Impoverishing effect of household healthcare expenditure in semi-rural communities in Yenagoa, Nigeria

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Abstract

Inequity in the payment mechanism for healthcare systematically affects poorer households more than the rich. This article examines the impoverishing effect of healthcare expenditure on households in Yenagoa. Data was obtained from a cross-sectional survey of households in 2 communities in Yenagoa selected by simple random sampling. A pretested, structured, interviewer-administered questionnaire was used to obtain information on household (HH) income, general expenditures and financing for healthcare. Two international poverty lines designed by World Bank were employed to classify households as poor, extremely poor and to determine the impoverishing effects of households' healthcare expenditures. Responses were received from 525 HHs with 9.2% of HHs falling below poverty line, another 9% pushed deeper into poverty after healthcare spending. A 12.3% and 16% increase in the poverty and extreme poverty gaps respectively were attributable to health payment. A significant percentage of households who were non-poor were pushed into poverty after healthcare spending. There is need for increased public spending and implementation of innovative pre-payment mechanisms and social insurance that assures financial-risk protection and equity in health financing in Yenagoa.

Introduction

Inequities in health financing systematically place households (HHs), especially the poor ones, who are already socially disadvantaged at further disadvantage with respect to their health. Hence, health financing options which ensure achievement of the core objectives of 'goodness' and 'fairness' of health systems should be the focus of policy makers and stakeholders in developing equitable distribution of qualitative healthcare goods and services. However, many health systems especially in developing countries are mainly financed privately through out-of-pocket payments for healthcare at the point of access.[1]

The direct out-of-pocket (OOP) payment for health services is an inequitable way to finance a health system as it places great financial burden on households,[1] excludes financial solidarity[2] and could compel many households to forgo basic needs such as education, food, and housing in order to pay for healthcare.[2-4] The usual consequence is that they suffer financial catastrophe or even impoverishment while seeking healthcare. They may also totally avoid or delay to seek necessary healthcare where the cost is perceived to exceed their ability to pay.[3-5] Nigeria, like many lower middle-income countries (LMIC), relies on OOP payments for financing health services. Fund from private sources is responsible for 75% of total expenditure on health (THE) and 90% of this is OOP payments.[6,7] This payment modality prevent people from seeking or continuing care, while some who do seek care incur catastrophic financial burdens that push them into poverty.[8] The ensuing vicious cycle of poverty further magnifies the need for healthcare while shrinking the capacity of household to pay for it.[9] Household spending on health in settings like Nigeria, can also disrupt their budget, making it impossible to meet some essential expenditure in the home.[10-16]

Catastrophic health expenditure which occurs when healthcare expenditures exceed pre-defined proportions of household income and/or non-food expenditure does not completely demonstrate the extent of hardship bore by household after such expenses.[11-13,17,18] The concept of impoverishment after healthcare spending paints a clearer picture of this financial burden as it demonstrates how expenditure on healthcare could push households into poverty or further down the poverty line.[19] A study done in Kenya reported that 3.5% of households and 4% of households were impoverished by health spending in 2003 and 2007 respectively. Outside the continent of Africa, study done in Brazil also revealed an increasing trend like in Kenya as poverty headcount increased from 6.8% in 2002/2003 to 11.6% in 2008/2009.[15] Though a multifaceted social menace, poverty can be measured by the poverty line which defines a monetary threshold below which it becomes difficult for individuals or households to afford basic needs. Poverty lines are commonly defined in relation to average household subsistence spending or 'food share'[20] and household per capita income. The World Bank had developed the international poverty lines using per capita income of households, adjusted for purchasing power parity. The most recent thresholds are US$1.9 per capita per day and US$3.1 per capita per day for extreme poverty and poverty respectively.[9,11,15] A non-poor household that becomes poor after paying for healthcare is said to be impoverished by such health expenditures with reference to any of the defined poverty lines.[12-15,20]

There is a paucity of studies that quantified the impoverishing effect of health spending on households in this setting. This study aims to bridge this gap by investigat-

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ing the incidence and depth of poverty due to healthcare spending among households in Yenagoa where OOP mechanism of payment is the predominant payment method for healthcare.

