

Distributional Analysis of Household Health Expenditure in Nigeria

Omotunde Omotosho

Department of Economics, University of Nigeria, Nsukka

Hyacinth Ementa Ichoku

Centre for Demographic and Allied Research, University of Nigeria, Nsukka

Abstract

The major means of financing healthcare in Nigeria, among other financing mechanisms is out-of-pocket expenditure. This is because most households (over 95%) are excluded from the financial risk protection of health insurance; hence the decision to utilize healthcare services by households implies the decision to pay directly out-of-pocket. This paper employs data from the Harmonized Nigerian Living Standard Survey 2009/2010. Using concentration index, Gini index and Kakwani index for the analyses, and also combining Lorenz curve and concentration curve to show inequality in health payment across socioeconomic groups in Nigeria, we found out-of-pocket payment to be a progressive healthcare financing mechanism across income quintile and geopolitical zones. It is therefore concluded that there exists a possibility of the Nigerian health system to exclude significant proportion of her population from the use of healthcare services simply because they cannot afford the cost of treatments.

Keywords: Household out-of-pocket expenditure, Income quintile, Geopolitical zones, Kakwani index, Gini index, Concentration index, Nigeria.

Introduction

The financing structure of a healthcare system can be associated with multiple adverse effects on households' living standard; which severely threaten their income sufficiency, disrupt their positions in the socioeconomic hierarchy thus, deepening overall inequalities in the distribution of income (Van Doorslaer et al., 2006). The principal challenges bedeviling healthcare financing in Nigeria as in most Sub-Saharan African (SSA) countries lies not primarily in the acute scarcity of resources, but in the absence of intermediation and insurance mechanisms to manage risk (Onwujekwe, et al., 2010). Out-of-pocket expenditure is therefore the major source of financing healthcare in Nigeria.

The National Health Insurance Scheme (NHIS) is one medium of reducing the financial burden of paying for healthcare directly out-of-pocket. According to Odeyemi and Nixon (2013) establishment of the NHIS in Nigeria was to ensure 'universal coverage' and access to adequate and affordable healthcare services, so as to improve the health status of Nigerians. NHIS came into full operation in 2005 in Nigeria, while in Ghana full operation commenced in 2004, however, comparing Nigeria and Ghana in terms of each country NHIS membership reveals that Nigeria has 3.5% of her population covered by the scheme while Ghana has 65% of her population covered by her health insurance scheme.

In Nigeria the NHIS covers mainly federal civil servants, the larger informal sector is largely left uncovered as Community Base Health Insurance (CBHI) is still at its infancy. According to Nwali and Egunjobi (2006) CBHI which was targeted at the larger informal sector is yet to gather momentum. Even though pilot schemes were launched, these have not been scaled up to significant levels, while there is minimal participation by the private financing agents. In that case, the vulnerable members of the society; the poor, may not be able to finance health needs through prepayment mechanism of health insurance since they are mostly found in the informal sector of the economy. The very poor who cannot afford to pay the premiums are not covered by CBHI and this is a source of concern, and even though some schemes try to provide exemptions to the very poor and indigent, these exemptions are often not only difficult to implement but constrained by limited resources available to the schemes themselves.

Out-of-pocket payments for healthcare at point of service dominate healthcare financing in Nigeria. According to the World Health Organization (WHO), (2015) public health expenditure in Nigeria accounts for 20-30% of total health expenditure, while private health expenditure accounts for 70 to 80% of total health expenditure and the proportion of private health expenditure provided by households' out-of-pocket expenditure is estimated to be 95% (Ichoku, Fonta & Araar 2011).

Despite increased funding to the health sector averaging over 6% of the total budget since 2003; government health expenditure still lag behind the 15% of commitment to the Abuja declaration 2000 and the Gaborone declaration 2005 (Ichoku, et al 2011). Nigeria is still not close to achieving the requirements of these declaration for which she is a signatory. Ichoku, et al., (2011) also observed that in Nigeria households pay for every healthcare cost directly on a 'cash and carry' basis as a result of lack of health insurance cover for the

majority of the population, hence the dominance of the Nigerian health system by 'for-profit providers' could interact with poor public financing and out-of-pocket expenditure to escalate the 'disequalizing' and impoverishing effects of healthcare.

Olaniyan et al., (2013) analysis using the Nigerian Living Standard Survey NLSS 2003/2004 data reports that the poor spent seven times more than the better-off on total per-capita health expenditure. This raises concern for the poor as some may avoid seeking healthcare because they cannot pay the cost, others may be seeking health services at great 'displacement effects' of other essential household needs (Ichoku, 2005). This implies that the poor seek healthcare at greater opportunity cost than the better-off.

Brief Indicators of the Nigeria's Health System

Health indicators for Nigeria are among the worst in world. Only about 28% of the under-five sleep under Insecticide Treated Nets (ITNs), just 38% of women delivers under the supervision of qualified attendants, 36% of women delivered in health facilities. This was far lower in three states of the federation; Jigawa (7.6%), Kano (13.7%), and Bauchi (16.3%) (Nigerian Demographic and Health Survey (NDHS), 2013).

