

## Poverty, user charges and health care demand in Nigeria

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### Keywords

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### Abstract

*Healthcare in Nigeria is paid for on a cash and carry basis while out-of-pocket expenses dominate in households' payment for health care services as a result of user charges that were introduced in the early 1980s. This coupled with the persistent poverty level in Nigeria raises the question of consumers' ability and willingness to pay these user charges. Accordingly, using primary data, this study examined the possible trade-off between user charges and demand for Public Health Care Services in Nigeria. The analysis showed that increasing user fees substantially reduced the use of government health facility by low-income earners. Thus, it was recommended, among others, that government should introduce price discrimination into user fees, to be set at marginal cost. This would help avoid the adverse distribution effects of user-fees, especially, on the lower income group.*

### Introduction

Modern health care services in Nigeria are provided by the Federal, State and Local Government Areas (LGAs) as well as private non-governmental (profit and non-profit) organizations. The three-tiers of government operates through a network of primary, secondary and tertiary level facilities. The primary health care is largely the responsibility of the LGAs with the support of state ministries of health. Secondary health care is available and provided at the State levels while the Federal Government is responsible for providing tertiary care. The referral system is to help ensure that the primary health care services are appropriately supported. The state and federal ministries of health review the resources allocated to, and the facilities available at the secondary and tertiary levels. The major aim of the referral system is to enable all Nigerians have easy access not only to primary health care but also to both secondary and tertiary health care.

Healthcare in Nigeria is paid for on a cash and carry basis while out-of-pocket expenses dominate in households' payment for health care services. For instance, Ogunbekun et al (1999) indicated that 85 percent of the respondents in their survey sample reported paying for healthcare directly out-of-pocket, this was also supported by estimates from the Federal Ministry of Health (FMoH) (2003) which shows that over 70 percent of healthcare payments in Nigeria are made out-of-pocket. It is worthy to note that prior to this period, (that is, the 1980s) public sector health care services were virtually provided free of charge in Nigeria. With the introduction of user charges, there was an increase in the cost of care being incurred by the consumers and consequently, huge out-of-pocket payments. But given that consumer may have the willingness but not the ability to pay for these services and with huge out-of-pocket payments, there possibly will be a shift or a change in their demand for public health care services.

One vital question in this regard is that of consumers' ability and willingness to pay these user charges, especially given the level of poverty that exists in the Nigerian economy. For instance, according to the World Bank, (1996), the severity of poverty as well as the incidence of extreme poverty increased significantly between 1985 and 1992. While, the National Bureau of Statistics (NBS) (2010) reported that the proportion of the core poor increased from 6.2% in 1980 to 29.3% in 1996 and then came down to 21.8% in 2004. The NBS report further shows that the proportion of Nigerians living in poverty is increasing every year as the incidence of poverty increased from 27.2% in 1980 to 46.3%, 42.7%, 65.6%, 54.4% and 69.0% in 1985, 1992, 1996, 2004 and 2010 respectively. This

consistent increase in the poverty rate does have an effect on the ability and willingness to pay these charges when consuming health care services in Nigeria

The ability and willingness to pay (which may not directly covary), therefore determines the quantum and quality of the medical care obtainable by the populace. Households may both have the willingness to pay but the ability to pay will be lacking, especially, in the poor. Yoder (1989) who tried to distinguish between the willingness to pay and the ability to pay maintained that although they may not directly covary, they are both influenced by some factors of which income and the quality of health care are very important. This was referred to as distributional effect by some studies like Gertler and Van der Gaag (1988), because the imposition of user charges increases the welfare and medical care utilization of individuals in the top half of the income ladder while reducing those of the individual in the bottom half of the income ladder.

It is as a result of this that the study examines whether or not the imposition user charges in public sector healthcare facilities can lead to large reductions in the usage of the services of the sector or can cause shifts across types of care used. The rest of the paper is structured as follows. Closely following this introductory section is a brief review of the literature which is contained in section two. Section three outlines the methodology and data analysis while the study's findings are discussed in section four. Section five concludes the study.

