**AASCIT** | American Association for Science and Technology

# Out of pocket health care spending among households in Keffi, Nigeria

**Bamidele Moyosola Abiodun[1, *], Adams Suaib[2], Adejumo Adebowale Olusola[1]**

[1]Department of Statistics, University of Ilorin, Ilorin, Nigeria
[2]Department of Paediatric, Federal Medical Centre, Keffi, Nigeria

### Email address

bamidelemoyo@gmail.com (Bamidele M. A.)

### Citation

### Abstract

Out-of-pocket spending (OOPS) for health care by households has been estimated by several studies and estimations to contribute between 64 and 70 percent of health care financing in Nigeria and has largely contributed to the inability of households to access adequate and desirable health care be it public or private. The study therefore examined out-of-pocket health care spending among households in Keffi, Nigeria. A structural questionnaire (pre-tested with Cronbach Alpha value of 0.76) was used to collect information from the randomly selected 322 households in Keffi, Nigeria. Data was collected on: health problems that people had and sought care for; type of care sought, outpatient department (OPD) visits and inpatient department (IPD) stays; providers visited; spending; and preferences for improving access to care. Data was disaggregated by socio- economic status (SES). The results indicated that most respondents used OOPS as the commonest type of spending mechanism for health care consumption. It also indicated that that money for treatment is the major factor influencing treatment seeking for household members followed by distance to treatment point and also treatment bill has influenced the choice of treatment point for household. The OOPS appeared largely uninfluenced by socio-economic status (SES). The lack of SES differentials in use of OOPS by respondents implies poor people are suffering and are not protected from the risk and uncertainty of paying for healthcare when ill. The impact of OOPS is worse on the poorest households as they are more likely to have higher occurrences of upheaval due to health spending through OOPS. The findings of this study has suggested the need reduce OOPS and pick up equity in healthcare financing by designing and implementing spending strategies that will assure financial risk protection of the poor such pre-spending mechanisms with government paying for the poor.

## 1. Background to the Study

Out-of-pocket spending (OOPS) of households was the most important financing agents through which health-spending sources channel funds to providers for health services in Nigeria as is the case in many other developing countries (FMOH 2003-2005). Out-of-pocket spending for health care is defined as, the direct outlay of households, including gratuities and spending in kind, made to health practitioners and supplies of pharmaceutics, therapeutic appliances and other goods and services whose primary intent is to contribute to the restoration or to the enhancement of the health status of the individual or population groups. It includes household spending to public services, non-profit institutions and nongovernmental organizations. It also include none reimbursable cost sharing deductions, co-spending and fee-for-service, but excludes spending by

companies that deliver medical and paramedical benefits whether required by law or not, to the employee. It excludes spending for overseas treatment (WHO, 2008). Nigerian's private health spending as percentage of total spending on health stood at 74.7%; out of this out-of-pocket spending constitute 95.9% as at 2008 (WHO, 2010). This suggests that government and privately organized institutions are not making enough investment in the health of the people, which is supposed to be a national priority.

The 25.3 percent general government spending as percentage of total spending on health is from the taxpayers' moneys that is mostly and often too poor to afford spending for health services. Most Nigerians are made poor due to the cost of treating illness, the effect of illness on household income. It's a common finding among poor households of cases of abandonment of treatment at treatment Centre on account of lack of funds to settle treatment bills. The usual outcomes of these scenarios are continuing ill health, death, and or impoverishment (WHO, 2008). Out-of-pocket spending for health care is one of the five major ways of financing health care in Nigeria. These are, government (from all sources including taxes), out of pocket spending for health care, health insurance (private and government schemes), donor funding from bilateral and multilateral organizations, and NGOs. Financing health care is one of the components of the Health system management, and its centered on three interrelated factors, vis-à-vis (1) revenue collection, which is the process by which the health system receives money from households and organizations or companies as well as from donors, (2) polling of resources, which is the accumulation and management of revenue in such a way as to ensure that risk of having to pay for healthcare is borne by all the members of the pool and not by each contributor individually, and (3) purchasing of interventions, is the process by which pooled funds are paid to providers in order to deliver a specified or unspecified set of health interventions (WHO, 2010). The objective of health care financing therefore is to make fund available, ensure appropriate choice/purchase of cost effective interventions, give appropriate financial incentives to providers, and ensure that all individuals have access to effective health service (WHO, 2010)