Immunization coverage in Nigeria is poor and varies with geographical zones. Generally about 25% of the under-five are fully immunized. Nationally the proportion of fully immunized children aged 12 to 23 months ranges from 4.7% in the North-West zone to 40.7 % in the South West zone. Coverage in rural areas was 13.4% compared with 32.6% in the urban areas. Nigeria is responsible for 29% of the global gap in reaching 90% of women living with HIV who need antiretroviral therapy for prevention of mother to child transmission. (WHO's Country Co-operation Strategy, 2014). These poor health indicators are attributed to poor public funding of the health system (Olaniyan et al., 2013) and excessive reliance on out-of-pocket expenditure for financing healthcare by households in Nigeria. These outcomes will be more pronounced among the poor; since they cannot relatively bear the burden of health costs posed by paying for health care services directly out-of-pocket

In spite of previous efforts at reducing unequal access to quality and affordable healthcare services in Nigeria, ranging from the National Health Policy, National Health Financing Policy, the National Health Insurance Scheme, and most recently, the National Health Bill which establishes the National Primary Health Care Development Fund, unequal access to healthcare is still a predominant problem in the Nigerian state. 'Universal coverage' and the provision of affordable healthcare services is the aim for which the NHIS was established in Nigeria. This aim will remain a mirage if different socioeconomic groups face unequal burden to the detriment of the poor.

The objective of this study is, therefore, to analyze the distribution of out-of-pocket health expenditure across socioeconomic groups in Nigeria. The results will help to improve policy targeting, particularly in identifying the most vulnerable groups as well as improve coverage of the national population.

Methodology

In general, analyses of equity in each household's health care payments can be appraised through the concentration index and the concentration curve. This is assessed against the distribution of household ability to pay (either household per capita income or expenditure), which is usually presented as the Lorenz curve. The Lorenz curve of household income or other measures of household ability to pay serves as a graphical representation of the cumulative distribution of household wealth (Limwattanon et al., 2011). The Lorenz curve depicts the distribution of income or consumption across households ordered from the poorest to the richest. If all households had an equal share of income, the Lorenz Curve would lie on the 45° line (i.e. 1% of households would have 1% of income and so on) According to Olaniyan et al, (2013) Lorenz curve shows the degree of inequality in the society.

The financing concentration curve plots the cumulative percentage share of health-care payments for each household with the same ordering as for the Lorenz curve. If the concentration curve lies between the 45° line and the Lorenz curve (or above the 45° line), the percentage share of health-care payments for poorer households is greater than their percentage share of income or consumption expenditure and vice versa for richer households (Mills, et al, 2012). This implies that the financing mechanism is regressive. Conversely, if the concentration curve lies outside the Lorenz curve, the share of health-care payments is progressive. If the concentration curve lies on the Lorenz curve, the financing mechanism of health care payment is said to be proportional.

One measure used as a summary index to measure the proportionality of payment vis-à-vis the prepayment income is the kakwani index. The kakwani index compares the distribution of healthcare payments (plotted on the concentration curve) with the distribution of income or consumption expenditure (plotted on the Lorenz curve) (Lamwattanon, et.al. 2011). When a Kakwani index is positive it implies the health financing system is equitable (with a maximum value of 1) and negative (with a maximum of -2) when a financing system is inequitable. When the Kakwani index is 0 it depicts proportionality of the health financing system (Abu-Zahien, 2009).

The kakwani index is defined as twice the area between the concentration curve of health payments and the Lorenz curve. The index can be calculated as $\pi_k = C - G$ where C is the health payment concentration index and G is the Gini coefficient of household income and expenditure (Lamwattanon et al., 2011). The Gini index is a useful measure of inequality in a distribution (usually income). It is defined as twice the area between the line of equality (45-degree line) and the Lorenz curve. The concentration index on the other hand is defined as twice the area between the concentration curve and the line of equality (O'Donnell, et.al. 2008). A Gini index of 0 implies perfect equality in income distribution, while a Gini index of 1 implies perfect inequality in income distribution.

Concentration indices are bounded between negative 1 and positive 1, a negative value meaning that the concentration curve lie above the line of equality, a positive value implies that the line of equality lie above the concentration curve (Ataguba, 2012).

Following (Kakwani et al., 2007) Gini index for a distribution is given as

$$G = 1 - 2 \int_0^1 L_y(P) dp \dots\dots\dots (i)$$

Or equivalently for a discrete distribution

$$G = \frac{2}{N\mu} \sum_{i=1}^N y_i r_i - 1 - \frac{1}{N} \dots\dots\dots (ii)$$

Where $L_y(P)$ is the Lorenz curve co-ordinate of income at percentile p in the distribution of income y . μ is the mean income. $r_i = \frac{i}{N}$ Is the fractional rank of individual i in the income distribution, and N is the total number of observation. The concentration indices are analogously defined by replacing $L_y(P)$ with the concentration curve co-ordinate and μ with the mean of the variable of interest.

Kakwani, et al., (2007) explained further that for the purpose of easy computation either index can be defined using the convenience covariance formulation

$$C = \frac{2}{\mu} cov(y, r) \dots\dots\dots (iii)$$

Where C could be the Gini or Concentration index and y could be income (for the Gini index) or health care payment (for the concentration index). Thus, for a given pre-payment income distribution, LX , and the health care payment LT , the two summary indices can be defined and assessed mathematically as follows:

$$kpi = 2 \int_0^1 [Lx(r) - LT(r)] dr = CT - GT \dots\dots\dots (iv)$$

Where, r in parenthesis here indicates the rank of household in the pre-payment income distribution (Olaniyan et al., 2013).

