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Contribution of household health care expenditure to poverty in Oyo State, South West Nigeria: A rural and urban comparison

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ABSTRACT

Introduction: The financial burden of health care costs in Nigeria is borne almost entirely by the individuals and household members as health care financing is still mostly from out of pocket (OOP) payments. OOP payments can lead households into poverty. This study aimed to estimate the contribution of household health care expenditure to poverty in rural and urban communities in Oyo state, Nigeria.

Method: This is a comparative cross-sectional study using a tested and adapted version of the Living Standard Survey questionnaire to collect data on 5,696 household members from 1,434 household representatives. Representatives were selected using a multistage sampling method. Information was collected from 714(49.8%) and 720(50.2%) households in the urban and rural Local Government Area (LGA), respectively. International poverty line of $1.25 per day was used. Poverty level was measured with and without household health expenditure. An exact McNemar's test was used to determine the difference in the proportion of poor, gross and net payment for health care services. SPSS software was used for data analysis.

Results: Health care was utilised by 1,006 (70.2%) of the 1,434 households studied. Of urban and rural households, 637(89.2%) and 369(51.3%) utilized health care services, respectively. Only 513(29.8%) were poor while 1519(88.2%) were poor after considering the cost of utilising health care. Increase in poverty of 66.2% occurred because of health care utilisation ($p<0.001$).

Conclusion: Health care expenditure increased the proportion of household members living below poverty line. To protect against poverty free basic health care services is required in Nigeria.

Keywords: Cost, Out of Pocket, Poverty, Expenditure

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Introduction

In resource-poor settings where out of pocket (OOP) payments is the common form of health care financing, health care expenditures often place a significant burden on the financial sustainability of households (1, 2). Many households in need of health care, particularly the poor, may come to a decision not to utilize health services, and some may patronise low quality health care, simply since they cannot meet the expenses (3). With all these implications for household sustainability, there is a persistent interest in the impact of health care spending on the affordability of health care in both rural and urban communities.

In Nigeria, health care cost is borne almost entirely by individuals and household members as the health care financing is mostly from OOP payments (4). High health care expenditure places considerable financial burden on households (5). Globally, it is estimated that 150 million people suffer financial catastrophe each year due to health care payments and about 100 million are pushed into poverty because of OOP payments. Where OOP expenditure is common, those in low socioeconomic status are affected more in terms of reduction in access to services than households with higher socioeconomic status (6).

In Africa, the incidence of poverty has been increasing significantly for many years; people living in poverty increased by about two-thirds between 1970 and 1985, and rose from 180 million (47% of the population) in 1985 to 265 million by the year 2000 (7). The Nigeria Bureau of Statistics publication reported the poverty lines for Nigeria; this is a measure that divides the poor from non- poor (8). Although all these measures of poverty are produced by the National Bureau of Statistics (NBS), the official poverty measurement approach reported by the NBS for 2004 and again for 2010 is the relative poverty measurement. The relative poverty measure showed that

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69% or 112,470,000 of Nigerians are living in poverty. However, 59.1% in South West Nigeria and 60.7% in Oyo State alone were living in poverty in 2010 (8).

An increasing number of studies are addressing the distribution of OOP payments and their impact on financial wellbeing and poverty across households in different parts of the world (3, 4, 9). Such households are not included in national poverty estimates since high health care costs raise their expenditure above the poverty threshold and are, therefore, measured to be non-poor (9).

Studies in Asia and Latin America have assessed the effect of spending on health care on household poverty. In a study on health expenditures in 11 Asian countries, poverty estimates were 14% higher when OOP payments were accounted for and about 78 million people were pushed into poverty due to heath care costs in these countries (9). It has been shown that health care costs are a major cause of impoverishment. In Nigeria, there is a need to estimate the effect of spending on health care on the individual household members. This study aimed to determine the contribution of health care expenditure to poverty in rural and urban households in Oyo State, Nigeria.

Method

Study Area

The study was conducted in Oyo State, South-Western Nigeria. It has a land mass of 27,249 square Kilometers and is one of 36 states in Nigeria (10). Oyo State has a population of approximately 5,580, 894 (11). There are 33 local government areas (LGAs) in the State. Twelve of these LGAs are urban; nine are semi-urban while twelve are rural (12). Nigeria's Gross Domestic Product (GDP) is $235.92 billion while Oyo State's GDP is $16.1 billion (13). In Oyo State, over 65% of the population live and work in the rural areas and poverty affects 60.7%, (in 2010) while 8.9% of its citizens are unemployed (8, 10, 13).