Materials and Methods

Study setting

The study was conducted in Yenagoa, one of the traditional homes of the Ijaw people and the capital of Bayelsa state. It is located on the banks of Epie and Ekole Creeks, major tributaries of the Nun River between 4° 47' 15" and 5° 11' 55" North of the equator and Long. 6° 07' 35" and 6° 24' 00" East of the Greenwich meridian.[21,22]

Yenagoa is a semi-rural settlement made up of 21 communities linearly arranged along both sides of the Mbiama-Yenagoa road[22] inhabited by people who engage in fishing, farming, palm oil production, palm wine tapping, local gin making, lumbering, craving and weaving. Communities in Yenagoa are organized as compounds with representative family heads.[23]

Yenagoa has at least one primary health care centre in each of its ward and major communities. It is also served by two tertiary health institutions, a number of private hospitals/clinics, patent medicine dealers, and a wide range of non-formal healthcare providers (including traditional medicine practitioners).

Study design

The study is a cross-sectional survey of households in two randomly selected communities in Yenagoa (Akenfa and Kpansia).

Sampling

The 2 study communities were selected from the existing 21 communities by simple random sampling. Households were recruitment with the help of the Bayelsa Geographic Information System (BGIS). The three geographical zones of these 2 communities were demarcated and zones 2 and 3 in Kpansia and Akenfa communities respectively were chosen for the study. All roads in the 2 selected zones were identified as clusters from which houses were chosen by systematic random sampling, using the new BGIS numbering system. The interviews were conducted in households selected by simple random sampling (balloting) from the chosen houses.

The number of households needed for this study was calculated using the estimation formula for calculating the required sample size for household survey (n_h) which is suitable for international use given by the Department of Economic and Social Affairs, Statistics Division, United Nations:[24]

$$n_h = \frac{(z^2)(r)(1-r)(f)(k)}{(p)(n)(e^2)} \quad \text{Eq. 1}$$

where n_h is the parameter to be calculated and is the sample size in terms of number of households to be selected;
z is the statistic that defines the level of confidence desired;
r is an estimate of a key indicator to be measured by the survey;
f is the sample design effect, Deff, assumed to be 2.0 (default value);
k is a multiplier to account for the anticipated rate of non-response;
p is the proportion of the total population accounted for by the target population and upon which the parameter, r, is based;
n is the average household size (number of persons per household);
e is the margin of error to be allowed.

Data collection

Data was collected by trained data collectors over a period of 5 weeks in July and August 2017 using an extensive questionnaire adapted from previous studies.[7,12,25,26] The questionnaire investigated household sociodemographic profile, household income, total consumption expenditure, healthcare expenditure and household assets. The study considered:

Household income included all earnings, welfare package or financial benefits accruing to the household from all members of the household not just the income of household head.

Household total consumption expenditure to include spending on health, food and non-food items like rents, transportation, school fees, cable television and mobile phone subscription bills, fuel for generator, clothing, religious contributions and expenses at social events.

Household healthcare expenditure includes expenditures on drug and medicines, consultation fees, hospital bed charges, transport charges to the treatment facilities and daily living cost, including food and lodging for the purpose of caring for the ailing household member. It also included expenditure made on self-medication for minor illnesses and other services sought from alternative/traditional medical practitioners (*e.g.* TBAs, TBSs and Spiritual healing homes).

The study explicitly explored healthcare payments during episodes of chronic illnesses, hospitalizations, childbirths in the preceding 12-month period (July 2016 – June 2017) and minor illnesses over 4-week period.

Chronic illness was defined as a condition that is long-lasting (e.g., more than 6 weeks), in many cases lifelong, which needs to be managed on a long-term basis.[27]

Minor illnesses were considered as non-severe health conditions of less than 6-week duration for which affected household members were treated on outpatient basis.

