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Towards Universal Coverage: Examining Costs of Illness, Payment, and Coping Strategies to Different Population Groups in Southeast Nigeria

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Abstract. This study investigated the costs of illness to households in different socio-economic status (SES) groups and geographic places of abode in addition to the mechanisms that the different population groups used to pay for health services and cope with payments. A cross-sectional descriptive study of 3,200 households selected from six communities in two states was conducted using interviewer-administered pre-tested questionnaires. An SES index was used to divide the households into quartiles, and χ^2 analysis was used to determine the relationship of SES and geographic abode of households with cost of illness, payment mechanism, and coping strategies. The results show that malaria was the illness that most people had. The average cost of transportation for malaria was 86 Naira ($0.6 US), and the total cost of treatment was 2,819.9 Naira ($20 US); of this cost, drug costs alone contributed more than 90%. Out of pocket was the main method of payment. Treatment costs differed by geographic location and socio-economic status. Policy measures should establish targeted mechanisms to protect the general population, especially rural dwellers and poorer households, against the financial burden of direct healthcare payments.

INTRODUCTION

Healthcare expenditures often present a considerable challenge to the economic sustainability of households,[1] especially in resource-poor settings that lack effective health insurance policies. The method of financing healthcare is linked to household treatment-seeking patterns,[2] and the strategies for coping with payments can increase a household's susceptibility to impoverishment.[3,4] The World Health Organization (WHO) estimated that households that spend 40% or more of their non-food expenditure on treatment are most likely to be impoverished.[5] To this effect, the poor are likely to be the most affected, because they spend larger proportions of their income than the wealthier groups when they seek care.[6]

Previous cost of illness studies have shown that, for households in low and middle income countries, health expenditures are frequently above 10% of household income.[7] Although costs above this threshold are being regarded as potentially catastrophic,[8] there are arguments that any health expenditure that deters households from consumption of their basic needs is catastrophic and may not essentially amount to high healthcare payments in real terms.[9]

In sub-Saharan Africa (SSA), the burden of health expenditures is mostly attributed to common endemic diseases; they constitute a majority of the public health problems because of their recurrent nature and are major causes of morbidity and mortality.[10] Such diseases, including malaria, typhoid, tuberculosis, and diarrheal disease among others, are the greatest contributors of the economic burden on both households and governments in Nigeria.[11] For instance, an annual economic loss of $132 billion,[12] an estimated 300,000 deaths each year,[13] 60% of outpatient visits, and 30% of hospitalizations[14] are all attributed to malaria. In addition, about 50% of the population experiences at least one episode of malaria annually, resulting in high productivity losses.[12]

Existing risk protection mechanism in the country is weakened by low coverage of the population. Consequently, people still pay out of pocket when they receive care, which creates inequities in treatment seeking in favor of those people with more ability to pay. Onwujekwe and others[15] have also shown that treatment expenditures for malaria most significantly depleted the aggregate income of the two poorest socio-economic status (SES) groups and rural dwellers, contributing to more than 20% of annual heath expenditures; also, it accounted for more than 10% of monthly household expenditure for the poorest SES.[15]

The costs of illness for households lead to inequities in access to care, with the poor being deterred from the use of healthcare, although they are the ones in most need of it.[16] In Vietnam, about 10% of households were at risk of being impoverished, despite existing policies on free access to healthcare for the poor.[17]

In Nigeria, out of pocket payments (OOP) remain an important source of funding for healthcare, accounting for more than 90% of private expenditures on health.[18] Because these direct payments place huge financial burden on individuals, some households refrain from seeking care in an attempt not to incur cost, but the net effect is often that many households incur greater costs on the long run because of possible complications from illnesses that could have been abated if care was sought earlier.[19]

The impact of coping strategies for payment of health expenditures has also been explored in many studies, and although some authors reported the existence of some form of risk protection mechanisms, others found the use of adverse coping strategies for common illnesses.[8,20,21] In some cases, some households are only able to manage payments by using coping strategies such as sale of assets, borrowing, and reduction in household consumption, which are all likely to have adverse effects on their wellbeing.[8,20] The overall frequency of using such strategies were found to be more common among the poorest countries and those people with limited health insurance.[21] The consequences of these strategies very often keep households in debt or poverty for a long period of time after the illness that created the debt.[22]

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In recent times, to lessen the burden of direct health payments and increase health service use, health systems of many countries are seeking to move away from overdependence on OOP payments as a source of health financing to payment strategies involving some form of risk pooling.[23] However, the main challenge to achieving this goal in many SSA countries, including Nigeria, has been the lack of effective mechanisms to pool risks.

