The findings were further strengthened by the results of the RS index reveals that the out-of-pocket payment system had a detrimental vertical redistributive effect on the poorest section of the population who utilised the out-of-pocket financing as their major means of financing health care because it creates a vertical redistribution of income in favour of the better-off, exacerbating the already existing income inequality between the better-off and the poor and results in further impoverishment of the poor and culminates in creating a catastrophic burden on the poor household who are made worse off after making out-of-pocket payments towards health. It is interesting that the zones also show evidences of pro-rich health payments which was most pronounced in the South-East and North-Central regions.

Figure 1, presents the picture of the inequality in health care payment. The figure compares the degree of income inequality in a society with the payment concentration curve (indicating the cumulative proportion of the population, ranked from the lowest to the highest income, in relation to the cumulative proportion of healthcare payments).

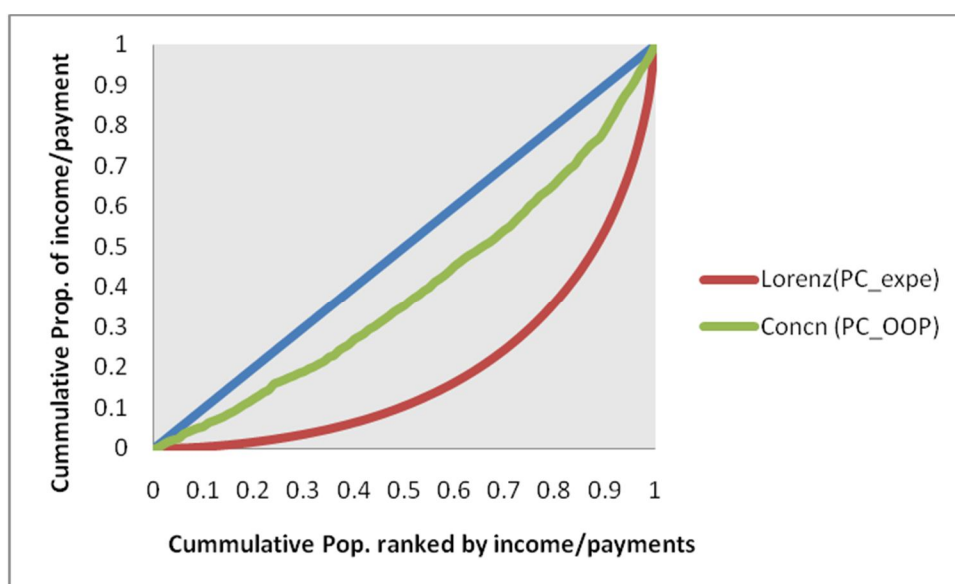


Figure1: Payment Concentration Curve for Nigeria

The figure reveals that the out-of-pocket health payment system in Nigeria was regressive, because the out-of-pocket concentration Curve lies above the Lorenz curve.

6. Conclusions

This study examined the relevance of equity in health expenditure in Nigeria. The aim of the study was to determine whether the poor spent a larger proportion of their income on health care payments than the better-off, to determine the level of progressivity in the health payment systems in Nigeria and finally to examine if the health payment systems in Nigeria increase the level of income inequality between the poor and the better-off. Data obtained from the Nigerian Living Standard Survey (2003-2004) conducted by the Nigerian National Bureau of Statistics were utilised in the analysis.

One of the major findings of the study was that in Nigeria the burden of health care financing is borne by the poor and this tends to impose a catastrophic burden on these households. The poor spent a larger proportion of their income on health payments than the better-off, with the poor spending 9 times more of their per capita total expenditure on out-of-pocket health payments than the better-off. The study also revealed that out-of-pocket financing was a very regressive health payment system in Nigeria, with the South-East zone having the most regressive out-of-pocket payment system in and the south-West zone having the least regressive. The out-of-pocket financing system in Nigeria fosters a “pro rich” vertical redistribution of income thus exacerbating the already existing income inequality between the better-off and the poor, thus implying that the poor are further impoverished after making these health payments.

Therefore, the findings from the study suggest that there is a need to identify and utilise other forms of health care payments such as earmarked health taxes, private and social insurance schemes. The National Health Insurance Scheme of Nigeria (NHIS), which is a form of social insurance health payment, should be effectively utilised in promoting progressivity of the health payment system so that the poor are not impoverished further by out-of-pocket health payments. The scheme should be implemented in such a way that its services are made available not only to those in the formal sector but also to the informal sector of the society because the poor are concentrated mostly in the informal sector of the society this can be done through the introduction of the community based health insurance scheme.

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