Hospitalization care were similarly considered as in-patient care received by household members either in the formal health sector or with the alternative/traditional health practitioner.[26]

The study instrument was pre-tested among 30 households in Yenegwe, a small community on the outskirt of Yenagoa. The results obtained were used to improve the different aspects of the questionnaire. The pattern of some of the questions, the arrangement of the sections and the coding of some responses were revised after the pre-test.

Data analysis

Data generated from the field was directly entered into IBM SPSS 22.0 version which was also used for the analysis. Analyses were done to uncover the demographics, earnings and expenditures of the households. Data was presented as frequency distribution tables and descriptive statistics like means, standard deviation and range were calculated. A principal component analysis was done to group household into different socioeconomic groups.

We estimated household impoverishment by calculating poverty estimates using international poverty and extreme poverty lines of N1,095 (US$3) and N730 (US$2) per person per day respectively before and after households made healthcare payments.[14] The calculated estimates are the poverty headcount, poverty gap and the normalized poverty gap before and after households made health expenditures. These poverty estimates were operationalised as follows:

The poverty headcount represented the percentage of households living below the defined poverty lines.[2,5,12,15]

The poverty gap represented the mean deficit from the poverty line among the study population. It is the average amount by which resources fall short of the defined poverty line.[2,5,15]

The normalized poverty gap was computed by dividing the estimated poverty gap by the defined poverty line. This is useful for international comparisons.[2,5,15]

All financial estimates were made in Naira which is the Nigerian currency (conversion: US$1 = 365 Naira).

The difference between the poverty estimates before and after healthcare expenditure represented the impoverishing effect of health payment.[28] Thus the differences in poverty headcounts, poverty gaps and normalized poverty gaps before and after health payment represents the impoverishment attributable to health spending.

Ethics and Permission

Ethical approval was obtained from the University of Port Harcourt research ethics committee. The standard protocol for community entrance was applied and data was obtained from respondents only after the study objectives were explained and a written consent obtained from them.

Results

Sociodemographic profile of Household

Responses were received from 525 Households of which majority were headed by males (77%), had married/cohabiting partners (70.7%) and over 90% of household heads had post-primary education (Table 1).

In total, two thousand five and twenty-eight (2,528) persons were studied in the five hundred and twenty-five (525) households with a median household size of 5. About 17% of households made health expenditures related to childbirth while others did same when they sought care for long-term health condition (16.2%) and hospitalization (13%) (Table 2).

Household income, total consumption expenditure and health expenditure

Table 3 shows that the household mean monthly income from all sources is N160, 785 with a high level of variability (SD N148, 871). The mean total expenditure on consumption in the study was almost N150, 000 (SD N128, 087) while healthcare gulped on the average N19,520 monthly from the households' income, this corresponds to a mean percentage of 15.9% of household income spent on health.

Impoverishing effect of healthcare payment

The mean household income per capita per day was estimated as N1, 220 (SD = 1,073; SE = 47). This estimate reduced to N1, 038 after health spending was discounted from household total income.

The proportion of households (poverty headcount) whose members live on less than the poverty line of N1,095 (US$3) per day was 58.7% and 67.9% before and after discounting household income by household health expenditure respectively, increasing the prevalence of poverty by 9.2% (Table 4). The results also show that 9% of poor households were further pushed deeper into extreme poverty by health payment. Other impoverishing impact attributable to health spending are presented in Table 4.

Discussion

The study demonstrated the impoverishing effect of healthcare expenditure on households in Yenagoa. It showed that a substantial proportion of households are living on the margin of poverty. Almost 10% of households who were hitherto non-poor were pushed below the poverty line and another 9% who were poor were further pushed deeper into extreme poverty by healthcare expenditure. A 12.3% increase in the poverty gap and 16% increase in the extreme poverty gap were attributable to health payment. The average per capita deficit of N480 suffered by households without healthcare spending increased to approximately N540 after accounting for health spending.

Studies done in India, Kenya and Brazil, reported 3.3%, 2.7% and 2.6% increase in poverty headcount respectively

Table 1. Sociodemographic of household heads.

