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ARTICLE *in* HEALTH POLICY AND PLANNING · MARCH 2010

Impact Factor: 3.47 · DOI: 10.1093/heapol/czp046 · Source: PubMed

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Published by Oxford University Press in association with The London School of Hygiene and Tropical Medicine *Health Policy and Planning* 2010;**25**:155–161

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Willingness to pay for community-based health insurance in Nigeria: do economic status and place of residence matter?

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Accepted 23 July 2009

Objective We examine socio-economic status (SES) and geographic differences in willingness of respondents to pay for community-based health insurance (CBHI).

Methods The study took place in Anambra and Enugu states, south-east Nigeria. It involved a rural, an urban and a semi-urban community in each of the two states. A pre-tested interviewer-administered questionnaire was used to collect information from a total of 3070 households selected by simple random sampling. Contingent valuation was used to elicit willingness to pay (WTP) using the bidding game format. Data were examined for correlation between SES and geographic locations with WTP. Log ordinary least squares (OLS) was used to examine the construct validity of elicited WTP.

Results Generally, less than 40% of the respondents were willing to pay for CBHI membership for themselves or other household members. The proportions of people who were willing to pay were much lower in the rural communities, at less than 7%. The average that respondents were willing to pay as a monthly premium for themselves ranged from 250 Naira (US$1.7) in a rural community to 343 Naira (US$2.9) in an urban community. The higher the SES group, the higher the stated WTP amount. Similarly, the urbanites stated higher WTP compared with peri-urban and rural dwellers. Males and people with more education stated higher WTP values than females and those with less education. Log OLS also showed that previously paying out-of-pocket for health care was negatively related to WTP. Previously paying for health care using any health insurance mechanism was positively related to WTP.

Conclusion Economic status and place of residence amongst other factors matter in peoples' WTP for CBHI membership. Consumer awareness has to be created about the benefits of CBHI, especially in rural areas, and the amount to be paid has to be augmented with other means of financing (e.g. government and/or donor subsidies) to ensure success and sustainability of CBHI schemes.

Keywords Community-based health insurance, equity, willingness to pay, contingent valuation, Nigeria

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KEY MESSAGES

- Economic status and place of residence determine the willingness of people to pay for community-based health insurance (CBHI) membership. Consumer awareness needs to be created about the benefits of CBHI, especially in rural areas, to ensure demand for CBHI and enhance the level of enrolment.
- Given the low premiums people were willing to pay, the contributions would have to be augmented with other means of financing, and the premium should be adjusted for income with exemptions and subsidies for the poor so as to increase their enrolment in the scheme. Otherwise membership will be inequitably distributed in favour of the wealthier population groups.

Introduction

High levels of out-of-pocket spending and paucity of insurance mechanisms to pool and manage risk form a major challenge to health financing in Nigeria (Onwujekwe and Velenyi 2006). The Nigerian National Health Insurance Scheme (NHIS) currently covers only federal government public servants and does not provide cover for people employed in the informal sector. However, the government intends to expand the NHIS in the future so as to cover people employed in the informal sector, using community-based health insurance (CBHI) schemes. CBHI reduces out-of-pocket expenditure and improves cost recovery, and although its effects on the quality of health care and efficiency of health services are unclear (Ekman 2004), it appears to be the most appropriate insurance model for the informal sector and rural areas, where incomes are unstable.

The recommendation of the Commission on Macroeconomics and Health (WHO 2001) that out-of-pocket expenditures by poor communities should be channelled into community financing schemes may be a worthwhile venture in Nigeria. Nigeria's use of out-of-pocket spending as the most important mechanism for health care payment is inefficient and inequitable (Soyibo 2004; McIntyre *et al*. 2005; Onwujekwe and Uzochukwu 2005; Ichoku and Fonta 2006; WHO 2007). Out-of-pocket spending is known to be a major hindrance to use of health care services (Palmer *et al*. 2004; Ichoku and Fonta 2006) and the burden is heavier on the poor and more vulnerable population groups. Households can fall into poverty due to catastrophic payments (Palmer *et al*. 2004; Poletti *et al*. 2007).

