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Community based health insurance as a viable option for health financing: An assessment of household willingness to pay in Lagos, Nigeria

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The high cost and effect of out of pocket payments for health care on households in developing countries have led to the use of community-based health insurance (CBHI) as a viable alternative for health care funding. The overall objective of the study was to assess the perception and determinants of willingness-to-pay (WTP) for a proposed community based health insurance scheme in urban and rural households in Lagos State. The multi-stage sampling technique was used with 960 household heads enrolled in the study. A pre-tested, semi-structured, interviewer administered questionnaire was used to collect data from the respondents. The contingent valuation method was used to elicit household willingness to enrol and pay for a proposed community based health insurance scheme. Data was analysed using Statistical Package for Social Sciences software (SPSS) version 17. This study revealed that 86.3% of the households in the rural LGA and 78.6% of the households in the urban LGA were willing to pay for the proposed community based health insurance scheme (p=<0.001). The households were willing to pay a mean amount of ₦957.56 and ₦754.83/household/month in the urban and rural area respectively (p<0.001). The paper concludes by emphasizing the high willingness among households to participate in the proposed hypothetical CHBI scheme. This highlights its prospects of increasing access to quality health care in Lagos especially amongst vulnerable low-income households.

Key words: Willingness to pay, community based health insurance, health financing, contingent valuation.

INTRODUCTION

The World Health Organisation (WHO) estimates that annually about 100 million people are driven into poverty attributable to catastrophic health expenditure (World Health Organization Geneva, 2003). A major number reside in developing countries in Sub Saharan Africa (SSA) with weak health care systems and lack of

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health insurance schemes (Carrin et al., 2005; World Health Organization, 2005). Access to healthcare is drastically limited for poor households by their low purchasing power due to their earnings and expenditure patterns (World Health Organization, 2000).

Expenditure on health care is sufficient to tip households into poverty causing them to forego consumption of other items that are necessary for their wellbeing such as food or education (Onoka et al., 2010). This is considerably worse in rural areas due to their low standard of living and limited accessibility to quality health care services as a result of the absence of funding for health care in the form of insurance schemes (World Health organization, 2002). Episodes of illness usually require payment at the time of occurrence and this restricts access and impoverishes households (OECD/W.H.O., 2003).

Though varied health financing options have been identified in Nigeria, health financing is still quite disproportionate in both urban and rural communities with a higher impact of the effects of inequitable budgetary health expenditure allocation in rural areas due to severe constraints in the budgets and maldistribution of resources (Olaniyan and Lawanson, 2010). Payments for health care can be so exorbitant in comparison to household income thereby resulting in "financial catastrophe" for individuals or households causing them to cut down on necessities (World Health Organization, 2000).

Globally, about 150 million people suffer financial catastrophe because of out-of-pocket expenditure on health services (WHO, 2016). Healthcare spending is considered catastrophic, if the out-of-pocket healthcare expenses incurred are large relative to the resources available to the household and this disrupts the household's standard of the household. Hence in Nigeria where prepayment mechanisms play a limited role in health financing, households are at risk of incurring exorbitant health care expenditures when members fall ill (Ibukun and Komolafe, 2018).

Nigeria's health financial arrangement has shifted from health provision by government as a normal good towards a competitive market where a greater proportion of health services are provided by ability to pay through out-of-pocket expenses (often referred to as user fees) (Ataguba et al., 2013).

Furthermore, excessive reliance on out-of-pocket payments for health reduces utilisation of these services and exacerbates the inequitable access to quality health-care which further exposes households to the financial risk of spending during health events. This risk is unacceptable due to the availability of effective and affordable health financing schemes to address the impact of out-of-pocket spending on health in poor resource settings (Onwujekwe et al., 2010).

Health financing through taxation or social health insurance is recognized as an effective tool for achieving universal health coverage with adequate financial protection against unexpected healthcare expenditure (Carrin et al., 2005). Risk-pooling is a core characteristic of these mechanisms which enables the provision of health services based on need and not the ability to pay for health services. Despite the existence of viable alternate health financing options, achieving a successful health care financing system in Nigeria continues to be a challenge. Nigeria's total health expenditure (THE) as a percentage of the gross domestic product (GDP) was 3.7% in 2014 which is well below the recommendation in the world health report of public health spending of about 6% of GDP which would limit out-of-pocket payments and therefore cause the incidence of catastrophic health expenditure to be negligible (World Bank, 2017).