This paper, thus, contributes to knowledge on household costs of illness, payment mechanisms, and payment coping strategies for common illnesses in different geographic areas in southeast Nigeria. A good knowledge of costs and payment methods and how they differ by SES and geographic location of the household is important for developing and implementing interventions that will promote equity in universal coverage of interventions such as social insurance. This information will ultimately help to reduce the economic burden of diseases.

MATERIALS AND METHODS

Study area. The study took place in Anambra and Enugu states in southeast Nigeria. Both states are Igbo-speaking, with English being widely spoken as the second language. Anambra state, with its capital at Awka, has a total population of 4,182,032 in a land area of 4,416 km^2, giving an average density of 633 persons/km^2.[24] The state is, therefore, one of the most densely populated states in Nigeria. The people of the state are widely known to be very resourceful, hardworking, sociable, and accommodating. They are highly enterprising and are reputed for their business acumen. It is also a region known for its skilled workforce.[25]

Enugu state has a population of 3,257,298 within a total area of 7,618 km^2.[26] Enugu is a modern city that covers an area of 85 km^2 and has a population of about 500,000. It is a well-developed coal mining, commercial, financial, and industrial center, with a booming economy and vast investment opportunities.[27]

The study was conducted in three communities in each state. In each state, an urban, peri-urban, and rural communities were chosen. In Anambra state, Awka (urban), Amawbia (peri-urban), and Amansea (rural) were the study areas. In Enugu state, Uwani (urban), Iji-Nike (peri-urban), and Amokwe (rural) were the study communities. The urban communities are characterized by a well-defined housing and road network together with adequate electricity and water supplies, whereas rural areas generally have poor housing systems and usually a lack of or inadequate electricity and water supply; peri-urban areas are intermediary between urban and rural areas, with some level of urbanization but usually without well-defined housing and road networks and proper refuse disposal system.

Study design and data collection. A pre-tested interviewer-administered questionnaire was used to collect information from randomly selected householders in a cross-sectional survey.

The questionnaire was administered to respondents from 3,200 households (a minimum of 500 from each community spread over the communities) selected by simple random sampling from a sample frame of households numbering system prepared by the National Bureau of statistics (NBS). Adequate sample size was determined using a power of 80%, confidence level of 95%, and use rate of health facilities of 20%.[28] The head of household or the most senior member of the household from the selected households was interviewed. The interviewers were trained over a period of 3 weeks to ensure their mastery of the questions; they were then examined, and the best interviewers were chosen to conduct the interviews. The interviews were conducted in the native language.

Data were collected on the reported illnesses that the household had 1 month to the date of the interview, the demographic structure, and their socioeconomic characteristics. Questions also addressed the costs that households incurred in seeking treatment 1 month before the interview and payment methods used as well as coping mechanisms. Treatment cost comprised expenditures on registration, investigations (laboratory, x-ray, etc.), drugs, and other costs.

Data analysis. Computation of frequency tables, cross-tabulations, and testing of means were the data analytic tools. The data were pooled to obtain the datasets for urban, peri-urban, and rural areas. The data were examined for links between SES and geographic location with the key variables. For specifically analyzing the socio-economic and equity implications of the data from the consumers, an asset-based SES index was created using principal components analysis.[29,30] Information on household ownership of radio set, bicycle, television set, motorcycle, and refrigerator as well as per capita weekly food value were the variables in the SES index. The first principal component was used to derive weights for the SES index. The SES index was used to divide the households into quartiles, and χ^2 analysis was used to determine the statistical significance of the differentiation of the dependent variables into SES quartiles. Comparison between the three geographic locations was used to examine for geographic differences. The Kruskal–Wallis non-parametric test (which reports a χ^2 statistic) was used to compare the means of health expenditures.

RESULTS

Demographic characteristics of respondents. Most of the respondents from the six study communities were male heads of households, middle-aged, main income earners, and main decision makers about household expenditures (Table 1). The table also shows that the average number of household residents was five people in the six study areas. The majority of the respondents had some formal education, and the least numbers of years spent schooling were found in the two rural communities of Amansea and Amokwe (approximately 9 years in the two communities).