### 2.1: Brief Review of the Literature

The introduction of user charges as a strategy for easing the health care financing crisis has been questioned, among others, on the basis of its implications for health care utilization. Dor, Gertler and Van der Gaag (1987) and Gertler and Van Der Gaag (1990) showed that the poor are two-to-three times more price responsive than the non-poor in the consumption of medical care. Thus, if prices were significantly raised in the public sector medical facilities, a large proportion of poor households would "migrate" out of this subsector. Their studies were conducted for Cote d'Ivoire and Peru respectively. Other studies that support this notion includes Litvack and Bodart (1993) for Cameroon; Lavy and Germain (1994) for Ghana; Ngugi (1999) for Kenya and Amaghionyeodiwe (2007) for Nigeria. These studies found that the introduction of user fees affected health care utilization of the consumers by reducing the usage of public health services, particularly for the poor. Deininger and Mpuga (2003) also found user fees to be particularly important in determining access to health services, particularly for the poor,

The conclusions above were confirmed by the studies of Alderman and Gertler (1989) which focused on the substitutability of public and private healthcare for the treatment of children in Pakistan, and Ching (1995) whose study examined the potential effects of user charges on the demand for children's health care across income groups in the Philippines. Moses *et al* (1992) and World Bank (1994b) pointed out that the number of women attending a public outpatient clinic for STDs in Nairobi, Kenya fell by 65 percent following the introduction of user charges, while male attendance decreased by 40 percent. In this regard, World Bank (1993) submitted that except for the rich, out-of-pocket financing couldn't cover expensive care. On the contrary, Lacroix and Alilhonou (1982) study of Benin; Akin et al. (1998) study on Sri Lanka and the World Bank (1987) study on the Philippines, showed that price had a relatively little impact on health care demand.

Nwabu and Nwangi (1986) asserted that the net welfare effect of improved health services in public clinics depends on how these services are financed. One way to raise revenue to finance these services is to charge for their use. Ching (1995), using a mixed/conditional logit parameterization of the health care demand model to study user charges, demand for children's health care and access across income groups in the Philippines confirmed that the poor are more sensitive to price changes than the rich. This has implications for the willingness to pay. Thus, user fees are regressive as was asserted by Mbanefoh, Soyibo and Anyanwu (1996) in their study of estimating Nigeria's health care demand, though, they did not empirically investigate this issue. Nwabu and Nwangi (1986) simulated the welfare effects of user charges for Kenya. Their study was based on the alternative assumption that user

charges are a "pure tax" on government health services and that the revenue generated is used to improve the quality of services in government clinics. They showed that welfare loss from user charges could be reversed by a simultaneous quality improvement, which raised quality in government clinics to the same levels as that of the mission clinics. Revenue, they claimed was enough to enable the achievement of this feat. However, the welfare gains of introducing user charges in all government health facilities are likely to be offset by the attendant equity trade-off (McPake, 1993).

This equity trade-off, which was referred to as distributional effect by some studies like Gertler and Van dar Gaag (1988), is mostly between the poor and the rich. They may both have the willingness to pay but the ability to pay will be lacking in the poor. The equity trade-off was referred to as distributional effect because the imposition of user charges increases the welfare and medical care utilization of individuals in the top half of the income ladder while reducing those of the individual in the bottom half of the income ladder. Li (1996) collaborated this argument when in a study of the demand for medical care in Bolivia, he cautioned that though uniform user fees can generate substantial revenue, it is likely to reduce the utilization of medical care by the poor. As a result of this, the introduction of price discrimination, referred to as selective pricing by Nwabu and Nwangi (1986), into the user charge proposal was suggested. But its implementation might be difficult because there might be an identification problem. This deals with how you determine that a person is poor (Ching, 1995), given the asymmetry of information that may arise.