In 2014, Public health expenditure (PHE) as a percentage of GDP accounted for 0.9% in 2014 when compared to private health expenditure which accounted for 74.9% of total health expenditure; the bulk of which was from out-of-pocket expenditure (World Bank, 2017). In Sub-Saharan Africa, the functional health insurance schemes cater to the formal sector who constitute a reduced proportion of the population (Shimeles, 2005) and so do not cover the informal sector predominantly made up of rural dwellers, low-income earners or small-scale business owners. Majority of these individuals are left to access health care through out of pocket expenditure, which in many instances limits the use of health care services (Shimeles, 2005). There is therefore a need for alternative health financing methods that include the direct involvement of communities so as to capture these vulnerable individuals (Carrin and Criel, 2003). In Nigeria, inability to pay out of pocket costs for health care services by many of the poor limits access to health care services. However the establishment of a community-based health insurance scheme targeted to overcome the barrier of health cost and increase access to health care has received limited acceptance and uptake among households in Nigeria (Carrin and Criel, 2003).

Community based health insurance (CBHI) has been advocated as an effective means of protecting the poor in Nigeria from the catastrophic burden of financing health services (Riman, 2012). CBHI is defined as health insurance in which individuals, families, or community groups finance or co-finance costs of health services (Adinma and Adinma, 2010) however the coverage of CBHI is quite low with schemes only existing in a few communities catering to less than 1% of the population (National Health Insurance Scheme (NHIS), 2011).

If implemented, CBHI has the potential to address the problem of inadequate funding of the health system. There have been several studies on health financing and CBHI; however few have offered an insight on the willingness to pay for CBHI and little is known about the

factors that influence the knowledge, perception and decisions to enrol in health insurance schemes. Also due to a lack of real world experience on community based health insurance among the population, willingness to pay (WTP) for health insurance by means of contingent valuation (CV) methods can be used to measure directly what individuals would be willing to pay for a hypothetical health insurance package (Asfaw et al., 2008).

In general, willingness to pay data are rarely collected or used as part of designing health insurance schemes in developing countries and this can cause low enrolment rates in CBHI schemes (Arkin-Tenkorang, 2001). In situations where high enrolment rates exist, there is a high drop-out rate due to lack of evidence on willingness to pay before take-off of these schemes (Brown and Churchill, 2000; Onwujekwe et al., 2009). Willingness to pay studies have the ability to provide information to facilitate the design and implementation of an insurance scheme. Assessing the demand for community based health insurance as a viable form of health care financing by households can provide important lessons and recommendations that would aid the design, implementation and uptake of this scheme which would invariably lead to increased access to quality health care in rural and urban areas in Lagos (Donfouet and Makaudze, 2011).

The aim of this study was to assess and compare the perception and willingness to pay for a proposed community based health insurance scheme among households in urban and rural LGAs in Lagos and provide recommendations of appropriate action towards advocating for the CBHI scheme in Lagos towards Universal Health coverage.

MATERIALS AND METHODS

This comparative cross-sectional study was conducted in Lagos State, located in the South west region of Nigeria. Lagos State is divided into 20 Local Government Areas (LGAs) of which 16 comprise the urban LGAs and the remaining four LGAs (Badagry, Ikorodu, Ibeju-Lekki and Epe) are classified as rural LGAs. One Urban and rural LGA each was selected from each group by simple random sampling using the balloting method. The Local Government Areas (LGA) selected were Surulere and Ikorodu constituting an urban and rural LGA respectively. The study was conducted in the two different settings to assess geographical influence on household perception and willingness to pay for CBHI.

A multistage sampling technique was used to select the respondents. A total of 960 households were enrolled in the study with a minimum sample of 480 households drawn from each LGA. The heads of households or the most senior member of the household from the selected households was interviewed and included all persons aged eighteen or above and were permanent residents of study area.