In some countries in Africa e.g. Uganda South Africa have drastically slashed user fee in public health facilities and this led to upsurge in attendance to these facilities by the poor (National Health Reform, 2007). Also in significant number of developed countries the poor and disabled in households have some special healthcare packages such as, exemption from spending for health care for the elderly or delayed spending for those who are incapable of paying at the point of service. This type of package is almost in non-existence in Nigeria even though the federal government and some states have some forms of free health care service such as immunization, treatment for the pregnant women and for the under 5 children but, these packages are not exclusively reserved for the poor, the rich also enjoy these services. Low

spending on health care by all tiers of government in Nigeria is an important contributor to the high out-of-pocket spending by households (FMOH, 2008). The total government health spending (TGHE) as a proportion of the total health spending (THE) was estimated to be 18.69% in 2003, 26.4% in 2004 and 26.02% in 2005 while household health spending (HHHE) as a proportion of the THE was 74.02% in 2003, falling to 65.73% in 2007 but went up to 67.22% in 2005 (National Health Reform, 2007). Not only is TGHE low but also that the rate of increase per annum was rather too slow. Comparing the Nigeria case to some other African countries e.g. Zambia, where HHHE was 21.20% of the THE in 2002 while corresponding value for Kenya was 51% in the same year and Egypt was 60% (FMOH, 2008). Its evidently clear from this that there is unwillingness on part of Nigeria government to increase its spending on health. However, it has been noted that there is general apathy among government of developing countries to improve spending on health care. Governments of developed nations have higher level of participation in health care for its citizens thus minimize the rate of catastrophic spending on health care by its households. For instance, in 1994 global spending on health total US $ 2.3 trillion with high income countries spending about US $2.0 trillion even though they accounted for only 16% of the world population. Developing nations on the other hand spent only 11% of the total global spending on health but accounted for 84% of the world population (Health Affairs, 1999).

Out-of-pocket spending for health care by households has been estimated by several studies and estimations to contribute between 64 and 70 percent of health care financing in Nigeria and has largely contributed to the inability of households to access adequate and desirable health care be it public or private. This unfortunate situation has not only contributed to the high morbidity and mortality but has also impoverished many households. The National Health Insurance Scheme (NHIS) is still not accessible by the rural poor and other informal sectors of the nation, and the probability of reaching this set of Nigerians soon is in serious doubt therefore, there is urgent need for an alternative, at least for now, to alleviate the burden of out-of-pocket spending on households in Keffi. Against this background therefore, the study examined out-of-pocket spending among households in Keffi, Nigeria.

## 2. Research Design

The study adopted cross-sectional and descriptive research design. The survey sample was drawn from Keffi Local Government Area of Nasarawa State, Nigeria. The sampling frame consisted of the census enumeration areas (EAs) used for the 2006 Population and Housing Census of the Federal Republic of Nigeria conducted by the National Population Commission (NPC). During the 2006 census, each locality was further subdivided into convenient EAs. The primary sampling unit (PSU), referred to, as a cluster in this survey,

was the EA from the 2006 census. Only EAs classified as urban in the study LGA were eligible for inclusion in the survey.

A two-stage sampling design was used. In the first stage, a random sample of clusters was selected in the LGAs based on probability proportional to the population. The number of clusters selected from the LGA was determined based on information from the 2008 Nigeria Demographic and Health Survey (NDHS) on the number of household in the LGA. In the second stage, 20 households were selected in each cluster in the LGA in order to create a sample of about 322 households in the LGA.

## 2.1. Method of Analysis

The dataset was entered into CSPro Statistical software for cleaning and exported into SPSS 17 for analysis at 0.05 level of significance. The socio-economic status (SES) was created using Principal components analysis using information from the households' asset holdings together with the per capita weekly cost of food. Non-parametric Kruskal-Wallis was used for testing the means to divide the variables into SES quartiles. The concentration index varies from -1 and +1 and a negative sign shows that the variable of interest is higher among the poorest and if positive, it means that it is more among the richest (or least poor).