A possible solution to this might be to charge people differently based on where they reside (Ching, 1995). In this case, user charges at health facilities in poor villages can be set at levels lower than those of richer villages or even be waived for the poor (Nwabu and Nwangi 1986), especially children (Ching, 1995), who are hurt more by the introduction of user charges than as the poor in general (Gertler and Van dar Gaag, 1990). This means using geographical basis, which is referred to as health zones, to help identify the poor and consequently improve the attendant user charges (Nwabu and Nwangi, 1986). Another solution was to abolish user charges and in this case, Koch (2012) examined the impact of the abolition of user fees in South Africa, a policy implemented in 1994 for children under the age of six and the elderly, as well as pregnant and nursing mothers, are examined via regression discontinuity. His analysis focuses on provider choice decisions for curative care treatment, and potential externalities that could arise from the policy. His findings indicated that as a result of abolishing user charges, curative care demand in the public sector increase by about 7%, while those of the private sector decreased by nearly the same amount thereby implying that the abolition led to provider choice substitution.

Nimpagaritse and Berton (2011) investigated the sudden removal of user fees in all health centers and hospitals for children under 5 and women giving birth Burundi. Using a descriptive case study approach, they opined that the removal of user fees for certain groups was an equitable and necessary measure in an extremely poor country such as Burundi. However, the suddenness of the decision and the lack of preparation had critical and long-lasting consequences for the entire health system. Gertler and Van dar Gaag (1988) concluded that as long as the user charges are below the welfare neutral prices [which increases with income, (Lavy and Germain; 1994)], the policy will be welfare-improving for everyone. The degree to which the price is below the welfare neutral prices determines the improvement in welfare and medical care utilization achieved by the policy.

### 3.1: Methodology

This study will utilize both a Multinomial Logit Model (MNL) and Simulation techniques in investigating whether or not the imposition user charges in public sector healthcare facilities can lead to large reductions in the usage of the services of the sector or can cause shifts across types of care used.

### 3.1.2 The Model

In this study, a multinomial logit (MNL) model is used because we assumed that the alternative options provide distinct choices, have different attributes and can be considered to be mutually exclusive. And also, the patient's alternative choices are more than two. This is in line with nearly all studies that concentrate on provider choice, (see Mwabu, et al., 1993; Tembon, 1996; Jianghui, et al., 1997; Dor, et al., 1987; Bedi, et al., 2003).

More specifically, assuming that each  $\varepsilon_{ij}$  for all alternatives  $j$  is distributed independently and identically in accordance with the extreme value distribution, the demand for provider  $j$  (that is, the probability that a patient will choose alternative  $j$ ) is given by equation 5. The demand function for a provider is thus the probability that the utility from that alternative is higher than the utility from any of the other alternatives.

$$\left(\text{Pr ob}(\text{Option}_j | H_{ij})\right) = \frac{\exp(\beta_j H_{ij})}{\sum_{k=0}^5 \exp(\beta_k H_{ik})} \quad \dots 5$$

The parameter of this model can be estimated using maximum-likelihood methods.

The MNL model requires that the 'independence of irrelevant alternatives' (IIA) assumption be satisfied. This assumption, however, is not realistic in many situations. Train (1990) has indicated that the IIA assumption in the MNL model is not as restrictive as it first seems. An alternative to the MNL model is the nested logit model. However as will be seen in the data section, since all our right-hand side variables are individual characteristics, the nested logit model will essentially produce the same result as the MNL (Econometric Society, 1982). In our data, the unit of observation is the individual. The estimated demand functions were then used to project (using simulation techniques) the effect of user fees on demand for health care.