A pre-tested, semi-structured, interviewer administered questionnaire was used to collect data from households. The questionnaire was adapted from the contingent valuation: a user's guide and from other published literature (Onwujekwe et al., 2010; Carson, 2000). The questionnaire was translated into Yoruba to suit the local language in the study area. A grading system based on the responses of the respondents from six statements was used to assess the perception of the respondents about CBHI with each of them having 3 options of high, medium or low. A bidding technique was used to elicit respondents' willingness to pay for the proposed CBHI scheme. The willingness to pay instrument used the contingent valuation method (CVM) to evaluate the WTP for CBHI amongst the households as previously used in many studies (Soyibo et al., 2009; The World Bank, 2013; Mays and Smith, 2011). The CVM questions are either open-ended or discrete (Soyibo et al., 2010). The respondents were asked to state their maximum WTP for the benefit in the open-ended CVM which is typically conducted using the so called "bidding game". The bid is conducted in a similar fashion to an auction, whereby a first bid is made to a respondent with the respondent either accepting or rejecting the bid. This answer leads to the bid being adjusted until the respondent's maximum WTP is reached. The questionnaire also included the valuation scenario; which is the most important part of the CV survey.

To ensure a valid study, the guidelines for the contingent valuation analysis were followed (Ichoku and Fonta, 2009). The scenario of a CBHI scheme was presented to the respondent, describing in detail the scheme, the criteria for membership, and the potential benefits. Thereafter they were asked whether they would be willing to pay for the proposed bid. The bids were three different amounts presented to the respondent in decreasing order. The start bid amount was chosen based on the amount that was used in the pilot schemes in Lagos state. The second and third bids were chosen and modified from that used in the literature (Donfouet and Makaudze, 2011).

The hypothetical CBHI was explained in details to the respondent including the benefit package, financing mechanisms and the terms of conditions before enquiring about their WTP. This was followed by asking each respondent if they were willing-to-join in the CBHI scheme individually or with their household. The bidding game was used to ascertain the premium each respondent would willingly pay for the hypothetical scheme for a household with a maximum of four children. The interviewer randomly set an amount as a starting bid and asked if the respondent was willing-to-pay. If the respondent agreed to pay this random fee, the interviewer would raise the bid and again question their willingness-to-pay. The interviewer would progressively raise the bid until the respondent expressed unwillingness-to-pay.

However, in the event that the respondent expressed unwillingness-to-pay the starting bid, the interviewer would lower the bid and repeat the enquiry continuing until a figure is reached (including zero) that the respondent was willing to pay. Ethical approval for this study was obtained from the ethics and research committee of the Lagos University Teaching Hospital. Informed written consent was taken from all the respondents, and confidentiality and anonymity were ensured.

Data entry and analysis was done using the Statistical Package for Social Sciences software (SPSS) version 17. Results were expressed with 95% confidence intervals and statistical significance was set at a p-value of ≤0.05 for all comparisons. A grading system based on the responses of the respondents was adopted to assess the perception of the respondents about CBHI. Comparison between the two groups was used to examine for geographic differences. Data were examined for links between key dependent variables with socio-economic status and geographic location of the respondents.

RESULTS

Table 1 shows that in the overall sample of 960, respondents in the urban and the rural LGA were mostly

Table 1. Demographic characteristics of respondents.

Variable	Frequency (%)		X^2	df	p-value
	Urban	Rural			
Age (years)					
18-29	65(13.5)	63(13.1)	2.78	4	0.689
30-39	14(29.4)	135(28.1)			
40-49	149(31.0)	142(29.6)			
50-59	80(16.7)	90(18.8)			
>60	45(9.4)	50(10.4)			
Mean age	43.17±13.37	47.22 ±11.31	t=5.66		0.809
Sex					
Male	321(66.9)	349(72.5)	3.87	1	0.049*
Female	159 (33.1)	131(27.3)			
Marital status					
Single	30 (6.3)	22 (4)	12.34**		0.010*
Married	393 (81.9)	391 (81.5)			
Separated	23 (4.8)	20 (4.2)			
Divorced	6 (1.3)	0 (0)			
Widowed	28 (5.8)	47 (9.8)			
Household size					
1-3	123(25.6)	110 (22.9)	4.24	2	0.120
4-6	255 (53.1)	289 (60.2)			
>7	102 (21.3)	81 (16.9)			
Mean household size	4.8 ± 2.1	5.0±2.0	t=1.82		0.110
Estimated household income per month(₦)					
<5000	23 (4.8)	308 (64.2)	44.42**		<0.001*
5000-10000	91 (19.0)	87 (18.1)			
10001-20000	116 (24.2)	65 (13.5)			
20001-30000	83 (17.3)	15 (3.1)			
>30000	167 (34.8)	5 (1.0)			