Characteristics	Frequency (n =525)	Percentage (%)
Sex		
Male	404	77.0
Female	121	23.0
Age of household heads (in years)		
18 - 24	9	1.7
25 - 34	98	18.7
35 - 44	197	37.5
45 - 54	120	22.9
55 - 64	48	9.1
65 and above	53	10.1
Marital status		
Single	77	14.6
Married	371	70.7
Divorced/Separated	51	9.7
Widowed	26	5.0
Educational status		
No formal education	9	1.7
Primary education	35	6.7
Secondary education	158	30.1
Post-secondary education	323	61.5
Occupation		
Unemployed	14	2.7
Student/Apprentice	18	3.4
Farming/Fishing	27	5.1
Company worker/Artisan	97	18.5
Civil servants	181	34.5
Business owner/ contractor	127	24.2
Professionals	32	6.1
Pensioner	29	5.5
Socioeconomic status (n = 475)		
Q1 (Poor)	150	31.6
Q2 (Middle)	273	57.5
Q3 (Wealthy)	40	8.4
Q4 (Wealthiest)	12	2.5
Household Assets (Ownership)		
Radio	300	57.3
Television	508	96.9
Fridge	449	85.7
Car	173	33.0
Phone	519	99.0
House	213	40.7
Stocks/Equities	40	7.6

after health expenditures.[15,29,30] The analysis of household income and expenditure from 11 countries in Asia showed an increase of 3.8% and 3.6% in extreme poverty and poverty headcounts respectively after household health spending deductions in Bangladesh which had the most significant proportional variation in the study.[4] Our finding shows an increase of approximately 9% in both extreme poverty and poverty headcounts which is higher than these quoted percentages from India, Kenya, Brazil and Bangladesh. However, a direct comparison of the estimates from different studies and countries can be misleading because the different methods that might have been employed in constituting health expenditure and the cutoff to define poverty vary in time and place. Nonetheless, all these studies showed that healthcare spending especially through OOP mechanism have an impoverishing effect on households.

The high proportion of households impoverished in Yenagoa, Bayelsa state due to healthcare spending provides additional support for the recently established Bayelsa health insurance scheme (BHIS). It is expected that stakeholders would galvanize efforts towards the success of this mandatory social health insurance scheme in the state. However, there are other important considerations which the operators would need to consider. Notable among these are the provisions for funding premiums for the poor, near poor and other vulnerable groups as contributory mechanisms alone will not ensure universal health coverage in situations where the population is largely poor and/or in the informal sector.[14,31]

It is pertinent to note that from the multi-country study involving 11 Asian countries, Indonesia had the lowest incidence of impoverished households attributable to healthcare payments.[4] This arose from the country's ability to protect poor households from high healthcare cost through targeted exemptions with the use of a health card.[2] Even in developed setting like the UK where hospital services are free at the point of access to all, similar exemptions from co-payment exist for prescribed drugs, dental treatment and eyesight examination for vulnerable population including those with long-term conditions.[32]

Indeed, there are further lessons to learn from the scenario in the UK[32] as 16% and 13% of households in Yenagoa had at least a member living with at least one long-term condition or hospitalized in the last one year respectively. The enormous financial burden associated with these events can be

Table 2. Morbidity pattern of households.

Characteristics	Frequency	Percent (%)
Morbidity pattern in households (n = 525)		
HHs with members having long term health condition	85	16.2
HHs with members hospitalized	68	13.0
HHs with members that had minor illness	265	50.5
HHs with childbirth	87	16.6
HHs with nonspecific medical conditions	169	32.2
HHs without health expenditure in last 1 year	115	22.0

Table 3. Household income, total consumption expenditure and healthcare expenditure.