The introduction of CBHI in many parts of Nigeria, with its attendant benefits of protection from payment at the point of use of health services, is likely to be well received as it will be perceived as having the capacity to improve access to good quality health care services. Segments of the population that have chronically depended on out-of-pocket spending for health care payment may be willing to pay for CBHI membership. This is because CBHI provides a way to avoid payment at the time of health service use (McIntyre *et al*. 2006), a major limitation of out-of-pocket spending. However, studies have shown that health insurance of any form is used by an insignificant proportion of people in Nigeria (Onwujekwe and Uzochukwu 2005; Onwujekwe and Velenyi 2006).

Previous studies found that most people were willing to pay for CBHI (Arhin 1995; Dong *et al*. 2003a,b; 2005) but that the mean willingness-to-pay (WTP) amounts were low and depended on many factors such as socio-economic status (income), gender, education and place of residence. In particular, Dong *et al*. (2005) found that WTP for CBHI in Burkina Faso was dependent on the socio-economic status of respondents. They recommended that the premium for CBHI should be adjusted for income; otherwise a lower proportion of poor people will enrol.

This paper examines socio-economic and geographic differences in the willingness of respondents to pay for their own and dependents CBHI membership. Valid information on WTP for CBHI can be elicited using the contingent valuation method, which is the theoretically correct method for eliciting consumers' WTP for goods or services in economics (Frykblom 1997). WTP is essentially the maximum amount that an individual is prepared to give up to gain utility and satisfaction from the consumption of a particular good or service (Phillips *et al*. 1997). WTP can be used to assess the value that consumers place on certain goods and/or services as a result of monetizing the benefits associated with such good or service (Morrison and Gyldmark 1992). The technique has been used to elicit valid WTP values for CBHI in Africa (Dong *et al*. 2003a,b, 2004, 2005). It has also increasingly been used to determine peoples' WTP for other health care goods and services in both developed and developing countries (Klose 1999; Kirigia 2000a,b; Onwujekwe 2004).

Methods

The study was carried out in Enugu and Anambra states of south-eastern Nigeria. Enugu state has a population of about 3 257 300. Anambra state has a population of about 4 182 000. The residents of both states are mostly of Igbo ethic group and Christian. More than half of the adult population in both states is employed in the informal sector. Three communities within each state were selected—one urban, one semi-urban and one rural—in order to reflect a broad picture of the WTP for CBHI across various community settings. In Enugu state, Uwani (urban), Iji-Nike (semi-urban) and Amokwe (rural) were purposively selected, while in Anambra state, Awka (urban), Amawbia (semi-urban) and Amansea (rural) were the study areas.

Sampling and sample size

An enumeration of the households in the chosen study areas was conducted and this served as the sampling frame. Adequate sample size was determined based on a power of 80%, confidence interval of 95% and using 20% as the

utilization rate of public facilities. A minimum sample size of 500 households per community was computed, translating to 3000 for the six communities. An additional 20 households were selected from each community in order to take care of refusals. Simple random sampling was used to randomly select the households from the sampling frame.

Data collection

The study was cross-sectional and a pre-tested, interviewer-administered questionnaire was used to collect data. Some residents from the study areas were selected to work as interviewers and trained over a period of 3 weeks on how to properly administer the questionnaires. The training took 3 weeks because the concepts of health insurance and CBHI were new to most of the interviewers. It was important for them to be familiar with the concepts so they would be able to explain the services under valuation to the respondents.

To collect the necessary information, the household heads or their representatives from the randomly selected households in the six study communities were interviewed. The focus of the data collection was the socio-economic and demographic profile of the respondents and their households, and the levels of WTP for CBHI. The detailed instrument is available from the authors on request.

Eliciting willingness to pay

Contingent valuation was used to elicit the WTP for self, other members of the household and also for altruism (for the poor and indigent people in the community) using only the bidding game technique (Dong *et al*. 2005). Three iterations were used in the bidding game depending on the answer to the starting-bid. The final response was a continuous quantitative amount that indicated the respondents' maximum WTP. A brief introductory explanation and scenario about health insurance was provided to the respondents before determining their levels of WTP for the scheme. The concept of CBHI and its attributes were explained before starting the bidding game.