Results

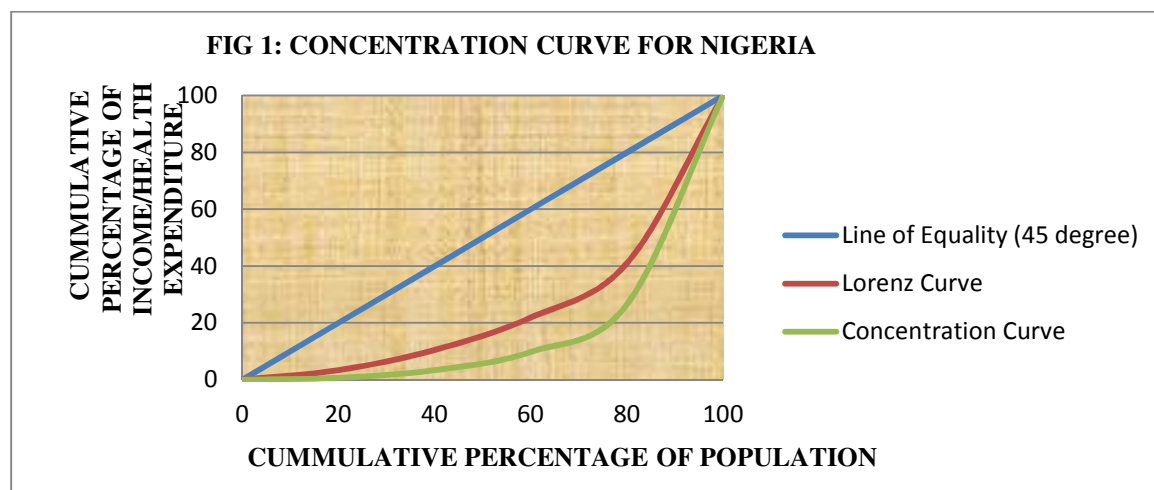
We ranked households into quintile using their per capital total non-food consumption expenditure as a proxy for income, this is because of the absence of income in our survey data. Non-food consumption expenditure is a better measure for income, because of the under-reporting of income in most survey data; also households with more individuals tend to spend more on food (Onoka et al., 2011; Yu, Whyne & Sach, 2007) hence the use of non-food consumption expenditure as measure of socioeconomic status.

Table 1: per capita out-of-pocket health expenditure as percentage of per capita total expenditure for Nigeria

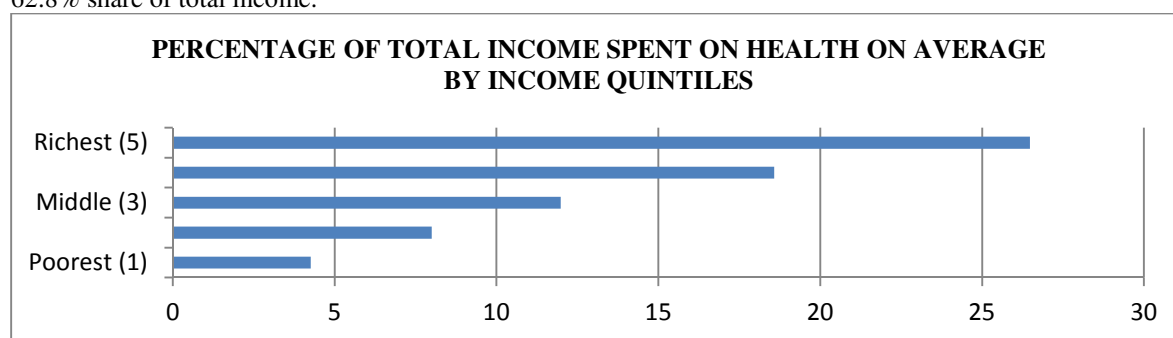
Quintile	Per capita household total expenditure (food and non-food)	Per capita total health expenditure	Per capita health expenditure as percentage of per capita total expenditure
1	13,161.741	560.551	4.3
2	27,635.015	2211.4	8.0
3	44,552.52	5337.609	12.0
4	74704.203	13882.958	18.6
5	230166.99	60962.035	26.5

Source: Researchers' computation from the Harmonized Nigerian Living Standard Survey 2009/2010

The above table presents the per capita total health expenditure as percentage of per capita total expenditure for Nigeria. On average, individuals in the poorest income quintile spent #13,161.7 on per capita total expenditure and out of this amount #560.6 was expended on per capita health expenditure. Individuals in the poorest income quintile spent 4.3% of their total income on health expenditure (out-of-pocket). Individuals in the middle quintile on average spent 12.0% of their total income on per capita health expenditure. On average, individuals in the richest income quintile spent 26.5% of their total income on healthcare.



The Lorenz curve lies below the 45 degree line indicating concentration of income among the economically better-off. The concentration curve shows that for Nigeria, out-of-pocket expenditure is progressive implying that poorer households' percentage share of total health expenditure was less than their percentage share of income or consumption expenditure and vice-versa for richer households. The curve shows that the first 20% of the population incurred 0.7% share of total per capita health expenditure and gets 3.4% share of per capita total income, while the richest quintile's share of total health expenditure was 83.5% and 62.8% share of total income.



Researchers' computation

Table 2: Gini Index, Concentration index and Kakwani index for Nigeria

Gini index	Concentration index	Kakwani index
0.493	0.639	0.146

Source: Researchers' computation

A positive concentration index of 0.639 implies concentration of health payments among the rich. The rich pays more for health as a proportion of income than the poor. This implies the rich reports for treatments whenever they are ill. Unlike the poor who as a result of health costs suppressed their health needs. A positive kakwani index depicts a progressive health payment mechanism. For Nigeria, out-of-pocket payment on health is progressive as shown by a kakwani index of 0.146.