### 3.1.3 The Data

The study utilized mainly primary data. The primary data used were individual and household-based. Both stratified random and cluster-sampling techniques were utilized. The above was supplemented with a health facility survey. Facilities were selected for interviews on the basis of proximity to a household cluster (this is a geographic area such as a village or neighborhoods of a city). A total of 9,900 households were interviewed (involving 29,700 individuals) using questionnaires. Out of this, 7,920 valid questionnaires (that is, those properly answered) were returned. This represents a response rate of 80%. Accordingly, this total of 7,920 questionnaires was used for the analysis. Households were randomly selected from both rural and urban areas. The questionnaires were administered in such a way that information obtained from the nearest cluster, was linked to a specific household in the cluster. The data were for both outpatients and inpatients in both rural and urban areas.

The survey collected socio-economic information such as household consumption, demographic characteristics, time use, income and consumption, education and health status. The health statistics provided a detailed description of health care and the incidence of morbidity thirty days prior to the survey date including information on the length of illness, choice of treatment, expenditure on consultation and drugs, travel time and cost. Other information sort includes household spending per visit, household total health spending, the composition of household's spending on health services, number of times the self-treatment option was chosen when an illness occurs. The household sample included both individuals who do not report as well as those who reported an illness within four weeks of the survey.

The facility survey collected information about infrastructure, personnel, availability of health services and drugs and fees charged. Other information about the average consultation time, net expenditure per visit, the percentage of people who reported ill or injured, government health spending and the cost recovered were also sorted. Providers' quality was measured by the availability of essential

drug; the number of medical staff as an indicator of the level of human resources available at the facility which may reflect the sophistication and range of health services provided; the provision of basic adult and child health services measured by the availability of a functioning laboratory, the ability to vaccinate children and the ability to provide prenatal, postnatal and child growth monitoring services (grouped together as 'mother and baby care'); the availability of essential infrastructures like electricity and running water. It should be noted that very few studies in health economics and bio-medical literature provide useful guidelines for building or constructing health quality indices from facility-level data. Garner, Thomason and Donaldson (1990) and Peabody et al (1993) attempted to deal with this problem.

The measure of health status prior to treatment was the nature of illness, which was measured by "illness" dummy variables. This includes what the individual health problem is. Provider dummies were also constructed to capture the variations in provider characteristics. Income was measured as total household income in the month prior to the survey while the per capita monthly income was calculated using data for members of the household. The prices for each provider where not directly available were constructed from the money price and/or cost information for each provider given by care recipients. For those who utilized care, this money price and/or cost data were available, but unavailable for those who did not utilize health care. Thus, for each provider, the available (money) cost information was used to estimate cost/price. The non-monetary access utilization price was measured by travel and service time of the providers.

#### **4.1: Estimation Results**

##### **4.1.1: Nested Multinomial Logit (NMNL) Results**

The Nested Multinomial Logit (NMNL) model was estimated using full maximum likelihood estimation method. The results are presented in Table 4.5 where our focus will be on our variable of interest which is the price factors.

As stated in economic theory that price and quantity demanded of a good are negatively related implying that for many goods, at higher prices, quantity demanded declines, the study's findings indicated that the price of consultation is negatively related to the demand for modern health care in Nigeria. Thus as price increases the probability of seeking modern health care reduces. This result agrees slightly with that of Mwabu and Nwangi (1986) that showed, among others, that the demand for healthcare services in public sector clinic is highly sensitive to changes in relative money prices. The price of consultation is also significant at 1% for all the sources of care used namely private and public sector hospital as well as private and public sector clinics. This result implies that any increase in the price of consultation (a form of user fees being charged) will have two major effects namely a reduction in the probability of that facility being chosen and secondly, a reduction in the probability of choosing a modern or professional care. Given this result, it is evident that the poor will be affected more relative to the high-income earners. In fact, money (prices) can be the reason why the majority of the low-income earners (the poor) consult traditional medicine healers as well as local herb sellers especially in the rural areas, as an alternative to modern health care. For the high-income earners, they preferred private health facilities, irrespective of the fees charged. This indicates to a large extent that they seem to be much more interested in the quality of the services rendered.