Types of illness that people had and where they sought treatment. Table 2 shows that malaria was the major illness in the communities, with the urban communities accounting for the highest proportion of malaria cases (61.7%). A considerable number of people had typhoid, with highest occurrence in the rural communities. Few people in all the communities had diarrhea. The majority of the people in all the communities sought treatment from patent medicine dealers, with the frequency being highest in the rural communities. More people in peri-urban than other communities sought treatment from private hospitals. People on average spent about 28 minutes to travel to the various healthcare providers to receive treatment for their illnesses; however, the travel

TABLE 1
Socio-demographic characteristics of the respondents by communities

Variables	Awka (urban) *n* (%)	Amawbia (peri-urban) *n* (%)	Amansea (rural) *n* (%)	Uwani (urban) *n* (%)	Iji-Nike (peri-urban) *n* (%)	Amokwe (rural) *n* (%)	Combined *n* (%)
N	500	500	501	515	555	500	3,071
Status in household							
Female household head	112 (22.4)	137 (27.4)	155 (30.9)	56 (10.9)	64 (11.5)	88 (17.6)	612 (19.9)
Male household head	334 (66.8)	263 (52.6)	313 (62.5)	180 (34.9)	404 (72.7)	401 (80.2)	1,905 (62.0)
Respondent is main income earner	460 (92.0)	386 (77.2)	463 (92.4)	233 (45.2)	526 (94.7)	480 (96.0)	2,548 (82.9)
Sex (male)	352 (70.4)	270 (54.0)	309 (61.7)	183 (35.5)	403 (72.6)	397 (79.4)	1,914 (62.3)
Mean number of household residents (SD)	4.93 (4.91)	5.09 (4.87)	4.93 (2.85)	5.49 (2.49)	5.48 (4.25)	5.42 (2.16)	31.34 (5.22)
Mean age (years) of respondent (SD)	44.76 (15.43)	47.26 (14.58)	43.71 (11.24)	41.65 (12.96)	41.85 (12.08)	49.16 (12.44)	268.39 (44.73)

SD = standard deviation.

time was highest in the rural areas compared with both urban and peri-urban areas.

Average monthly treatment and transportation costs for the respondents. Table 3 shows the combined data of the three types of communities. The average cost of transportation was 86 Naira ($0.6 US), with the urban and rural communities incurring similar costs. The total cost of treatment was 2,819.9 Naira ($20 US), of which drug cost was 2,191.3 Naira ($16 US), accounting for more than 90% of the total treatment cost. The residents of peri-urban areas also spent more on treatment and drugs compared with the urbanites and rural dwellers. The geographic differences in the results were statistically significant ($P < 0.05$).

Average treatment and transportation costs for the respondents by socio-economic status. Table 4 shows that there were significant differences in mean treatment costs by SES, where the very poor paid the highest amount on treatment and the most poor (quartile [Q] 1) spent the lowest amount at 1,821 Naira ($13 US). Transport cost was highest for the least poor (Q4) followed by the most poor (Q1) and lowest for the very poor (Q2).

Payment and payment coping mechanisms. Table 5 shows that, in all the communities, OOP spending was the major payment mechanism and that the incidence of OOP spending was highest in the peri-urban communities. Health insurance was rarely used. A greater proportion of people in the urban area compared with the rural dwellers borrowed money to pay for care. Very few subsidies were received by the residents of the urban and rural communities, and rarely did residents of the peri-urban areas receive subsidies.

DISCUSSION

The finding that malaria ranked highest among the illnesses experienced by householders is consistent with what has been observed in other studies in this region.[31,32] Considerable numbers of respondents also suffered from typhoid and other illnesses, and if combined with the burden of malaria, this finding could have significant impact on households. This finding is worsened in cases where possibly inappropriate treatment is sought and received, which may also increase the economic burden of the diseases.

Hence, the finding on patterns of treatment-seeking of the different geographic groups raises concern, especially because of the suboptimal health-seeking of rural dwellers. It was found that informal providers, such as patent medicine dealers, were patronized more by rural dwellers compared with urbanites and peri-urbanites and *vice versa* for public and private hospitals. This pattern could be a function of the relative availability of different providers in different geographic settings, with hospitals being found more in urban and peri-urban areas. However, the implication is that rural dwellers are exposed to possibly low-quality but cheaper (in terms of direct expenditures) services. The differential health-seeking patterns are confirmed by the patterns of expenditures in the three different geographic settings.