Distribution of Out-of-Pocket expenditure across geopolitical zones in Nigeria

Table 3: per capita total health expenditure as % of per capita total expenditure by geopolitical zones in Nigeria

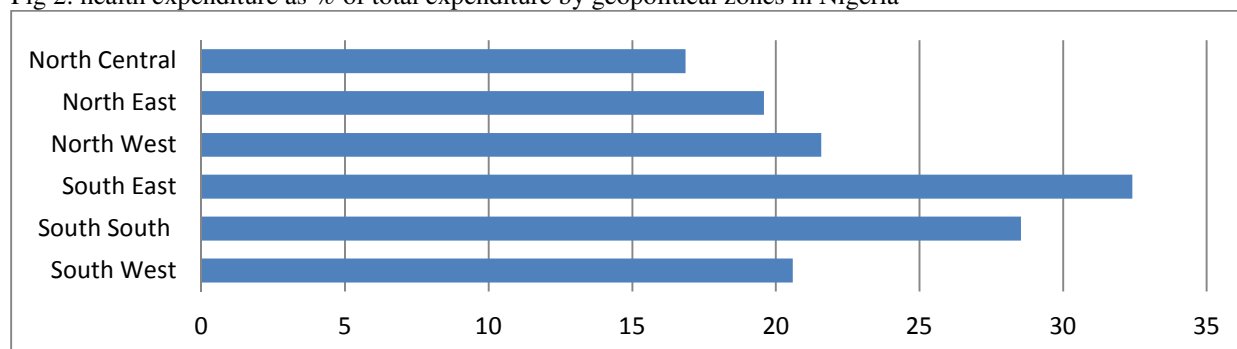
Geopolitical Zones	Total Health Expenditure (N Mean)	Total Expenditure	Total health expenditure as % of total expenditure
North Central	48192.54	286034.78	16.9
North East	53498.439	273205.63	19.6
North West	54308.353	252685.07	21.5
South East	96008.173	296243.66	32.4
South South	85115.397	298317.72	28.5
South West	59586.749	289343.32	20.6

Source: Researchers' computation from HNLSS 2009/2010

The result shows that the South East geopolitical zone of Nigeria has the highest prevalence of out-of-pocket expenditure when compared to household income. For South East, individuals spent on average 32.4% of total income on healthcare. South South zone 28.5%, South West 20.6%, North West 21.5%, North East 19.6%

and North Central 16.9%.

Fig 2: health expenditure as % of total expenditure by geopolitical zones in Nigeria



Source: Researchers' computation.

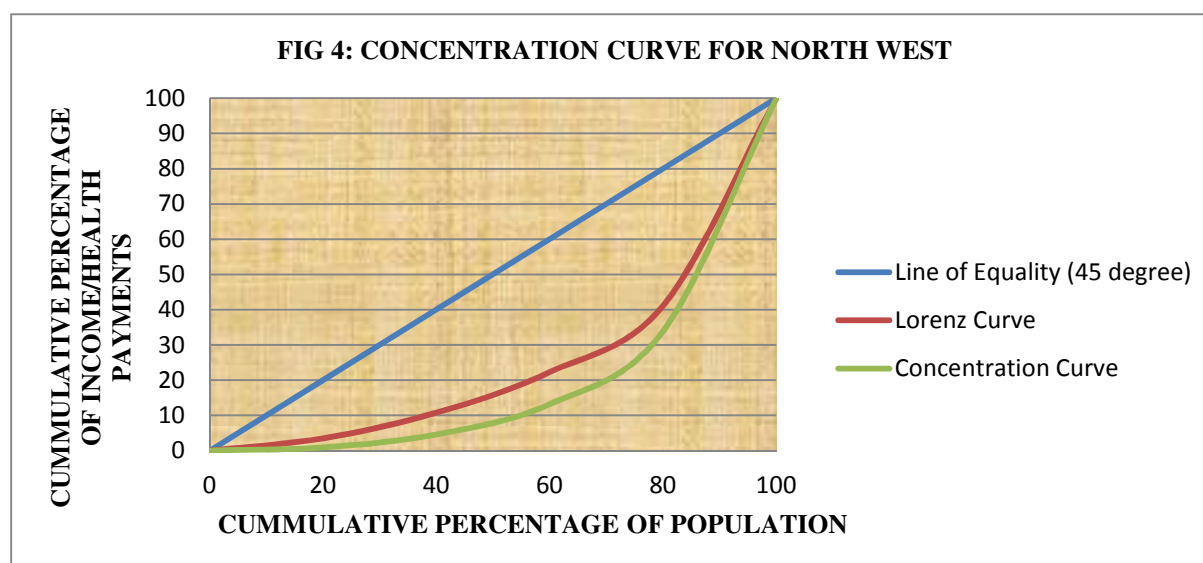
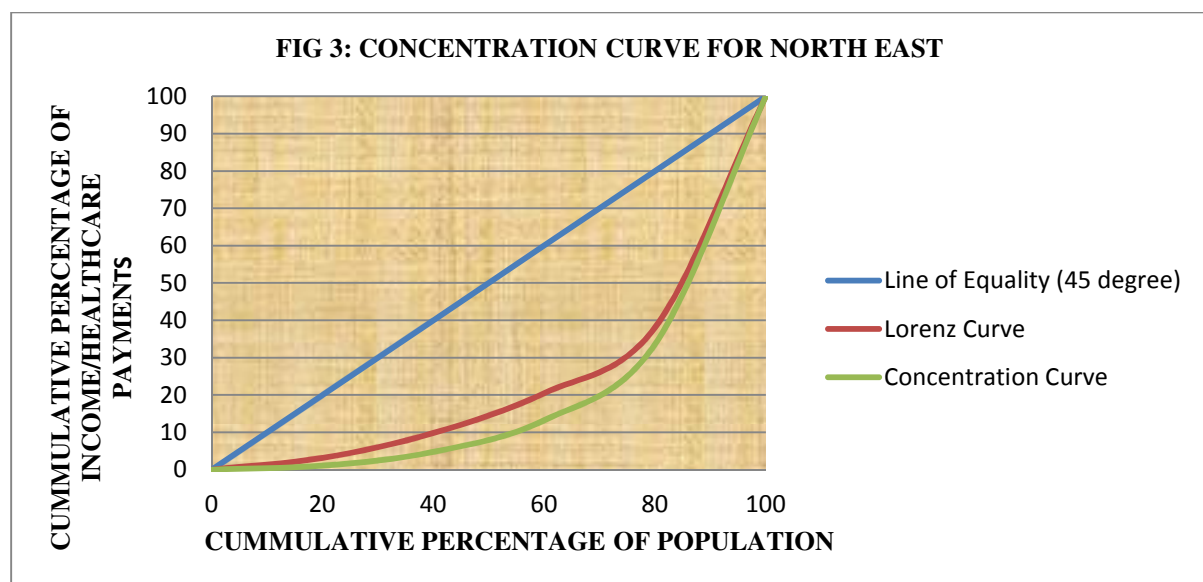
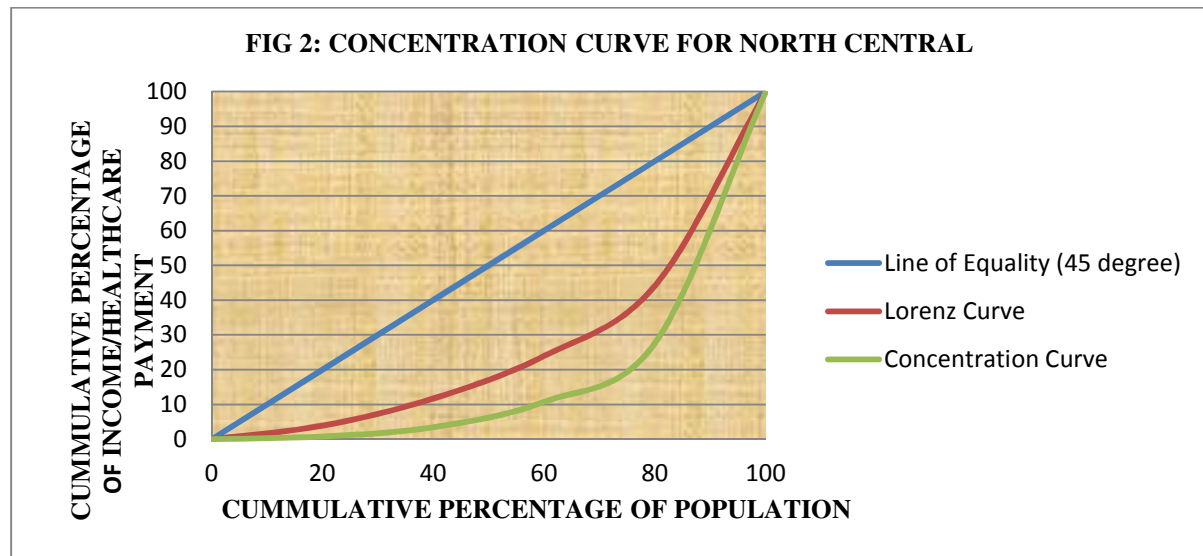
The result is further presented by grouping per capita total expenditure and per capita health expenditure into quintile for each of the geopolitical zones. The households were arranged into quintiles using their per capita total expenditure (food and non-food) which is a proxy for income.