The studied LGAs were Ibadan South West (urban) and Ibarapa North (rural) of Oyo state. The residents are mainly of Yoruba ethnicity; they have similar cultural values and speak predominantly Yoruba. Less than 10% of the citizens of Oyo State have any form of health insurance (14).

Urban LGA (Ibadan South West Local Government Area)

Ibadan South West LGA was carved out of the defunct Ibadan Municipal Government (IMG) in 1991. The Administrative Headquarter is located at Oluyole Estate. The 2013 estimated population for the area was 352,302, using a growth rate of 3.2% from the 2006 census (12). Ibadan South West LGA is made up of 12 political wards. Located in the LGA are state government hospitals, Primary Health Care (PHC) facilities as well as numerous private hospitals. Patent Medicine Stores are present throughout the LGA. The majority of the inhabitants of the LGA fall in the middle and high socio-economic classes (15). The LGA is dominated by the Yorubas, but other tribes also engage in different types of economic activities within it. The LGA is characterized by a well-defined housing and road network.

Rural LGA (Ibarapa North Local Government Area)

Ibarapa North LGA was carved out of Ifeloju LGA in 1996, and uses Ayete as the headquarter (16). The total population of Ibarapa North LGA is 100,293 according to the 2006 population census, 113,130 in 2010 using a growth rate of 3.2% from 2006 population census (12). The majority of the people are Yoruba. They are mostly farmers, with others being artisan, traders and few public servants. Ibarapa North LGA is made up of 10 political wards. The health facilities present in the LGA are mainly local government Primary Health Care centers. There is one General Hospital owned by the Oyo State government at Ayete, the local government headquarter. Patient medicine stores are also available within the LGA.

Study Design

This study used a comparative cross-sectional study design. The study involved quantitative data collection using a pre-tested adapted version of the Living Standard Survey questionnaire (17).

Study Population

The study population included each member of every household in the selected communities of both rural and urban LGA Oyo State.

Inclusion Criteria

Households who had resided in the selected communities of rural and urban LGA Oyo State for at least one year were selected. Heads of households were chosen as representatives. If heads were not available, the spouse or other household representative aged 18 years and above was selected to be interviewed.

Exclusion Criteria

1. Households enrolled in health insurance scheme and did not make any counterpart payment for health care services received.
2. Visitors and non-residents of the selected communities of Oyo State.

Sample Size Determination

The sample size was determined using the formula for comparing two proportions (18). Initial calculation was 331 households per group. A design effect/correction factor of 2.0 was considered because of the cluster sampling technique used making the sample size (2×330) = 660. Non-response rate was 10% (10% x 660= 66). Sample size=660+66=726. Minimum sample size estimated for each group was 726. Households visited in the rural LGA and urban LGA based on the cluster sampling technique used were 730.

Sampling Technique

A multistage sampling technique was used to select the households.

Stage 1:

Using the sampling frame of rural and urban LGAs in Oyo

State, a rural LGA (Ibarapa North) and an urban LGA (Ibadan South West) were selected by balloting.

Stage 2:

From the list of all the political wards in each selected LGA, five out of 10 wards from Ibarapa North, and five out of 12 wards in Ibadan South West LGA were selected by tables of random numbers.

Stage 3:

A list of all the settlements/streets was obtained from both the rural and urban LGAs.

In the rural areas, a rapid mapping of a random sample of selected settlements gave an average of 50 eligible households per settlement/area.

In the urban areas, a rapid mapping of a random sample of selected settlements gave an average of 90 eligible households per street/area/settlement. With this assumption, the appropriate number of settlements required was selected from each ward in the rural and urban LGA.

Stage 4:

All consenting households that met the inclusion criteria in the selected settlement/area /neighbourhood /street were included in the study. Household heads or representatives aged 18 years and above in all the selected area were interviewed until the sample size was reached.

The questionnaire used in the study was adapted from a standardized questionnaire on Living Standards Measurement for developing countries developed by the World Bank (17). Recall period of one month was used for self-reported health spending for outpatient care and 12 months was used for inpatient care (19). Inpatient care often costs more, patients are likely to recall its cost easier than outpatient care.

The survey instrument contained three main sections:

Section A: Socio-demographic data the age, sex, relationship to respondents, religion, present level of education, present occupation, marital status, tribe of household members, family type, and possession of household items.

Section B: Household health services utilized and healthcare expenditure, including whether or not health care was utilized, the type of services, and where it was received. Utilization of health care implies that the patient received outpatient care in the four weeks preceding data collection or inpatient care 12 months before data collection or both.