Variable	Mean Value (in Naira)	Standard Deviation (in Naira)	Range
HH mean monthly income			
Primary income	150,970	140,079	(10,000 – 750,000)
Collective income (all sources)	160,785	148,871	(10,000 – 1,010,000)
HH mean monthly expenditure			
Total consumption expenditure	149,597	128,087	(12,000 – 771,925)
Food expenditure	60,900	32,625	(7,000 – 195,300)
Non-food expenditure	73,729	80,391	(3,450 – 550,000)
Total healthcare expenditure	19,510	44,899	(0 – 683,330)
Breakdown of HH mean health care expenditure			
Long-term medical condition	4,515	15, 475	(0 – 200,000)
Minor illness	8,940	3,709	(0 – 35,000)
Childbirth	3,150	6,980	(0 – 46,000)
Hospitalization	6,770	28,630	(0 – 333,330)
Non-specific health payments	3,065	7,278	(0 – 86,000)

Table 4. Impoverishment estimates before and after health expenditure.

	Before discounting health payment (1)	After discounting health payment (2)	Difference (Absolute) (3)= (2) – (1)	Difference (Relative) [(3)/(1)*100]
Assessment using the $3.00 (1,095 Naira) capita/day poverty line				
Poverty Headcount (%)	58.7	67.9	9.2	15.7
Poverty gap (Naira)	482.4	541.6	59.2	12.3
Normalized Poverty Gap (%)	44.1	49.5	5.4	12.2
Assessment using the $2.00 (730 Naira) capita/day extreme poverty line				
Poverty Headcount (%)	37.8	46.8	9.0	23.8
Poverty Gap (Naira)	280.2	324.9	44.7	16.0
Normalized Poverty Gap (%)	38.4	44.5	6.1	15.9

ameliorated with expanded funding options for public health services that can guarantee improved access to hospital care for all and exemption of poorer households from all co-payments as part of a broader social security system.

Although the relative increase of 15.7% and 12.3% in the headcount and depth of poverty respectively are worrisome, this may still represent an underestimation of the impoverishing effect of healthcare cost on households in Yenagoa as indirect costs and lost earnings by households with sick members were not accounted for in this study. Like the Kenyan study,[18] underestimation could also arise from the 22% of households that reported zero spending on healthcare in the one-year recall period. The zero spending may reflect non-recall or denial of past illness episodes which are often given negative connotations or because they had completely forgone care due to lack of resources, not necessarily because they do not need healthcare.

Interestingly, while impoverishment as a result of health expenditures occurs in all countries irrespective of income levels, its prevalence is higher in countries which depend predominantly on OOP payment mechanisms like Nigeria.[6,33,34] A quick recommendation would be urging all leaders in Africa to increase public spending on health to at least achieve the target of 15% endorsed at the Abuja declaration.[35] This would appear difficult in view of other formidable challenges, dwindling public revenue and lack of political will in these countries. However, widening the sources of funding may just well be the way out. In this regard, a range of innovative prepayment methods including the National Health Insurance Scheme (NHIS) should be introduced, strengthened and expanded to achieve national coverage.

Although this community-based study quantified and deduced the impoverishing effect of healthcare expenditure, its limitations arise from the fact that only the total OOP expenditures was reported without categorizing them into healthcare expenditure subheads like fees for drug, consultation, investigation, transportation, accommodation as was done in similar studies.[33-34] This categorization would have helped identified the specific spending that influenced household impoverishment the most in our setting.

Furthermore, applying a longitudinal approach is more apt and reliable in studying expenditures and their impact on household impoverishment. The paucity of longitudinal data on the subject may not be unrelated to the difficulties in implementing such research protocols, hence researchers often resort to cross sectional designs.[2,11,13,15,18,33-34,36,37] Despite these limitations, findings from this study would be a useful guide in the on-going implementation of the state-wide health financing model that would minimize systematic disparities while ensuring the achievement of universal health coverage for the population.

Conclusions

A significant percentage of households who are marginally non-poor were pushed into poverty because of healthcare expenditure. There is need for increased public spending on healthcare, implementation of innovative and progressive pre-payment mechanisms as well as exemption from payment by vulnerable households that would assure financial risk protection, guarantee equity in health financing and universal coverage for households in Yenagoa, Bayelsa state.

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