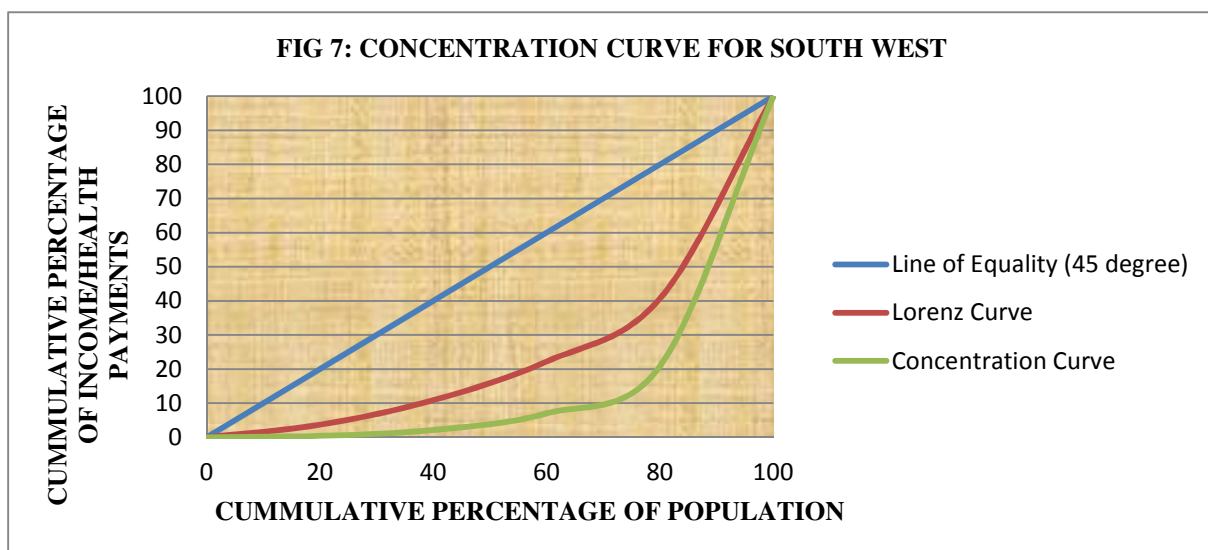
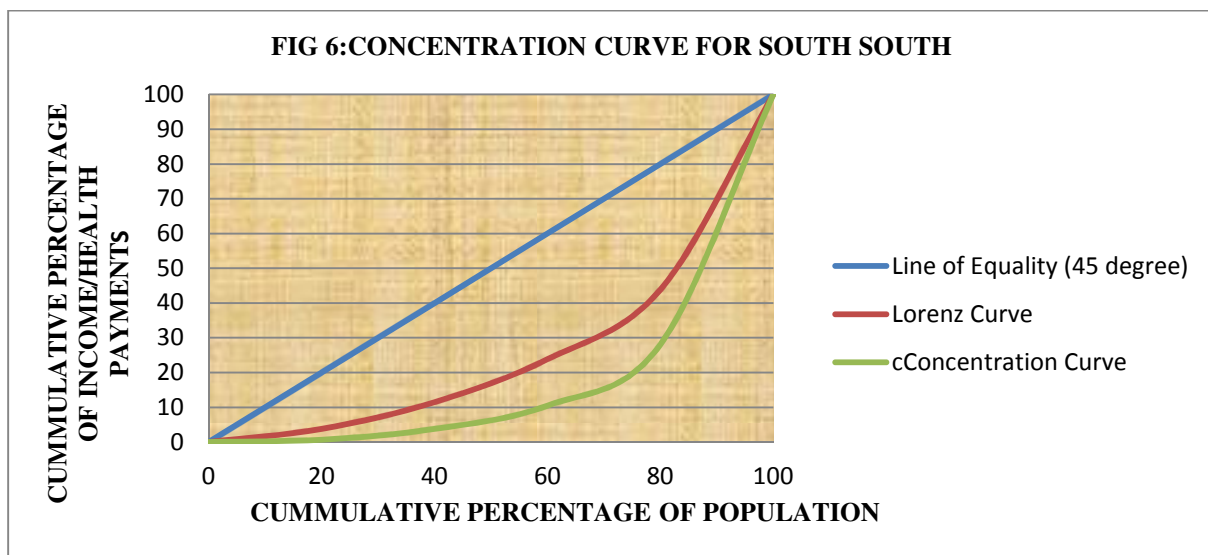
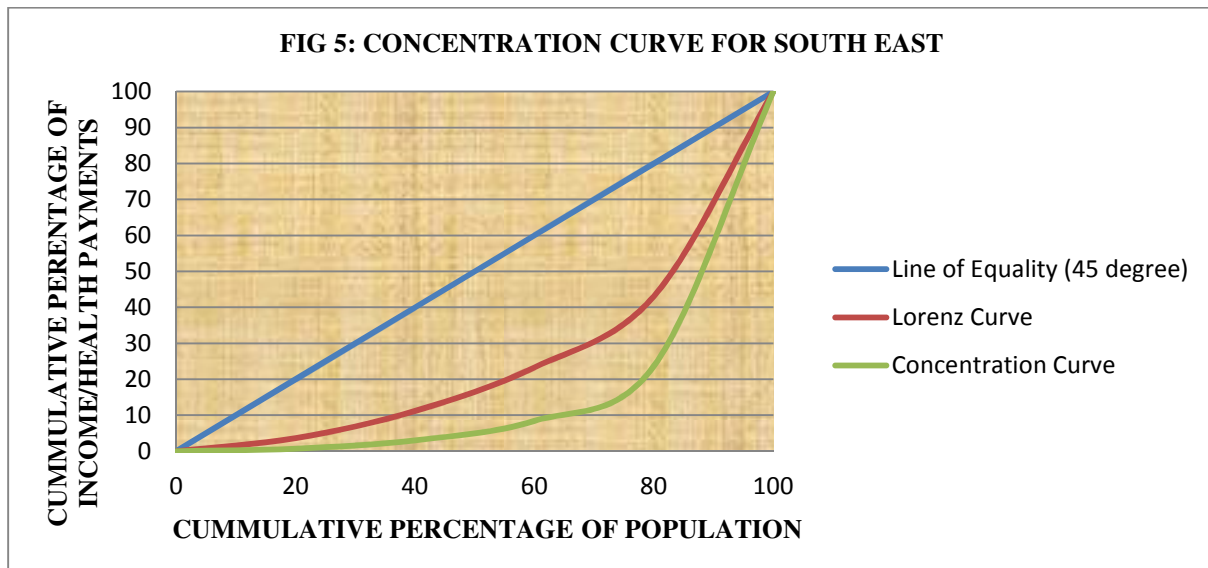
Table 4: Per capita health expenditure as a % of per capita total expenditure across geopolitical zone in Nigeria