**Fishers exact test.

within age range 40-49 years (31 and 29.6% respectively) with a mean age of 43.17+13.37 and 47.22±11.31 years respectively. A large proportion of the household heads in the two groups were males (66.9 and 72.5% in the urban and rural LGAs respectively). A large proportion of the respondents in the urban (81.9%) and in the rural (81.5%) were married and similarly majority of household heads in the urban (66%) and the rural (70.8%) were male There were within group differences but the distribution was similar in terms of demographic characteristics between households in the urban and rural LGA.

The respondents were divided in their perception of community based health insurance (Table 2). The rural households had a high perception of the potential ability of CBHI to make health care more affordable compared with urban households (48.8 vs. 40.0%). The perceived potential of CBHI to increase access to affordable health-care was medium among the urban households (47.3%) and rural households (54.4%). The perceived potential to improve household health consumption patterns was also medium among the urban households (45.6%) and the rural households (53.3%).

The perception of CBHIs potential to improve quality of health services given in health care institutions was medium in 51.0% of the urban and 49.6% of the rural households. There was also a medium perception of the potential of CBHI to ensure constant drug availability at

Table 2. Perception of community based health insurance among the respondents.

Variable	Urban	Rural	χ^2	df	p–value
	Frequency (%)				
Perceived ability of CBHI to make health more affordable					
Low	75 (15.7)	64 (13.4)	18.49	3	<0.001*
Medium	210 (43.8)	182 (37.9)			
High	195 (40.6)	234 (48.8)			
Perceived potential of increasing access to affordable healthcare					
Low	87(18.1)	53 (11.1)	25.34	2	<0.001*
Medium	227 (47.3)	261 (54.4)			
High	166 (34.6)	166 (34.6)			
Perceived potential to improve household health seeking behaviour					
Low	82 (17.0)	70 (14.6)	12.53	2	0.002*
Medium	219 (45.6)	256 (53.3)			
High	179 (37.3)	154 (32.1)			
Potential to improve quality of services provided by					
Low	69 (13.4)	76 (15.8)	20.18	2	<0.001*
Medium	245 (51.0)	238 (49.6)			
High	166 (34.6)	166 (34.6)			
Potential to ensure constant availability of drugs at facilities					
Low	89 (18.6)	116 (24.2)	21.13	2	<0.001*
Medium	209 (43.5)	245 (51.0)			
High	181 (37.7)	119 (24.8)			
Perceived confidence in committee managing pooled funds in community					
Low	228 (47.5)	146 (30.4)	42.49	2	<0.001*
Medium	146 (30.4)	283 (59.0)			
High	106 (22.1)	51 (10.6)			

**Fishers exact test.

facilities among the respondents in the urban (43.5%) and majority of the rural (51%) households. Majority of the respondents in the urban (47.5%) had a low perception of their funds being pooled and managed by community and a medium level of perception amongst the rural (59.0%). A higher proportion of the rural respondents (86.5%) were willing to pay for the hypothetical community based health insurance scheme compared to the urban (73.8%) respondents. (Table 3) The difference between the two groups was found to be statistically significant (p=<0.001).

Majority of respondents in the rural (84.6%) and the urban (91.3%) were willing to pay a starting bid monthly premium of ₦900 per household (Table 4). Of respondents who refused the first bid, an equal proportion among the rural and urban LGA respondents (100% each) also refused a second bid premium of ₦850 per month. At a third bid of ₦750, 19.4% in the urban and none of the respondents in the rural were willing to pay. This difference was not statistically significant between the two groups. Of those who declined the first, second and third bids in Table 5, the

Table 3. Respondents' willingness to pay for a hypothetical CBHI package for their household.

Variable	Urban	Rural	χ^2	df	p-value
	Frequency (%)				
Willing to pay for CBHI	354 (73.8)	415 (86.5)	24.32	1	<0.001*
Not willing to pay for CBHI	126 (26.2)	65 (13.5)			

*p<0.05 = statistically significant.