Section C: Treatment cost comprising expenditures on registration/consultation, investigations (i.e. laboratory and other investigations), drugs, and other costs.

The questionnaire was translated into Yoruba and translated back into English to ensure the original meanings were maintained. Data were collected using a semi-structured questionnaire. It was interviewer administered and the duration of field work was six weeks. Information on all household members was collected through the household head or the representative.

Data were collected by trained research assistants. The research assistants had a minimum qualification of secondary education. They were trained for three days in Yoruba and English to have a good understanding of the questionnaire. A practical session was held on the third day of the training to ensure mastery of the questions.

The questionnaire was pre-tested among the household heads in a rural and urban LGA that were not selected to participate the study. From the result of the pre-test, ambiguous questions were rephrased or where necessary excised. Field supervision was done by an appointed supervisor daily, the most qualified out of the research assistance.

Statistical Analysis

The data were analyzed using SPSS, version 21.

Qualitative variables (e.g. sex of respondent, occupation, educational level, household socioeconomic status, health care services utilized) were summarized as proportions and compared between LGA's. Quantitative variables (age of the respondent, average monthly household income) were summarized as means with standard deviation or median with range and compared between LGA's.

The socio-economic status index was developed using Principal Components Analysis (PCA). The input to the PCA was information on the ownership of the house and other key assets such as a stove, electric fan, refrigerator, air conditioner, radio, television, and generator, piped water in the household, bicycle, motor vehicle, upholstered chairs, sewing machine, and washing machine. For calculation of distribution cut points, quintiles were used. Each member was assigned the wealth index score of his or her household. The quintiles were Q1= Lowest, Q2=Second, Q3= Middle, Q4= Fourth, Q5=Highest (20-22).

All persons whose per capita expenditure was less than the poverty line of $1.25 were considered poor, while those from and above the stated line were considered on-poor (8, 22). One U.S. dollar was converted to ₦150 to compare the study to national figures; this was the worth in 2010-2013. Household health expenditure was computed by finding the average monthly cost of outpatient care with one twelfth the cost of inpatient care (23). This was done since the cost of outpatient care data was collected over the last four weeks preceding data collection while that of inpatient care was for the last one year before data collection (20). The contribution of household healthcare payments to poverty estimates were made by calculating poverty levels using consumption expenditure of individual household member without health care payments (i.e. gross of OOP payments) and with health care payments (i.e. net OOP) (24).

Data were presented using frequency tables. Inferential statistics were done using chi-square test. Man-Whitney U test was used to compare the health care expenditure. An exact McNemar's test was used to determine the difference in the proportion of poor, gross and net payment for health care services. The level of statistical significance was set at 5%.

Ethical approval to carry out the study was obtained from the Oyo State Ministry of Health Ethical Review Committee. Permission for the study was sought from the head of households.

Operational Definition of Study Variables

A household refers to a group of two or more persons living together in the same house and sharing common food or other arrangements for essential living (17, 25).

Illness episode: A report of at least one of the following conditions: beingned-ridden; having been restricted from normal activities (i.e. work, school); having been able to do normal activities but with reduced capacity for at least one day and/or having to pay out-of-pocket for health services (26). However, reasons for health care utilization were not restricted to illnesses alone.

Expenditure refers to consumption expenditure incurred by households. Household consumption expenditure is the value of consumer goods and services acquired, used or paid for by a household for the satisfaction of the needs and wants of its members. Final use of goods and services, excluding the intermediate use of some goods and services in the production of others (23).

Household Health Care Expenditure: is defined as the expenditures on drug and medicines, consultation fees, hospital bed charges, transport charges to the treatment site and other cost directly related to the utilization of health care services (9).

Out-of-pocket (OOP) health expenditure refers to the payments made by households at the point they receive health services. Typically, these include registration, doctor's consultation fees, investigations, purchase of medication, hospital bills, insurance co-payments, and expenditure on health-related transportation (9).