The bidding game iteration for eliciting WTP for the individual was:

1. The price of a monthly insurance premium (contribution) per person is 600 Naira[1]; are you willing to pay? [ ]
   1 = Yes (Q2); 0 = No (Q3) Do not know (Q4)
2. What if the premium is 700 Naira, will you be willing to pay? [ ]
   1 = yes (Q4); 0 = No (Q4)
3. What if the premium is 500 Naira, will you be willing to pay? [ ]
   1 = yes (Q4); 0 = No (Q4)
4. What really is the maximum amount you are willing to pay for CBHI? [ ]

Data analysis

Tabulations, testing of means and multivariate analysis were the data analytical tools. A socio-economic status (SES) index was created based on information on household ownership of radio, bicycle, television and refrigerator etc., as well as per capita weekly food expenditure. The SES index was subsequently used to divide the households into different quartiles, and for examining the relationship between WTP and economic status using chi-square analysis. The mean WTP of respondents from urban, peri-urban and rural areas as well as for the four SES quartiles was computed using testing of means, where elicited WTP was the dependent variable and the categorization into urban-rural and the SES quartiles were the independent variables.

Log Ordinary Least Squares (OLS) was used for determining the validity of elicited WTP. Mean WTP was the dependent variable in Log OLS. A number of variables that were hypothesized to explain WTP were the independent variables. These variables, their descriptions and hypothesized theoretical relationship with WTP for CBHI based on economic theory are elaborated in Table 1. Some of the variables reflect the socio-economic and demographic status of the respondents and their households. Other variables are focused on current mechanisms used to pay for health care. A full-to-reduced modelling approach was used. The independent variables with the smallest *t*-statistic, and whose removal adversely affected neither the other coefficients nor the predictive power of the models, were removed sequentially.

Results

Respondents' socio-economic and demographic characteristics

Table 2 outlines the socio-economic and demographic characteristics of the respondents and their households. It shows that 83% of respondents were the major income earners and 85% were decision makers within their households. Sixty-two per cent of respondents were male household heads. The average household size was five persons.

Willingness to pay for CBHI in the six study areas

Table 3 shows the WTP for CBHI in the six communities. In all study areas except Uwani and Iji-Nike, less than one-third of respondents were willing to pay 500 Naira as the monthly premium. The mean WTP ranged from 132.4 Naira in Amansea to 343.0 Naira in Uwani. Furthermore, in all communities, respondents were willing to pay for at least two extra members of their household. Very few, however, were willing to pay up to 500 Naira for other members of their households, the number ranging from as few as 6 respondents (1.2%) in Amansea to 152 (29.0%) in Iji-Nike. The mean amount that respondents were willing to pay for other members of their household ranged from 73.0 Naira in Amansea to 295.9 Naira in Uwani.

Willingness to pay for CBHI across community types and by socio-economic status

Table 4 shows the mean WTP for CBHI in the urban, peri-urban and rural communities as well as by socio-economic status. It shows that the mean maximum WTP for self, i.e. for the respondent, was highest in the urban areas (314.3 Naira) and lowest in the rural areas (182.8 Naira), but the average WTP per respondent across all communities was 261.6 Naira per month. Also, the average amount that the respondents were willing to pay for other household members (211.1 Naira per month) was lower than the average WTP for self.

Table 1 Description of independent variables hypothesized to explain willingness to pay (WTP) for community-based health insurance (CBHI)