In Nigeria, government workers enjoy government services at a reduced or subsidized cost as manifested by the result which showed that for the government employee variable, price, which was significant at 1% for public sector health facilities and not significant for private sector facilities, is positively related to the demand for the public sector facility but negatively related to the demand for private facility. As stated earlier, this result could be a demonstration of the policy, which entails government employees, and their families to have access to health care services at public sector health facilities free of charge or at a subsidized price. An implication of this is that the probability of government employees and their relatives choosing a public sector health facility becomes higher

relative to that of a private facility. With this result, the government employee dummy can be interpreted as a price effect and not as a quality effect. This result was similar to that of Lavy and Germain (1994). Also, this, among others, might be one of the reasons why low-income earners (poor) utilize the government health care facilities than they do for the private facilities.

Another important factor is the distance (travel time), which was negatively but significantly different related to the demand for both private and public healthcare facilities. It was significant at 1%. This effect of distance was estimated with the coefficients been restricted to be equal across equations. The reason for this is to help reduce or minimize the disparity in the opportunity cost of time that will be incurred in traveling to the health facility. This has been argued to be a more important cost incurred in traveling to the health facility (Lavy and Germain, 1994) and it is equal to the time lost during travel (proportional to distance) multiplied by the hourly wage of the individual (which, on average, is proportional to income).

Table 4.5: Multinomial Logit Estimates of Choice of Health Care Provider

Variable	Public Clinic	Public Hospital	Private Clinic	Private Hospital
Characteristics of Perceived Illness				
Nature of illness acute illness (emergencies).	0.67(3.92)***	0.43(5.52)***	0.81(1.19)**	-0.28(-1.23)**
Access to Healthcare				
*Price factors				
Distance (travel time) <sup>b</sup>	-1.25(-3.63)***	-1.25(-3.63)***	-1.25(-3.63)***	-1.25(-3.63)***
Price of Consultation <sup>c</sup>	-0.33(-3.86)***	-0.89(-3.93)***	-1.28(-2.88)***	-2.67(-4.10)***
Government Employee	0.85(2.41)***	1.12(3.08)***	-0.00(0.31)	-0.00(0.35)
*Quality of facility				
Drugs availability	1.34(5.81)***	1.87(2.05)***	0.32(6.40)***	0.89(5.60)***
Infrastructure	0.73(2.06)***	0.21(2.13)***	0.55(3.25)***	0.79(2.16)***
Personnel	1.08(2.04)***	0.54(2.05)***	1.02(4.21)***	0.47(5.60)***
Services	0.35(4.34)***	0.26(2.89)***	0.11(3.11)***	0.61(4.01)***
Summary Statistics: Number of Observations: 7,920 R <sup>2</sup> - McFadden: 0.782 -2 log likelihood: 1121.691 Chi-Square: 1060.56 P - Value: 0.0000				

<sup>t</sup>-statistics are in brackets; <sup>b</sup>- the co-efficients are restricted to be equal across equations

<sup>c</sup>- Price of consultation covers the fee for the service in Nigeria

(\*\*\*), (\*\*) Significant at 1% level and 5% level respectively.

If the opportunity cost is large, it discourages households from seeking professional care but if it is relatively less or small, it encourages the demand for professional care by households. This shows that the probability of seeking professional care would significantly increase if health care were more accessible. Also, any increase in non-monetary access cost may reduce the demand for professional care. For many of the low-income earners (poor) especially those in the rural areas, the travel time has been a major concern to many of them as they have to travel for long periods of time before getting to access any government healthcare facility.