Logistic regression analysis was used to examine the multivariate relationship of OOPS with key explanatory variables. The dependent variable was whether or not someone paid through OOPS. The explanatory variables were the weight that was used to derive the SES index, households' socio-demographic characteristics and costs of transportation and cost of treatment itself. There were no prior hypothetical expectations about the relationship of the dependent and the explanatory variables.

# 3. Result and Findings

This section presents the result of findings on assessing out of pocket health care spending among households in Keffi, Nigeria.

## 3.1. Socio-Economic and Demographic Characteristics

In Table 1, the result showed that the respondents were mostly heads of households. The average number of household resident (household size) is 4.6. The average age of the respondents was 38 years. Majority of the respondents were Males and had some formal education and gainfully employed. The average monthly spending on food was ₦12,500 and the average money spends on healthcare was ₦3,516. Majority of the household uses electricity and most of households are likely to own Radio, Television, Telephone and generator while little percentage of the respondents owns motorcar, and Donkey/Horse

*Table 1. Respondents' households' Socio-economic and demographic characteristics*

| Variables Characteristics | Keffi (n = 322) | |
|---|---|---|
| Household Heads: n (%) | 302 | (94) |
| No. of Household Resident. Mean (SD) | 4.6 | (2.3) |
| Age. Mean (SD) | 38 | (8.5) |
| Sex (Males) n (%) | 274 | (85) |
| Education. Mean (SD) | 9.3 | (5.7) |
| Employed. n (%) | 294 | (91) |
| Spending on Healthcare. Mean (SD) | ₦3,516(₦2,612) | |
| Monthly spending on food. Mean (SD) | ₦12,500(₦11,004) | |
| Household uses Electricity. n (%) | 204 | (63) |
| Household owns a Radio. n (%) | 301 | (93) |
| Household owns a Television. n (%) | 239 | (74) |
| Household owns a Telephone. n (%) | 283 | (88) |
| Household owns a Fridge. N (%) | 157 | (49) |
| Household owns a Iron. N (%) | 187 | (58) |
| Household owns a Fan. N (%) | 171 | (53) |
| Household owns a Generator n (%) | 203 | (63) |
| Household owns a Bicycle. n (%) | 197 | (61) |
| Household owns a Motorcycle. n (%) | 51 | (16) |
| Household owns a Donkey/Horse. n (%) | 18 | (6) |

SD-standard deviation, n- size, %- percentage

*Table 2. Decisions that influenced Treatment seeking of Household member*

| Variables | Keffi (n=322) | |
|---|---|---|
| Distance from treatment point. n (%) | 56 | (17) |
| Money for treatment. n (%) | 221 | (68) |
| Delays at point of treatment n (%) | 31 | (10) |
| Against Faith. n (%) | 05 | (2) |

On the decision that influenced treatment seeking for household members, the result in Table 2 showed that 68% of the household respondents said money for treatment was a decision that influenced their treatment seeking for household members, 17% distance from treatment point, 10% delay at point if treatment and an insignificant figure (2%) said it was against their faith while little percentage are undecided.

*Table 3. Has Treatment Bill Influenced your choice of household treatment point in the last three months?*

| Categorised Variable | (n=216) | |
|---|---|---|
| Yes. n (%) | 194 | (90) |
| No. n (%) | 13 | (6) |

The result in Table 3 showed that about 90% of the respondents has treatment bill influenced their choice of treatment point in the last three months while about 6% of the household respondents said that treatment bill has not influenced the choice of their point of treatment.

*Table 4. Are you Aware of the existence of pre-spending health Insurance Scheme?*

| Categorised Variable | Keffi (n=322) | |
|---|---|---|
| Yes. n (%) | 55 | (17) |
| No. n (%) | 259 | (80) |

On the awareness of the existence of pre-spending health insurance scheme, Table 4 showed that about 80% of the respondents said they are not aware of the existence of pre-

spending heath insurance scheme while 17% are aware of the existence of the pre-spending health insurance scheme.