North central	North East	North West	South East	South South	South West
2.1	5.4	5.1	5.9	4.4	2.2
5.0	8.8	9.9	9.5	9.5	4.6
8.9	12.6	14.7	13.8	12.9	8.5
12.4	18.3	21.5	23.8	20.8	14.7
19.2	17.0	22.0	41.5	30.3	26.1

Researchers' computation

The table above revealed that for the North Central individuals in the poorest quintile spends 2.1% of their per capita total income on per capita health expenditure. Conversely individuals in the richest quintile spent 19.2% of their income on healthcare. In the North East, we found that individuals in the lowest income quintile spend 5.4% of total income on health. While individual in the richest quintile spend 17% of total income on health. For the North West zone individuals in the lowest income quintile (the poorest) spent 5.1% of total income on healthcare. Individuals in the middle quintile spent 14.7%, Individuals in the richest quintile spent 22.0% of their total income on health. In the South East zone, the lowest income quintile spends 5.9% of their total income on health. The middle quintile spent 13.8% of per capita total income on health. The richest quintile spent 41.5% of their per capita income on per capita health expenditure. Result from the South South geopolitical zone shows that the poor spent just 4.4% on average, on per capita health expenditure, while the richest income quintile spent 30.3% of per capita total expenditure on per capita health expenditure. Finally for the South West, the lowest income quintile (the poorest) spent 2.2% of their per capital total income on per capita health expenditure. The richest quintile spent 26.1% of their total income on out-of-pocket health payments. This result shows that the poor are not seeking care as they should. They are suppressing their health needs possible for inability to afford payment.