Quality of services (better treatment and the availability of quality care) is an important factor in the choice of health care facility to utilize. For this study, all the quality variables used in the analysis (drug availability, infrastructure, Personnel and Services) were positively related to the demand for professional care. Also, they were all significant at 1%. This implies that households prefer health facilities with adequate and qualified health personnel, up-to-date (modern and well-functioning) infrastructure, quality, adequate and diverse health services. The consequence of this is that households will opt for health facilities where drug and diverse services are available,

infrastructure is functioning well and there is qualified personnel (doctors and nurses), which they, the households, will prefer to treat them. The implication of this is that households take into account the various dimension of quality of care in making their choices of which health facility to use. Thus, the probability of a household choosing a health facility with better infrastructure as well as where drug and diverse services are available will be higher than where these quality variables are lacking. Also, the estimation result shows that households attach more importance to the probability of their being treated by qualified personnel (doctor or nurse). All these may also attract higher user charges (prices).

### **5.0: Conclusion**

From the analysis, it is evident that the poor (low-income earners) suffers more from the imposition of user charges as it reduces their utilization level of public sector health care services. Many of the poor, even those that are not government employees prefer to utilize the government health care facilities because of the reduced prices, quality of care and distance. Also, given that many of the traditional medicine healers reside in rural areas, and that there were more government established health posts and health centers in these areas (though, many lack the basic infrastructure) the residents, therefore, have easier access to these facilities than those in the urban areas, no wonder then that most of them (the rural households) prefer to utilize mainly government facilities, traditional healers, and self-care than those in the urban areas.

Based on the above, the government should introduce price discrimination into the user fee it charges. This will help avoid the adverse distribution effects which user fees have. User fee at clinics in poorer villages and communities can be set at different levels than user fee in rich communities and as long as the user fee is below the welfare neutral prices the policy will be welfare improving for everyone. With this type of price discrimination, the clinics in richer villages or areas will be self-financing, while the facilities in poorer villages require a subsidy. Also, given that the demand for healthcare is positively related to income, the rich should be encouraged by some deliberate government policies to increase their usage or utilization level of private sector health facilities. The government should encourage the private sector health providers to improve their facilities as a way of pulling away the rich from public sector health facilities. This will help reduce the pressure on public sector health facilities as well as enable the poor and the more vulnerable groups in the society to be better targeted and provided for.

The government needs to establish more operational and equipped public sector healthcare facilities especially in the rural areas as this will increase the patronage of professional care in general and public sector health care in specific. Most of the government established health posts and health centers in these areas lack the basic infrastructure and need significant improvement to be able to provide quality care to the people. Thus, there is a need for the government to ensure that drugs, infrastructure, qualified personnel, efficient and diverse services are adequately and readily available in public sector healthcare facilities as it will lead to increased utilization of public sector health facilities even at a higher cost. This notwithstanding, since the price of consultation is negatively related to healthcare utilization, it becomes evident that any increase in these fees will reduce the chance of that facility being chosen as well as reducing the chance of choosing modern health care. Thus, government pricing of these services should also bias towards the poor.

### **5.1: Research Limitations and Direction for Further Research**

The sample size was one of the limitations for the study. A bigger sample would have served as a better representative of the country. Another limitation is the very small number of health facilities that responded. The number of facilities was not sufficient for the study to adequately estimate the number of health personnel and thus be used in the model. This was also one of the reasons why provider computation of cost of treatment was not used. There were also limitations relating to sampling and measurement errors. The measurement error occurs when the observed

values of a variable are not a full and accurate representation of the true variable. Also, most of the responses were perceptions by the households. That is, they were perceived responses. The limitations are not much of a handicap as the results obtained gave much insight into the issue of user charges and healthcare utilization in public sector health facilities in Nigeria. They will also aid policy decisions. Moreover, many of the econometric findings are backed up by the descriptive analysis.

In the future, as improved data, theory and estimation techniques become available, more services including promotive and preventive care could be analyzed in Nigeria. This kind of research will further help the government to reach members of the community even before the onset of illness. Furthermore, a rigorous analysis of the cost recovery consequences of user charges can also be done. Also, given the regressiveness of user charges, there is the need for a research on a sliding scale fee or a price discrimination policy in order to avoid unduly restricting the access to health care, especially on the part of the poor.

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