***Table 5.*** *Does your household have any form of Health Insurance or any pre-spending health care service?*

| Categorised Variable | Keffi (n=322) | |
|---|---|---|
| Yes.  n (%) | 59 | (18) |
| No. n (%) | 258 | (80) |

The result Table 5 showed that about 80% of the household has no form of any health Insurance or pre-spending health care service and 18% of the respondents are having health Insurance or pre-spending health care service. Of the 59 (18%) representing the household that have any form of Insurance or pre-spending health care service, 43 (73%) maintained National Health Insurance Scheme, 11(18%) maintained employment based health Insurance scheme while other types of health Insurance Scheme were rarely maintained.

***Table 6.*** *Preferred form of pre-spending healthcare service Schemes by household*

| Variables | Keffi (n=322) | |
|---|---|---|
| Community Based.  N (%) | 98 | (30) |
| Religious Based. n (%) | 71 | (22) |
| National Health Insurance for Community (rural). N (%) | 51 | (15) |
| Formal Sector based National Health Insurance Scheme. n (%) | 43 | (13) |

On the preferred form of pre-spending schemes of household, the result in Table 6 showed that 30% of the household preferred a community based pre-spending healthcare service scheme, 22% religious based pre-spending healthcare service scheme and 15% and 13% would preferred National health Insurance for community (rural), Formal Sector based National health Insurance scheme respectively while other percentage are undecided. On if given privilege to contribute to pre-spending healthcare service if given the opportunity to do so, about 87% of the respondents showed interest in contributing to pre-spending healthcare.

***Table 7.*** *Providers visited for Healthcare Services*

| Source of Treatment | (n=216) | | $X^2$ (P-value) |
|---|---|---|---|
| Self-Treatment.  n (%) | 16 | (7) | 5.36 (0.07) |
| Traditional/Herbal. n (%) | 19 | (9) | 1.97 (0.96) |
| Patent Medicine.  n (%) | 97 | (45) | 6.78 (0.02) |
| Clinic/Hospital.  n (%) | 68 | (31) | 3.09 (0.03) |
| Prayers.   n (%) | 4 | (2) | 2.78 (0.26) |

The providers of healthcare services by respondents that sought for health in the last three (3) months were presented in Table 7. The Table showed that 45% of the respondent sought for healthcare from the patent Medicine, 31% from Clinic/hospital, while 7% and 9% of the respondents sought for healthcare through self treatment and traditional/herbal respectively and others using other provider such as home treatment. The respondents made greater use of Self-treatment, Patent medicine and Clinic/hospital at $P < 0.05$.

***Table 8.*** *SES of Respondents on Health services provider*

| SES quartiles | Self Treatment | Traditional/Herbal | Patent Medicine | Clinic/Hospital |
|---|---|---|---|---|
| Q1 (Most Poor). n (%) | 5 (31) | 6 (32) | 10 (10) | 6  (9) |
| Q2 (very Poor). n (%) | 7 (44) | 5 (26) | 18 (19) | 10  (15) |
| Q3 (Poor). n (%) | 3 (19) | 4 (21) | 26 (27) | 15 (22) |
| Q4 (Least Poor). n (%) | 2 (12.5) | 4 (21) | 43 (44) | 37  (54) |
| Chi-Square | 6.80 | 3.90 | 2.40 | 2.36 |
| Sig. (P-value) | 0.00 | 0.01 | 0.03 | 0.07 |
| Concentration Index | -0.34 | -0.07 | 0.03 | 0.58 |

## 3.1.1. Derived using Principal Component Analysis (PCA)

The SES level of how respondent sought for healthcare was presented in Table 8 in the last three (3) month, the table showed that the most poor and very poor SES uses self treatment and traditional/health as health service provider while the SES Scale, Poor and least poor uses patent medicine and clinic hospital. It should the noted that there are some elements of variation in the uses of healthcare provider across the SES quartiles. Considering the concentration index, it established that negative index (pro-poor) uses self-treatment and tradition/herbal while the positive index (pro-rich) uses patent medicine and clinic/hospital.