Table 4. Respondents' willingness to bids (₦900, ₦850 and ₦750) as premium for their household in the proposed scheme.

Variable	Urban	Rural	χ^2	df	p –value
	Frequency (%)				
WTP the starting bid of ₦900					
Yes	285 (84.6)	373 (91.3)	75.21	1	<0.001*
No	68 (15.4)	42 (8.8)			
WTP the second bid of ₦850					
Yes	0 (0)	0 (0)	0.407**		0.519
No	68 (100)	42 (100)			
WTP third bid of ₦750					
Yes	14 (19.4)	0 (0)	1.42**	1	0.229
No	54 (80.6)	42 (100)			

*p<0.05 = statistically significant. **Fishers exact test.

average maximum amount respondents were willing to pay as monthly household premiums in the urban and rural households was ₦506.67±179.15 and ₦437.33±271.15, respectively. However the difference in the two groups was not statistically significant (Table 5). Majority of the rural respondents (66.7%) were willing to pay less than ₦250 in comparison to 39.3% of the urban while majority of the urban households (42.6%) were willing to pay a premium between ₦251 and ₦500 when compared to 22.2% of the rural respondents. This difference was statistically significant.

In Table 6, when asked how high a premium the respondent would be willing to pay in the event of inflation, a higher proportion of the respondents in the urban (57.7 %) and the rural (69.0 %) were willing to pay ₦501 – 1000. The mean amount reported by the respondents that they would pay while putting inflation into consideration was ₦975.56 ± 408.45 in the urban and ₦754.83±498.99 in the rural. The difference in the means was statistically significant (p=<0.001).

DISCUSSION

From this study, data showed that majority of head of households in both settings were male which is common in most African household settings as the decision making in most settings is done by the men and is consistent with the Nigeria demographic and health survey 2013 (National Population Commission (NPC), 2013).

The mean household spend on health in the last quarter was ₦4832.35±1615.69 and ₦4234.17±1565.65 in the urban and rural areas which is approximately 17.9 and 43.3% of their household income respectively. This signifies catastrophic health expenditure among the rural households as a major proportion of the income (exceeding 40%) was spent on their health as indicated by the World Health Organisation's as catastrophic spending (Puteh and Almualm, 2017). Majority of the households in the urban (81.9%) and rural (91.3%) areas used cash as form of payment for their health care and they likewise coped with this out-of-pocket payments which is consistent with literature where about 90% of health expenditure in Nigeria is from out-of-pocket payments (Velenyi, 2005).

In this study, there was a low level of utilization of health insurance with only 4% in the urban and 2.5% in the rural utilising health insurance which is similar to the health insurance coverage in Niger at less than 5%, Stoermer et al. (2012) further affirming the paucity of health insurance mechanisms and high level of out-of-pocket spending in Nigeria. Perceptions' relating to

Table 5. Maximum amount respondents were willing to pay (those that refused the bids) for household.

Variable	Urban	Rural	x^2	df	p –value
	Frequency (%)				
Maximum amount willing to pay for households (₦) 0 – 250	27 (39.3)	26 (66.7)	8.15**		0.012*
251 – 500	31 (42.6)	12 (22.2)			
501 – 750	11 (18.0)	4 (11.1)			
Mean + standard deviation	510.00±107.24	420.85±254.92	t=1.33		0.187
Final maximum amount willing to pay for households (₦)					
0 – 200	23 (30.7)	9 (38.9)	10.05**		0.024*
201 – 400	10 (13.3)	24 (44.4)			
401- 600	24 (32.0)	8 (11.1)			
601- 800	14 (18.7)	1 (5.6)			
801-1000	4 (5.3)	0 (0)			
Mean + standard deviation	506.67±179.15	437.33±271.15	t=0.95		0.354

**Fishers exact test.

Table 6. The premium all respondents were willing to pay for their household per month in case of inflation.