TABLE 2
Types of illness that people had and where they sought treatment

Variable	Urban *n* (%)	Peri-urban *n* (%)	Rural *n* (%)	χ^2 (*P* value)	Combined *n* (%)
N	321	416	405		1,142
Type of illness					
Malaria	198 (61.7)	237 (57)	222 (54.8)	3.5 ($P > 0.05$)	657 (57.5)
Typhoid	48 (15.0)	37 (8.9)	70 (17.3)	13.04 ($P < 0.05$)	155 (13.5)
Diarrhea	8 (2.5.0)	3 (0.7)	8 (2.0)	3.84 ($P > 0.05$)	19 (1.7)
Other	92 (28.7)	134 (32.2)	114 (28.1)	1.88 ($P > 0.05$)	340 (29.7)
Where treatment was first sought					
Traditional healer	6 (1.9)	19 (4.7)	27 (6.7)	9.48 ($P < 0.05$)	52 (4.5)
Patent medicine dealer	163 (50.8)	145 (38.9)	236 (58.3)	46.88 ($P < 0.05$)	544 (47.6)
Home treatment	19 (5.9)	70 (16.8)	12 (3.0)	53.66 ($P < 0.05$)	101 (8.8)
Community health worker	0 (0)	2 (0.5)	3 (0.7)	2.28 ($P < 0.05$)	5 (0.4)
Health center	0 (0)	6 (1.4)	5 (1.2)	4.44 ($P > 0.05$)	11 (0.9)
Public/general hospital	66 (20.6)	67 (16.1)	53 (13.1)	7.35 ($P < 0.05$)	186 (16.2)
Private hospital or clinic	61 (19.0)	105 (25.2)	78 (19.3)	5.85 ($P > 0.05$)	244 (21.3)
Other	6 (1.9)	65 (15.6)	3 (0.7)	90.69 ($P < 0.05$)	74 (6.4)

The degree of freedom was two for all the comparisons.

TABLE 3
Average monthly treatment and transportation costs for the respondents in the three types of communities (urban, peri-urban, and rural)

Variables	Urban ($N = 320$)	Peri-urban ($N = 416$)	Rural ($N = 405$)	χ^2 (P value)	Combined ($N = 1,141$)
Transport cost	93.8	72.9	93.1	14.5 ($P < 0.05$)	85.5
Transport cost SD	291.5	224.2	216.6		242.5
Transport cost median	0	0	0		
Drug cost	2,316.2	3,034.1	1,209.4	17.2 ($P < 0.05$)	2,191.3
Drug cost SD	7,852.0	14,037.7	1,773.3		9,580.2
Drug cost median	860	700	500		
Mean treatment cost	3,255.9	3,639.7	1,624.1	11.8 ($P < 0.05$)	2,819.9
Mean treatment cost SD	10,054.0	14,743.4	3,812.3		10,676.0
Mean treatment cost median	1,060	860	600		

SD = standard deviation.

Also, the bulk of the poorer households are resident in the rural communities, with a limited number of formal health facilities and trained providers; this lack of facilities makes it even more expensive to patronize the private facilities, because people have to spend a greater amount of time and money in getting to where treatment is sought. This additional cost of transport raises treatment cost and can possibly constitute a barrier to treatment-seeking behavior.[33]

This study found that rural dwellers incurred the least healthcare costs compared with urban and peri-urban households. Also, the most poor households spent the least on treatment, which may erroneously imply that they are at a lower risk of suffering deprivations because ill health. Although some authors have opined that other factors, such as asset base[9] and availability of social networks,[34] play a role in determining if a household will be impoverished or not by health expenditures, this study, however, did not estimate if these costs were impoverishing to households. The high levels of expenditures, especially for peri-urban communities, are worsened by the finding that the dominant payment mechanism was OOP spending, which is a regressive form of financing healthcare.

Where healthcare payments are made mostly through OOP spending, which was 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. It is possible that payment through OOP spending could have deterred the poorest people from accessing healthcare services and could also account for their relatively lower expenditures compared with more affluent quintiles. Also, the poorest people could have opted for cheaper alternatives or ration their consumption to be able to pay.[3] It has been shown that availability of cash is a determinant of what treatment services are consumed and if care will be sought at all.[7]

It was found that people mostly coped with payments using their own money. Other studies have reported the sale of assets and livestock as a way of coping with payment for common illnesses such as malaria[35]; however, such mechanisms were not found in this study. However, more people in the urban than rural areas borrowed money to pay for care. This finding should not be taken to mean that rural dwellers have enough savings to offset their healthcare costs; rather, it is more likely to be difficult for these people to borrow money as a result of the absence of lenders or possibly be because of their inability to provide collateral for obtaining loan. The fact that most of these payments are made OOP will most likely result to more income depletion for the poorer households.

Previous studies have explored the link between SES and cost of illness in different settings.[3,7,11,20] In Kenya, some authors observed that urban households spent significantly more than those households in the rural areas, with the poorest households in different settings incurring the highest cost burdens.[3] Other studies in this region have also showed that the poorest SES and rural dwellers incur higher healthcare costs as a proportion of their income.[30] These costs, which are often regressive, hinder households from seeking care or obtaining the needed level and quality of care.