The result in Table 9 showed the spending mechanism employed by respondents to pay for healthcare services. The result shows that OOPS (Personally) is the commonest type

of spending mechanism that was used by the respondents for their healthcare. This was followed by regular contribution for the respondents, which can also be seen as personal spending it would be interesting to note that few respondents have utilized the health Insurance Scheme, which is a health scheme in Nigeria.

***Table 9.*** *Spending mechanisms that were used to pay for healthcare for people that consumed healthcare services*

| Method of Spending | Respondents  (n=216) | |
|---|---|---|
| Personally, OOPS. N (%) | 182 | (84) |
| Regular Contribution. n (%) | 12 | (6) |
| Faith Based Organisation. n (%) | 0 | (0) |
| Private Insurance. N (%) | 0 | (0) |
| Health Insurance Scheme. n (%) | 34 | (16) |
| Wok Place Retainers. n (%) | 11 | (5) |
| In-Kind.  n (%) | 5 | (2) |

**Table 10.** *Difference use of OOPS for respondent and other household members based on SES*

| SES quartiles | For Respondents (n=72) | For other household member (n=144) |
|---|---|---|
| Q1 (Most Poor). n (%) | 8 (11) | 11 (08) |
| Q2 (very Poor). n (%) | 12 (17) | 25 (17) |
| Q3 (Poor). n (%) | 21 (29) | 46 (32) |
| Q4 (Least Poor). n (%) | 31 (43) | 62 (43) |
| Chi-Square | 4.67 | 3.90 |
| Sig. (P-value) | 0.03 | 0.09 |
| Concentration Index | 0.45 | 0.29 |

## 3.1.2. Derived using Principal Component Analysis (PCA)

In the difference use of OOPS for respondents and other household members for spending of healthcare, result in Table 10 showed that a statistical significance at $P< 0.05$. SES difference in the use of OOPS to pay for healthcare services. The result also showed that OOPS as the most mechanisms of spending for healthcare by all the SES groups. It is interesting to note that the most-poor group is likely to use OOPS as a spending mechanism compared to better-off SES groups.

## 3.2. Logistic Regression Analysis Result

Logistic regression analysis of out-of-pocket user fees and explanatory variables

**Table 10a.** *Model Summary Table*

| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
|---|---|---|---|
| 1 | 748.419 | .430 | .576 |

**Table 10b.** *Variable in the Equation Table*

| | | B | S.E. | Wald | Df | Sig. | Exp(B) |
|---|---|---|---|---|---|---|---|
| Step 0 | Constant | .370 | .082 | 20.460 | 1 | .000 | 1.448 |

**Table 10c.** *Variables in the Equation*

| | | B | S.E. | Wald | df | Sig. | Exp(B) |
|---|---|---|---|---|---|---|---|
| | Status in Household | -.060 | .261 | .961 | 1 | .062 | 1.62 |
| | No. of Household Res. | .402 | .109 | 3.582 | 1 | .000 | .49 |
| | Sex | .086 | .186 | .215 | 1 | .643 | .290 |
| | Age | -.065 | .126 | .062 | 1 | .609 | .937 |
| Step 1ᵃ | Education | .552 | .138 | 5.989 | 1 | .000 | 1.22 |
| | Employed | .084 | .039 | 4.646 | 1 | .031 | 1.37 |
| | Cost of Treatment | .620 | .111 | 1.477 | 1 | .000 | 1.53 |
| | SES Index | -.127 | .187 | .064 | 1 | .881 | 1.453 |
| | Constant | .623 | .751 | .287 | 1 | .407 | 1.864 |

a. Variable(s) entered on step 1: Status in household, No. of household, sex, Age, Education, Occupation, Cost of treatment, SES Index.

Logistic regression was conducted to assess whether the explanatory variables, households' socio-demographic characteristics, the weight of the SES indices, and cost of treatment significantly predicted whether or not someone paid for OOPS. The Model Summary Table in 10a included two different ways of estimating $R^2$ (percent of variance accounted for) as was done in multiple regression. These "pseudo" $B^2$ estimates (.43 and .58) indicated that approximately 43% or 58% of the variance in whether or not someone paid for OOPS or not can be predicted from the linear combination of the four independent variables. The Cox & Snell $R^2$ (43%) is usually an underestimate. The first Variables in the Equation Table in Table 4.2.1b showed that if you predicted that every individual would not pay for OOPS, the odds of successful prediction would *not* be significantly different from 50-50 (i.e., no better than chance).