Out-of-pocket expenditure is progressive for each of the geopolitical zones in Nigeria as shown by the concentration curves above. The concentration curves lies below the Lorenz curve for each of the geopolitical zones in Nigeria.

Concentration index, gini Index and kakwani index for geopolitical zones in Nigeria

Table 5: Concentration indexes, Gini indexes and Kakwani indexes for geopolitical zones in Nigeria

Geopolitical zones	Concentration Index	Gini Index	Kakwani Index
North Central	0.6296	0.465	0.164
North East	0.589	0.514	0.076
North West	0.590	0.489	0.100
South East	0.657	0.475	0.182
South South	0.628	0.468	0.160
South West	0.678	0.490	0.120

Source: Researchers' computation

A positive concentration index indicates pro-rich distribution of health payments (where health payments are concentrated among the rich). The concentration indexes for each of the geopolitical zones were positive values indicating pro-rich distribution of health payments. This shows that health payment was concentrated among the rich. The Gini index be more pronounced in the North east although inequality in income distribution across the geopolitical zones in Nigeria. Positive kakwani indices for each of the zones, indicates progressivity in out-of-pocket payment.

Discussion

Studies relating to equity in healthcare with emphasis on distributional analysis have shown mixed results. Some found out-of-pocket expenditure to be a regressive (Ataguba, Akazili, & McIntyre, 2011; Chuma & Okugu, 2011; Mills et al., 2012; Sanwald & Theurl, 2015; Olaniyan 2013), others found it to be progressive (Devlin & Richardson 1993; Ichoku et al., 2011; Onoka et al., 2008; Yu, Whynes & Sach, 2007). Our result is in contrast to Olaniyan et al., (2013) study that found out-of-pocket expenditure to be regressive for Nigeria and the six geopolitical zones. The progressivity of out-of-pocket expenditure implies that poorer households lack the resources required to seek healthcare and most times such households may forgo healthcare seeking and treatments since they cannot afford the cost of treatment. Ichoku et al (2011) utilized a new Gini decomposable index with Enugu state Nigeria as case study, shows out-of-pocket expenditure to be progressive and concluded that some of the poor may avoid the use of health services because they cannot pay the cost. The positive kakwani index of 0.146 found in this study is consistent with Yu, Whynes & Sach (2007) of 0.86 for Malaysia and Devlin & Richardson (1993) that found highest income households to spend six times as much as the lowest income households on health. The progressivity of out-of-pocket health expenditure implies poorer households may be suppressing their health needs and hence avoid seeking healthcare (Ichoku et al., 2011; Onoka et al., 2008), poorer households may also seek low quality care and prefers public healthcare services where the cost of treatment is low, while the richer households prefer private health facilities where they get value for money spent and health services tends to be of better quality.

For Nigeria most studies dealing with distributional analysis of out-of-pocket expenditure were carried out at state level (Ichoku et al 2011; Ichoku & Fonta 2006; Ichoku, 2005; Onoka et al 2008; Onoka, 2011; Onwujekwe et al 2010; Oyinbo 2011; Riman & Akpan, 2012). However, the only study that utilized nationally representative survey found out-of-pocket expenditure to be regressive (Olaniyan et al., 2013).

Conclusion

The progressivity of out-of-pocket expenditure presupposes that if health needs of the various quintiles are taken into consideration, it seems to show that poorer households are grossly under spending on health. This could possibly be because they cannot afford the cost of treatments. It is also possible that poorer households embark on self medication that takes a smaller proportion of their income. The Lorenz curves for each of the zones indicates that income inequality exists, as bulk of the income is concentrated with the richer households. The concentration curve lies below the Lorenz curves and the 45 degree lines for all the zones indicating that out-of-pocket payments on health is progressive for all the zones. The kakwani index further shows progressivity in healthcare payment across zones. This account for why the concentration curves and Lorenz curve looks similar for all zones in Nigeria. It is possible that the Nigerian Health System is excluding majority of her population from healthcare services simply because they cannot afford the cost of treatments.

This progressivity of out-of-pocket healthcare financing mechanism for Nigeria found in this study could be due to some reasons; progressivity of out-of-pocket health financing may be brought at great opportunity costs as households may need to forgo other essential needs required for their wellbeing in order to seek healthcare. Another major reason could be that since poorer households cannot afford the costs of seeking healthcare services, they choose not to seek care at all. There exist unmet healthcare needs which may not be captured by distributional analysis since such analysis deals with the effect of payments on prepayment distribution. The poor mostly utilized government own hospitals where they pay less for health care and the rich prefer private hospitals where healthcare services is most efficient with high cost of treatments. There is need to

move away from out-of-pocket payments to prepayment mechanism of health insurance or a subsidized healthcare system as this is the key to reducing financial catastrophe otherwise; it would be difficult to improve the Nigeria health system's performance. The NHIS should be expanded to cover more of the poor. This could be done in the form of community based health insurance, so as to provide the necessary risk protection to these vulnerable groups.