Result

Information was obtained on 5,696 people in 1,434 households surveyed. Table 1 shows the socio-demographic characteristics of all household members in rural and urban locations. Concerning the sex, the proportion of males in the rural location (1,667=53.7%) was slightly higher than that of the urban area (1,283=50.5%) (p=0.002). Among household members aged 40 years and above, 384(14.8%) were living in urban areas while 506(16.3%) were in rural areas (p<0.001). More than half of household members (2937=51.6%) were single with a slightly higher proportion (1627=52.5%) of singles in rural areas compared to the urban areas (1,310= 50.5%) (p=0.002). A significantly higher proportion had secondary education in the urban areas (1151=44.4%) as compared with 1,218(39.2%) in the rural areas. Only 233(4.1%) household members were enrolled in the National Health Insurance scheme. A significantly higher proportion of urban household members (226= 8.7%) were enrolled in the National Health Insurance scheme or other Health Insurance scheme as compared to 7 (0.2%) in rural households (p<0.001).

Table 1. Socio-demographic Characteristics of Household Members in Rural and Urban Locations, Oyo State

Characteristics (n=5696)	Location		Total (N=5696) n(%)	Test statistics	P-Value
	Urban (N=2592) n(%)	Rural (N=3104) n(%)			
Sex				χ^2 9.857	0.002
Male	1283(49.5)	1666(53.7)	2949(51.8)		
Female	1309(50.5)	1438(46.3)	2747(48.2)		
Age				χ^2 177.144	<0.001
<10	796(30.7)	849(27.4)	1645(28.9)		
10-19	281(10.8)	535(17.2)	816(14.3)		
20-29	490(18.9)	801(25.8)	1291(22.7)		
30-39	641(24.7)	413(13.3)	1054(18.5)		
≥40	384(14.8)	506(16.3)	890(15.6)		
Marital Status				χ^2 12.006	0.002
Single	1310(50.5)	1627(52.5)	2937(51.6)		
Married	1193(46.0)	1416(45.6)	2609(45.8)		
Others*	89(3.5)	62(1.9)	151(2.6)		
Highest level of Education Completed				χ^2 227.174	<0.001
Pre-school	4(0.2)	80(2.6)	84(1.5)		
No formal education	149(5.7)	501(16.1)	650(11.4)		
Primary	848(32.7)	781(25.2)	1629(28.6)		
Secondary	1151(44.4)	1218(39.2)	2369(41.6)		
Tertiary	440(17.0)	524(16.8)	964(16.9)		
NHIS or Other Health Insurance Scheme**				χ^2 259.732	<0.001
Enrolled	226(8.7)	7(0.2)	233(4.1)		
Not enrolled	2366(91.3)	3097(99.8)	5463(95.9)		

*Divorced, separated, co habiting**NHIS: National Health Insurance Scheme

Table 2 shows the cost of care for household members at the first time of seeking health care services in both (urban and rural) locations. The most common form of payment was for prescription drugs while the least common payment was made for investigation. The median cost of purchasing prescription drugs was ₦400 (10-10,000) in the urban area compared to rural household members who paid a median cost of ₦700 (20-10,000); the difference in cost was statistically significant (p<0.001). The median cost of investigation among urban household members ₦1500 (800-4,000) was statistically higher compared to the median cost of ₦500 (30-2,000) paid by rural household members. Significantly more money was paid for transportation among rural household members (₦200; 40-3,000) compared to ₦100 (40-3,000) paid by urban household members, (p<0.001). Of 1723 household members that utilized health care services, urban dwellers were 1060(61.5%) while 663(38.5%) resided in the rural areas.

Table 3 shows the poverty head count for individuals that utilized health care services.

When cost of health care expenditure was not considered, only 513(29.8%) were poor while 1519(88.2%) were poor after utilising health care. Individuals who were poor without considering the payment for health care (gross) were 351(33.1%) in urban compared to 162(24.4%) in rural. With payment for health care, 879(82.9%) were poor in the urban areas compared to 640(96.5%) in the rural areas.

Table 4: Increase in poverty of 66.2% (1519-513/1519) occurred because of health care utilisation. One thousand seven hundred and twenty three (1723) persons utilized health care services. An exact McNemar's test determined that there was a statistically significant difference in the proportion of poor, gross and net payment for health care services p<0.001.