The Variables in the Equation Table in Table 10c showed that *cost of treatment, number of Household members, employment status* and *Education* were significant. *Status of household, Sex,* and *SES index* are not significant, which is probably due to several factors: 1) the fact that SE is quite high relative to B, which makes the Wald statistic lower, and 2) the fact that *sex* is dichotomous, so when they are already

included, *sex, household status, SES index* does not add enough to be significant (p = .643, .062, .881 respectively). Note that Exp(B) gives the odds ratios for each variable. The odds ratio *for cost of treatment* was 1.53, *employment status* was 1.37, *and education* was 1.22 and for *number of household members* was 0.49. These indicate that the odds of estimating correctly who paid for OOPS improve by 53% if one knows cost of treatment, 37% for employment status, an about 21% if one knows the *number of household members*.

## 4. Discussion of Results

The results indicate that most respondents used OOPS as the commonest type of spending mechanism for health care consumption. However, this could be due to absence of wide-scale spending alternatives to OOPS. It is possible that other pre-spending (especially health insurance) mechanisms were widely available; spending by OOPS would not be so high. The limited use of spending mechanisms such as faith based contribution; private insurance, National health insurance scheme and in-kind spending either reflect their low acceptability by providers or a low level of awareness that the consumers could use them. The result shows that money

for treatment is the major factor influencing treatment seeking for household members followed by distance to treatment point and also treatment bill has influenced the choice of treatment point for household. It was also observed that most members of household have abandoned treatment due to fund in the last three months, which indicate their inability to cope with treatment bill. The analysis result also shows that majority of the household are not aware of any form of health Insurance or any pre-spending health care service and of the little percentage of household that are aware of health Insurance scheme, they maintained National Health Insurance scheme and employment based health insurance scheme. On the preferred spending scheme, majority of the respondent preferred community based spending scheme followed by religious based spending scheme.

The OOPS appeared largely uninfluenced by socio-economic status (SES). The lack of SES differentials in use of OOPS by respondents implies poor people are suffering and are not protected from the risk and uncertainty of paying for healthcare when ill. This can lead to individuals to either delay or not seek healthcare at all. User fees paid through OOPS, which has been universally recognized to be very retrogressive, was the most common spending mechanism used to pay for care by all the SES. The impact of OOPS is worse on the poorest households as they are more likely to have higher occurrences of upheaval due to health spending through OOPS.

## 5. Conclusion

This study has demonstrated the existence of SES inequities in use of OOPS to pay for healthcare services. Developing equitable financing approaches will depend on the assessment of the burden and determinants of OOPS on healthcare seeking by different socio-economic and geographic groups, leading to determining how best to protect the poor. The findings of this study has suggested the need reduce OOPS and pick up equity in healthcare financing by designing and implementing spending strategies that will assure financial risk protection of the poor such pre-spending mechanisms with government paying for the poor.

## References

[1]    Federal Ministry of Health (FMOH), Abuja. National Health Account of Nigeria, 2003 – 2005. Vol. 1,

[2]    World Health Organization, National Health Account. WHO Statistical Information System 2008.WHO Report 2011

[3]    World Health Organization (2010) Health Care Expenditure. World Health Statistics,2010

[4]    World Health Organization, (2000), Health system Improving Performance. World Health Report

[5]    National Health Review (HERFON) 2007, Financing Primary Health Care in Nigeria, Health Affairs, Health care Financing and Delivery in Developing Countries, Health Affairs, 18, No. 3 (1999) 193 – 94.

[6]    Federal Ministry of Health, 2006. Health Care Financing in Nigeria. Nigeria Health Review 2006, 191 – 92

[7]    Federal Ministry of Health, 2006.  National Health Financing Policy 2006.

[8]    Obinna O. (2010), Investigating determinants of out-of-pocket spending and strategies for coping with payment for Healthcare in Southeast Nigeria, Health Service Research

[9]    National Demographic and Health Survey 2008, Health Insurance Coverage, Federal Population Commission