Variable (₦)	Urban n=354 Freq (%)	Rural n=415 Freq (%)	x^2	df	p –value
< 500	142 (29.6)	49(10.2)	64.80**		0.001*
501 – 1000	277 (57.7)	331 (69.0)			
1001 -1500	54 (11.3)	82 (17.1)			
1501 – 2000	4 (0.8)	15 (3.1)			
2001 – 2500	1 (0.2)	2 (0.4)			
2501 – 3000	2 (0.4)	1 (0.2)			
Mean ± standard deviation	975.56±408.45	726.83±498.99	t=8.37		<0.001*

*p<0.05 = statistically significant. **Fishers exact test.

insurance schemes, scheme providers and the community attributes play a major role in household decisions to join or enrol and remain in the scheme.[36] In this study the respondents in both urban and rural local government areas had a good perception of the CBHI scheme.

Price including premium and registration fees and the benefits of the scheme are factors that are significantly associated with enrolment and retention in the scheme. In this study, 43.8% of the respondents in the urban and 48.8% in the rural areas perceived that CBHI had the ability to make healthcare more affordable for them. Studies have shown that enrolment decreases if the price of the premiums is perceived to be high (Jehu-Appiah et al., 2011).

Despite the potential of CBHI as a viable healthcare payment option, there were disparities in the premium that the respondents were willing to pay for the hypothetical scheme. About 73.8% of the urban households and 86.5% of rural households were willing to pay for community-based health insurance scheme. The high WTP rates in the rural area in this study is similar to what was found in north central Nigeria (Banwat et al., 2010) were the willingness to pay in a rural community was 93.6%. The higher WTP for the scheme in the rural areas may be as a result of lack of access to quality health care in their communities as compared to the urban centres thereby raising their interest in a programme that has the potential to improve their access to quality health services (Shitu, 2010).

In addition South West rural households are accustomed to having their money managed by financial groups and associations. In addition, stronger earning power in the urban setting may lead to low WTP thereby resulting in the belief that incidental health user fees

would be affordable. It is expected that urban households would have a higher willingness to pay for CBHI based on literacy and level of income however the reverse was the case.

Similar to this study, lower WTP was also reported in an urban community in south west Nigeria were the willingness to pay was 51.6% (Usman, 2013). However contrary low WTP in rural setting was found in a study conducted in Eastern Nigeria where it reported that less than 7% of rural households were willing to pay for CBHI, with higher WTP rates in urban households (Onwujekwe et al., 2010).

In this study considering the premiums that households were willing to pay monthly, the mean WTP among the rural household heads was found out to be ₦542.19±317.67 (3.4±1.98 USD) for individual enrolees per month and ₦754.83±498.99 (4.72±3.12 USD) per household per month while in the urban households it was found to be ₦555.23±221.01 (3.5±1.38 USD) per person per month and ₦957.56±408.45 (5.98±2.55 USD) per household per month. Similar WTP estimates were seen in Ilorin, Kwara where the researchers reported a mean amount each person would be willing to pay at ₦591.6 ± 302.6 (3.48±1.78 USD) per person per annum for CBHI in a community with an average household size (Babatunde et al., 2012). The mean amount that the respondents were willing to pay as a premium for individual and household enrolees was higher among the urban respondents.

Household heads in the urban (73.8%) and the rural (86.5%) were willing to pay for the proposed scheme. This shows the recognised value of the scheme and its potential to increase access to quality health services for households, without having to pay at the point of service. Hence, this scheme could be embraced in urban and rural areas of Lagos and has the potential to protect Lagos households from health risks.

CONCLUSIONS AND RECOMMENDATION

This study demonstrates a high willingness to participate in the scheme hence the potential for community-based health care insurance schemes in Lagos. The lessons learned would provide a useful model to accelerate implementation of CBHI schemes in Lagos and would make future schemes more successful. The population would however require increased advocacy and campaign on the concept of alternative health financing options to sensitize households and communities on community-based health insurance and its advantage to individuals and families in Lagos. This would encourage their involvement in and uptake of the scheme. The Government can also lend technical support to the communities managing and running these schemes to strengthen their capacity.

LIMITATIONS

This is a "willingness to pay" study with a hypothetical health care package and so may not reflect absolute reality. The introduction of the scheme in the study area will benefit from further studies to assess satisfaction and provide information on individual and household preferences.

CONFLICT OF INTEREST

The authors have not declared any conflict of interests.

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