Variables	Explanation	Measurement	Hypothesized relationship with WTP
Geographic location	Measures whether a respondent is resident in an urban, peri-urban or rural area	0 = rural residence 1 = peri-urban residence 2 = urban residence	Urban residents will be more willing to pay for CBHI than rural residents
State of residence	The state where a respondent is resident	1 = Anambra state 2 = Enugu state	Residents of Anambra state will be more willing to pay than Enugu residents
Household status of respondent	Whether the respondent is the head of the household	1 = head of household 0 = not the household head	Household heads will be more willing to pay than others
Respondent's status as household decision-maker	Measures whether the respondent is the main decision-maker	1 = main decision-maker 0 = not the main decision-maker	Main decision-makers should have higher WTP than others
Total number of people in household	The number of residents within each household	A continuous quantitative measure	Higher numbers of household residents will lead to lower WTP
Age of respondent	How old (in years) the respondents are	A continuous quantitative measure	The older the people, the more the WTP
Sex of respondent	Whether respondent is male or female	1 = male 0 = female	Males will be more willing to pay than females
Whether respondent went to school	Whether the respondent had formal education	1 = had formal education 0 = had no formal education	People with formal education will be more willing to pay than others
Number of years of schooling	How many years of formal education that respondents had	A continuous quantitative measure	Higher number of years spent in formal education will increase WTP
Paid out of pocket for health care	Whether respondent paid out-of-pocket (OOP) recently for health care	1 = paid OOP 0 = did not pay OOP	Payments OOP will lead to higher WTP for CBHI
Paid by health insurance	Whether respondent paid by health insurance (HI) recently for health care	1 = paid using HI 0 = did not use HI	Payments using HI will lead to higher WTP for CBHI
Paid in installments	Whether respondent paid by installments recently for health care	1 = paid by installments 0 = did not use installments	Payments using installments will lead to higher WTP for CBHI
Paid with own money	Respondents coped with health care payment using own money	1 = used own money 0 = did not use own money	Using own money will lead to increased WTP
Borrowed money for payment	Respondents/their households coped with health care payment using borrowed money	1 = borrowed money 0 = did not borrow money	Borrowing money will lead to decreased WTP
Total household expenditure	Amount that household spent on household needs 1 month prior to interview	A continuous quantitative measure	The higher the expenditure, the higher the WTP
Socio-economic status	An index of the socio-economic status (SES) of the households	A continuous quantitative measure	The higher the SES, the higher the WTP

Table 4 also shows that the least poor respondents stated the highest average WTP amount (329.8 Naira), while the most poor stated the lowest average WTP amount (193.0 Naira). Similarly, the least poor were willing to pay the highest average amount (275.4 Naira) for other household members, while the most poor were willing to pay the lowest average amount for other household members (149.1 Naira).

OLS regression analysis

Table 5 presents the results of the full and reduced log OLS regressions for WTP for the respondents and WTP for other household members. Amongst the numerous statistically significant variables, it strikingly shows that WTP was positively related to socio-economic status for both WTP for the respondents and WTP for other household members. Conversely, WTP was negatively related to geographic location, showing that residence in rural areas led to decreased WTP. Payment by health insurance was positively related to WTP for respondents, whilst payment out-of-pocket was positively related to WTP for other household members. Other coefficients showed a positive relationship of gender with WTP, implying higher WTP amongst males compared with females.

Table 2 Socio-demographic characteristics of respondents by study community, Enugu and Anambra States, Nigeria

Variables	Anambra state			Enugu state		
	Awka (urban) $n = 500$	**Amawbia (peri-urban) $n = 500$**	**Amansea (rural) $n = 500$**	**Uwani (urban) $n = 515$**	**Iji-Nike (peri-urban) $n = 555$**	**Amokwe (rural) $n = 500$**
Male household head: *n* (%)	334 (66.8)	263 (52.6)	313 (62.6)	180 (35.0)	404 (72.9)	401 (80.2)
Whether respondent is main income earner: *n* (%)	460 (92.0)	386 (77.2)	463 (92.6)	233 (45.2)	526 (94.8)	480 (96.0)
Whether respondent is main decision-maker: *n* (%)	457 (91.4)	398 (79.6)	469 (93.8)	252 (48.9)	545 (98.2)	481 (96.2)
Sex (male): *n* (%)	352 (70.4)	270 (54.0)	309 (61.8)	183 (35.5)	403 (72.6)	397 (79.4)
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)
Mean age (in 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)

SD = standard deviation.

Table 3 Willingness to pay (WTP) for community-based health insurance in the six study communities of Nigeria

Communities	WTP of respondents		WTP of respondents for other household members		
	Whether willing to pay 500 Naira monthly *n* (%)	Mean amounts respondents are willing to pay mean (SD)	Mean number of household members respondents are willing to pay for *n* (%)	Whether willing to pay 500 Naira monthly *n* (%)	Mean amounts respondents are willing to pay mean (SD)
Awka (urban)	163 (32.7)	284.6 (224.0)	2.7 (3.1)	72 (18.9)	215.2 (221.0)
Amawbia (peri-urban)	147 (29.5)	260.4 (182.8)	2.4 (1.9)	33 (8.4)	180.8 (126.1)
Amansea (rural)	18 (3.6)	132.4 (98.7)	3.3 (1.9)	6 (1.2)	73.0 (66.9)
Uwani (urban)	195 (38.0)	343.0 (275.0)	3.4 (2.6)	151 (19.7)	295.9 (245.0)
Iji-Nike (peri-urban)	197 (35.5)	307.8 (201.0)	3.7 (2.9)	152 (29.0)	286.5 (182.0)
Amokwe (rural)	31 (6.3)	234.1 (145.1)	3.2 (2.0)	15 (3.1)	199.0 (136.3)