References

- Abu-Zahien, M. (2009). Contributions to the analysis of health equity: Measurement and explanation of inequality and inequity in the health care sector in the context of developing countries: The Palestinian case. Centre for development studies, Birzeit University.
- Ataguba, J. E. (2012). *Distributional impact of health care finance in South Africa*: A thesis presented for the degree of Doctor of Philosophy, Department of Economics, University of Cape Town, South Africa.
- Ataguba, J. E., Akazili, J., & McIntyre, D. (2011). Socioeconomic-related health inequality in South Africa: Evidence from generalized household surveys. *International Journal of Equity in Health*, 10, 48.
- Chuma J., & Okungu, V. (2011). Viewing the Kenyan Health system through an equity lens. Implications for universal coverage. *International Journal of Equity in Health*, 10(22), 1-14.
- Devlin, N.J., & Richardson, A. K. (1993). The distribution of household expenditure on health care. *Pubmed*, 106(953), 126-9
- Ichoku, H. E., & Fonta, W. M. (2006) *The Distributional Impact of Healthcare Financing in Nigeria: A Case Study of Enugu State*. PMMA Working Paper No. 17: 3-22.
- Ichoku, H.E., Fonta W.M., & Araar, A. (2011). A Distributional Analysis of Out-of-pocket healthcare financing in Nigeria using a New Decomposable Framework: *Central Bank of Nigeria Journal of Applied Statistics* 1(1) 71-83
- Ichoku H.E. (2005). *The redistributive effect of healthcare financing in Nigeria*. A technical report submitted to Poverty and Economic Policy Research Network, University of Laval, Canada.
- Kakwani, N., Wagstaff, A., & Van Doorslaer, E. (1997). Socioeconomic inequalities in health, measurement, computation and statistical inference. *Journal of Econometrics*, 77, 87-103.
- Limwattanon, S., Viangmongkoi, V., Prakongsai, P., Patacharanarumol, W., Hanson, K., Tangcharoensathien., B., & Mills, A (2011). *The equity impact of universal coverage: Health care finance, catastrophic health expenditure, utilization and government subsidies in Thailand*. International Health Policy Gram. Ministry of Public Health
- Mills, A., Ataguba, J. E., Akazili, J., Borghi, J., Garshong, B.,...McIntyre, D. (2012). Equity in financing and use of health care in Ghana, South Africa and Tanzania: Implications for paths to universal coverage. Doi: 10.1016/50140-6736(12)60684-9.
- NDHS (2013). National Population Commission. *Nigeria Demographic and Health Survey*.
- Nwali, C., & Egunjobi, V. (2006). The National Health Account Policy Brief, Paths 2.
- O'Donnell, O., Van Doorslaer, E., Wagstaff, A., & Lindelow, M. (2008). Analysis of health equity using household survey data: A guide to techniques and their implementation. WBI learning resource. World Bank, Washington D. C Doi: 10.1596/978-0-8213-6933-3
- Odeyemi A O., & Nixon, J. (2013) Assessing equity in health care through the National Health Insurance Schemes of Nigeria and Ghana: A review-based comparative Analysis. *International Journal of Equity in Health*, 12, 9. doi:10.1186/1475-9276-12-9
- Olaniyan, O., Oburota, J., & Obafemi, N (2013). Equity in health care expenditure in Nigeria. *International Journal of finance and banking studies*, 2(3), 76-88.
- Onoka, C. A., Onwujekwe, O. E., Uzochukwu, B., Ugburu, N., Anochie, A., & Ewelukwa, O. (2008). *Variations in incidence of out-of-pocket spending for illness amongst households of different socioeconomic groups: An investigation using expenditure diaries*. Retrieved from resist.ishtm.ac.uk.
- Onoka, C.A., Onwujekwe O E., Handson, K., & Uzochukwu, S. B. (2011) Examining catastrophic health expenditure at variable thresholds using households consumption expenditure diaries. *Tropical Medicine and International Health*. doi:10:11
- Onwujekwe, O., Uzochukwu., E. N., Obikeze, I., Okoronkwo, O., Ochonma, C., Onoka, G., Madubuko and Okoli, C., (2010). Investigating Determinants of Out-of-Pocket Spending and Strategies for Coping with Payments for Healthcare in Southeast Nigeria. *BMC Health Services Research*. 10:16. Retrieved from www.biomedcentral.com/1472-6963/10/67.
- Oyibo, P. G. (2011). Out-of-pocket payment for health services: constraints and implications for government employees in Abakaliki, Ebonyi State, South east, Nigeria. *American Journal of Public Health Research*, 2(4), 119-124. doi: 10.1269/ajphr-2-4
- Riman, B. H., & Akpan, E. S (2012). Healthcare Financing and Health Outcome in Nigeria: A State Level Study Using Multivariate Analysis. *International Journal of Humanities and Social Sciences*. 2(15), 297-309.

- Sanwald, A & Theurl, E. (2015). *Out-of-Pocket Payments in the Australian Health System: A Distributional Analysis*. Working Paper in Economics and Statistics. University of Innsbruck.
- Van Doorslaer, E., O'Donnell, O., Rannan-Eliya, R. P., Samanathan, A., Adhikari, S. R., Garg, C. C., Harbrianto, D., ...Zhao, Y. (2006). Effect of Payments for Health Care on Poverty Estimates in 11 Countries in Asia: An Analysis of Household Survey Data. *The Lancet*, 368, 1357-136.
- World Bank data base 2015. (see <http://apps.who.int/nha/database>)
- World Health Statistic (2014). World Health Organization Country Cooperation Strategy
- Yu, C P., Whynes DK & Sach T H. (2007) Equity in health care financing: The case of Malaria *Journal of Equity in Health*,7, 15. doi: 10.1186/1475-9276-7-15.