Because of its quantitative nature, the respondents in this study who reported not seeking care for their illness were not asked if they felt that they needed it and the reasons why they did not seek care at all. This information could have been elicited using qualitative methods that could have helped to explain whether they did not seek care because of treatment costs or travel time. Hence, the lack of qualitative research methods for in depth examination of reasons for patterns of health-seeking, expenditure, payments, and payment coping is a limitation of the study. Another limitation was that the study did not monetize the indirect cost caused by illnesses,

TABLE 4
Average treatment and transportation costs for the respondents by SES

Variables	Q1 (most poor)	Q2 (very poor)	Q3 (poor)	Q4 (least poor)	χ^2 (P value)
N	328		278	253	
Transport cost	92.5	267	74.8	101.3	0.7 ($P > 0.05$)
Transport cost SD	277.0	243.5	151.4	277.3	
Transport cost median	0	0	0	0	
Drug cost	1,530.2	2,892.5	2,165.6	2,417.4	27.5 ($P < 0.05$)
Drug cost SD	6,840.8	16,953.3	4,987.8	4,842.3	
Drug cost median	500	500	800	1,000	
Mean treatment cost	1,821.7	3,559.1	2,803.6	3,429.9	28.2 ($P < 0.05$)
Mean treatment cost SD	7,097.0	17,371.4	6,940.5	8,509.4	
Mean treatment cost median	600	700	1,050	1,300	

The Kruskal–Wallis non-parametric test was used to compare the means of health expenditures controls for the high values in standard deviation (SD). The degree of freedom for all comparisons was three.

TABLE 5
Payment and payment coping mechanisms for respondents for the six communities

Variable	Urban *n* (%)	Peri-urban *n* (%)	Rural *n* (%)	χ^2 (*P* value)	Combined *n* (%)
N	321	416	405		1,142
Payment mechanisms					
OOP but reimbursed by employer	7 (2.2)	1 (0.2)	6 (1.5)	6.0 ($P < 0.05$)	14 (1.2)
OOP	284 (88.5)	382 (91.8)	369 (91.1)	2.8 ($P > 0.05$)	1,035 (90.6)
Heath insurance	1 (0.3)	1 (0.2)	2 (0.5)	0.39 ($P > 0.05$)	4 (0.4)
Installment	24 (7.5)	45 (10.8)	36 (8.9)	2.5 ($P > 0.05$)	105 (9.2)
In kind	4 (1.2)	1 (0.2)	1 (0.2)	4.5 ($P > 0.05$)	6 (0.5)
Others	18 (5.6)	7 (1.7)	8 (2.0)	11.9 ($P < 0.05$)	33 (2.9)
Payment coping mechanisms					
Own money	286 (89.0)	395 (95)	385 (95.1)	13.0 ($P < 0.05$)	1,066 (93.3)
Borrowed money/took a loan	16 (5.0)	7 (1.7)	8 (2.0)	8.78 ($P < 0.05$)	31 (2.7)
Sold household movable asset or family land	1 (0.3)	0 (0)	0 (0)	0	1 (0)
Payment was subsidized	14 (4.4)	1 (0.2)	13 (3.2)	14.37 ($P < 0.05$)	28 (2.5)
Payment was deferred	1 (0.3)	1 (0.2)	7 (1.7)	7.11 ($P < 0.05$)	9 (0.7)
Community solidarity/someone else paid	5 (1.6)	12 (2.9)	2 (0.5)	7.20 ($P < 0.05$)	19 (1.7)
Was exempted from payment	4 (1.2)	1 (0.2)	3 (0.7)	2.65 ($P > 0.05$)	8 (0.7)
Others	8 (2.5)	3 (0.7)	3 (0.7)	5.91 ($P > 0.05$)	14 (1.2)

such as lost income because of not being able to work. We did not study this aspect, because we did not collect occupation-specific data on people that were ill. Hence, there was no objective basis to value time lost.

There is the need to institute effective exemption policies that are well-targeted at the poor and substitute the current practice of healthcare payment through OOP spending with other pre-payment mechanisms, with cross-subsidies from the rich to the poor and from the healthy to the wealthy, while protecting households against the financial burden associated with illness. This result could be achieved through concerted efforts to the expansion of the present Nigerian National Health Insurance scheme to cover both the vulnerable group and the informal sector while patronizing and scaling up community-based financing mechanisms.

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