Note: 1US$ = 120 Naira.
SD = standard deviation.

Table 4 Willingness to pay (WTP) for community-based health insurance by different population groups

	Maximum WTP for respondent Mean (SD)	**Maximum WTP per other household member** Mean (SD)
By geographic location		
Urban	314.3 (253.0)	261.4 (238.7)
Peri-urban	285.4 (194.1)	241.1 (168.7)
Rural	182.8 (133.9)	136.0 (124.4)
X^2 (*P*-value)	179.7 ($P < 0.05$)	25.13 ($P < 0.05$)
By socio-economic status		
Q1 (most poor)	193.0 (151.3)	149.1 (130.8)
Q2 (very poor)	251.1 (206.6)	200.9 (180.0)
Q3 (poor)	268.1 (201.8)	212.4 (181.0)
Q4 (least poor)	329.8 (237.1)	275.4 (230.0)
X^2 (*P*-value)	154.3 ($P < 0.05$)	10.5 ($P < 0.05$)

Note: 1US$ = 120 Naira.
SD = standard deviation.

Additionally, the higher the number of years of education, the higher were the amounts of elicited WTP. The regressions were statistically significant and explained 17% of the variations observed in WTP for respondents and 34% of the variations observed in WTP for other household members.

Discussion

The finding that a minority of respondents were willing to pay for the CBHI scheme both for themselves and for household members, coupled with the generally low amounts that people were willing to pay to participate in CBHI, has far reaching implications if a CBHI scheme is to be set up. It implies that promoters of CBHI such as the Nigerian National Health Insurance Scheme (NHIS) need to raise awareness so as to increase the demand for CBHI. The findings also imply that people may not enroll in the scheme if the premium is not reduced to make it affordable, and such schemes require a large pool of premiums to attain their objective of financial risk protection. Dong *et al*. (2003a, 2005) similarly found low levels of WTP for CBHI in Burkina Faso. However, an appreciable proportion of people in urban and peri-urban areas did state

Table 5 Full and reduced log ordinary least squares models of willingness to pay (WTP) for community-based health insurance for self and for others

Independent variables	WTP for self		WTP for others	
	Full model Coefficient (SE)	Reduced model Coefficient (SE)	Full model Coefficient (SE)	Reduced model Coefficient (SE)
Geographic location	−0.24(0.03)***	−0.23(0.03)***	−0.33(0.04)***	−0.36(0.04)***
State of residence	0.26(0.05)***	0.27(0.05)***	0.57(0.05)***	0.63(0.05)***
Household status of respondent	−0.11(0.05)**	−0.13(0.05)***	−0.02(0.05)	–
Whether respondent is the main decision-maker	−0.18(0.11)*	−0.18(0.10)**	−0.13(0.11)	–
Total number of people in household	−0.01(0.01)*	−0.02(0.01)	−0.03(0.01)	−0.02(0.01)*
Age of respondent	0.00(0.00)	0.00(0.00)**	0.00(0.00)	0.00(0.00)
Sex of respondent	0.15(0.07)**	0.23(0.64)***	0.13(0.07)*	0.19(0.05)***
Whether respondent went to school	0.26(024)	–	−0.16(0.24)	–
Number of years of schooling	0.01(0.01)*	0.02(0.01)***	0.02(0.01)*	0.02(0.01)***
Paid out-of-pocket for health care	−0.04(0.13)	–	−0.38(0.12)**	−0.33(0.11)***
Paid by health insurance	1.07(0.43)**	1.04(0.41)**	–	–
Paid in installments	0.05(0.17)	–	–	–
Paid with own money	0.00(0.17)	–	0.50(0.16)**	0.47(0.16)***
Borrowed money for payment	−0.00(0.18)	–	0.23(0.17)	0.22(0.19)
Total household expenditure	−0.02(0.03)	–	−0.00(0.00)**	−0.00(0.00)
Socio-economic status	0.08(0.02)***	0.09(0.02)***	0.07(0.02)***	0.08(0.02)***
Number of observations	843	886	798	816
F statistics	8.36***	18.20***	20.76***	38.47***
Adjusted R^2	0.18	0.17	0.35	0.34