Table 2. Cost of Care for Individual Household Members at the First Time of Seeking Health Care Services in both Urban and Rural Locations

Variables	Urban	Rural	Total	P-Value*
Transportation				<0.001
n**	345	880	880	
Median ₦	100	200	200	
Minimum ₦	40	40	40	
Maximum ₦	3,000	3,000	3,000	
Registration/ Consultation				<0.001
n	183	688	688	
Median ₦	500	150	150	
Minimum ₦	100	20	20	
Maximum ₦	2,500	3,200	3,200	
Drugs				<0.001
n	604	1176	1176	
Median ₦	400	600	600	
Minimum ₦	10	10	10	
Maximum ₦	10,000	10,000	10,000	
Investigation				<0.001
n	45	171	171	
Median ₦	1500	500	500	
Minimum ₦	800	30	30	
Maximum ₦	4,000	4,000	4,000	
Other cost***				0.479
n	53	78	78	
Median ₦	800	1,000	1,000	
Minimum ₦	40	40	40	
Maximum ₦	12,000	12,000	12,000	

*Mann-Whitney Test

**n varied since it was not all the household members that paid for all the services listed

***Other costs are the extra cost of feeding and transporting the person accompanying the sick

Table 3. Poverty head count for individuals who utilized health care

Poverty line	Location		Total (N=1723) n(%)	Test statistics	P-Value
	Urban (N=1060) n(%)	Rural (N=663) n(%)			
Gross of health care utilization				$\chi 2$ 14.693	<0.001
Rich (≥$1.25 per day)	709(66.9)	501(75.6)	1210(70.2)		
Poor (<$1.25 per day)	351(33.1)	162(24.4)	513(29.8)		
Net of health care utilization					<0.001
Rich (≥$1.25 per day)	181(17.1)	23(3.5)	204(11.8)	72.344	
poor (<$1.25 per day)	879(82.9)	640(96.5)	1519(88.2)		

Table 4. Difference in the proportion of poor gross and net payment for health care services in Oyo State

		Net of health care utilization			P value
Gross of health care utilization		Rich	Poor	Total	<0.001
	Rich	204(100%)	1006(66.2%)	1210(70.2%)	
	Poor	0(0%)	513(33.8%)	513(29.8%)	
	Total	204(100%)	1519(100%)	1723(100%)	

Discussion

We aimed to estimate the contribution of health care expenditure to poverty in Oyo State, Nigeria using the international poverty estimate. We found that the gross individual expenditure per day was <$1.25 (proportion below the poverty line) in 513(29.8%) and 1519(88.2%) after utilising health care. The 88.2% was more than 51.8% estimated for Oyo state, 50.1% estimated for the South Western Nigeria and 60.2% for the entire country by the National Bureau of Statistics (27). This finding is higher than 33.7% declared by the World Bank (22). It is possible that because the cost of living is increasing in Nigeria, the proportion below the poverty line will also be on the increase.

When the cost of health care expenditure was not considered, only 29.8% were poor while it was 88.2% after utilising health care. Individuals who were poor without considering the payment for health care (gross) were 33.1% in urban compared to 24.4% in rural areas. With payment for health care, 82.9% were poor in the urban compared to 96.5% in the rural areas.

We also found that after considering out of pocket payments, the poverty head count increased. An additional 58.4% of the population had income that was less than the international poverty line of US$ 1.25 per day after they paid for health care. In other low income countries, OOP payment has been shown to contribute to household poverty (9, 25). In Asia, for example, the poverty head count increased by 14% after counting health care payments (28).

Health care services were utilized by 1,723 individuals from the households studied. More households in the urban area utilized health care services than households in rural areas; this is similar to the findings in the South Eastern part of Nigeria (20). It should not be concluded that the need for health care services is more in the urban areas because the median monthly household cost of health care is higher among rural households. This is similar to another study in Nigeria that has also shown that rural households incur higher healthcare costs (29). Ezeoke et al. opined that where healthcare payments are made mostly through OOP spending, as found in this study, many households face the risk of not accessing care at all when ill or seeking care from low-level providers, where the quality of care is often low (20). In Kenya, urban households were found to have spent significantly more than those residing in rural areas, with the poorest households in different settings incurring the highest cost burden (30).

Limitations of the Study

A likely limitation in this study was recall bias, as is the case in self-reported prevalence surveys. Recall bias was reduced by limiting enquiries on out-patient care to one month and in-patient care to one year. These cut-offs have been used widely in several countries (9). The study captures only orthodox health care utilization. Unorthodox health care patronage is expected to be common. Underestimation of the effect is, therefore, possible. This study captured direct cost of care. Estimating the indirect cost caused by illnesses, such as lost income because of inability to work, was not considered. Effort was made to cover the direct cost completely.

Conclusion

This study showed that health care expenditure pushed the households into poverty in Nigeria. The effect of health care expenditure is more in rural than urban communities. Health care expenditure increased the proportion of household members living below the poverty line.

Recommendation

To protect against poverty, the Nigerian healthcare financing agenda should provide basic health care services

at no cost to rural community dwellers and particularly for the poor.

Conflict of Interest

None declared.

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