*$P < 0.10$; **$P < 0.05$; ***$P < 0.01$.

positive WTP for CBHI, as was similarly found by Dong *et al*. (2003a). This shows that many respondents could see the value of the scheme and recognized that CBHI may increase access to good quality health services for themselves and for members of their family, without having to pay at the point of use and with CBHI spreading payments over time (Jütting 2001).

The implication of low levels of average WTP amounts is that the amount of money that will be available for the schemes when established will be low, unless there is external financial support. If, for example, 500 Naira per member is the minimum expected monthly premium, then the elicited mean WTP amounts pose challenges for the viability and sustainability of such schemes. Enrolment levels will likely be low and, with socio-economic status a determining factor in WTP, those enrolling will be those able to afford the premium. Dong *et al*. (2005) also found that mean WTP for CBHI was higher for higher socio-economic status groups. Further, the higher the volume of contributions, the more the financial consequences of treatment costs can be avoided and access to care secured when it is needed (Carrin *et al*. 2005).

The finding that socio-economic status was a principal determining factor for WTP may imply that CBHI may also end up providing services only for the better-off groups who are willing to pay heavy premiums. This 'exclusion effect' has been noted in many CBHI schemes in low-income settings (Ekman 2004). It may also mean that if people cannot pay fixed premiums at a level necessary for appropriate packages (for example, 500 Naira), the services contained in the benefit package may have to be adjusted to correspond with the amount available from what people are willing to pay. The danger, however, is that service quality may reduce and underpayments may emerge in the scheme (Poletti *et al*. 2007). In a CBHI pilot project in Ghana, households were willing to make the necessary contributions on the condition that services of the required quality were delivered (Arhin 1995; Poletti *et al*. 2007). Thus a compromise on the quality of services is likely to affect the willingness of individuals to pay for CBHI.

The result showing that males stated higher WTP amounts than females could be an income effect because males generally earn more than females in southeast Nigeria. Similarly, those living in rural areas tend to be less willing to pay than those in urban areas because the former earn less and mostly depend on subsistence farming for survival. There may also be more ignorance and lack of awareness in rural areas. However, the positive association of years of schooling with WTP for CBHI implies that the more knowledgeable or exposed that people are, the more they value CBHI and are willing to pay for it.

All in all, economic status and place of residence, amongst other factors, matter in peoples' WTP for CBHI membership. Although a good number of people expressed WTP for CBHI, this is tempered by the fact that there were very low numbers of people willing to pay in rural areas and there were also inequities in the average WTP amounts. Hence, as the Nigerian National Health Insurance Scheme (NHIS) prepares to introduce and scale-up CBHI in the country, a lot of awareness-raising is needed, especially in rural areas, and care must be taken in fixing the premium to be paid by different

population groups. Dong *et al*. (2005) suggest that premiums should be adjusted for income and that there should be exemptions and subsidies for the poor so as to increase their enrolment. Thus, the NHIS should create a pool of funds to be used as a resource for subsidies and exemptions for enrolling the poorest and other disadvantaged people into CBHI schemes. Setting financial contributions according to ability to pay may be more acceptable than levied flat sums for all households irrespective of socio-economic status, a situation which is known to be regressive (Carrin 2003; McIntyre *et al*. 2005). Finally, considering the low levels of WTP, other ways of augmenting premiums to meet the expected costs of selected benefit packages, such as government support from taxes and donor financing, should be pursued to ensure the financial viability of such schemes, whilst making sure that the most important services are included in the CBHI schemes.

Acknowledgements

This study received financial support from the African Regional Office of the World Health Organization (AFRO), Brazzaville. We are grateful to the anonymous reviewers for their comments, which helped in improving the paper.

Endnote

[1] 1US$ = 120 Naira.

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