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Willingness to Pay for Community Health Insurance and its Determinants among Household Heads in Rural Communities in North-Central Nigeria

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Abstract

Willingness to pay data are rarely collected or used as part of designing health insurance schemes in developing countries. The objective of this study was to assess household heads' willingness to pay for community health insurance and its determinants. It was a descriptive cross-sectional study with sample size of 360 determined using Fishers formula. Multistage sampling technique was used to select respondents. Questionnaire was semi structured

interviewer administered and data analysis was done using Epi-info version 3.4.1. Frequency tables and cross-tabulations were generated with a statistical significance p-value pre-determined at less than 0.05. The mean amount respondents were willing to pay was 522.0 ± 266.3 Naira per annum per household member (3.26 ± 1.66 US Dollars). Those willing to pay were 313(87.0%) and the allowable range for fixing premium is between 250 Naira and 1,200 Naira (1.56 ± 7.50 US Dollars) per annum per household member. The factors that affect Willingness to pay were age, sex, educational attainment, income, household size, and past health expenditure of household heads. Premium that should be fixed for Community Health Insurance in these rural communities should range between 250 Naira to 1,200 Naira (1.56 ± 7.50 US Dollars) per annum per household member.

Keywords: Community, Insurance, Willingness to pay.

1. Introduction

In the absence of real world experience, economists gauge the willingness to pay (WTP) for health insurance in low income countries by means of contingent valuation (CV) methods which elicit directly what individuals would be willing to pay for a hypothetical health insurance package. [1, 2, 3] In General willingness to pay data are rarely collected or used as part of designing health insurance schemes in developing countries. [3] In Nigeria enrolment in some Community Health Insurance (CHI) have been low with small average premiums because of a lack of study on Willingness to pay before such schemes took off. [4]

It has been shown by Contingent valuation theory and empirical evidence that studies could be undertaken in developing countries to obtain valid and reliable health-related Willingness to pay data. [3] Such valid and reliable Willingness to pay information for a target population would facilitate scheme design and implementation. [3] While some previous studies reveal that households in rural areas do not readily accept the idea of paying for services they might not use with regard to health care, some other studies reveal the opposite. [3, 5]

A research in a rural district in Southern Ghana revealed that WTP were compatible with high membership in, and satisfactory performance of a proposed health insurance scheme. [3] Studies in communities where WTP was not carried out before the scheme revealed a high drop-out rate. [6] On the other hand studies in Namibia and Ethiopia where WTP was done before instituting CHI showed how important WTP study was to the planning and implementation of CHI. [7]

Most functional health insurance schemes in Africa are associated with formal sector employment which requires regular contributions compatible with formal sector earning. [3] Such schemes do not cover individuals in the informal sector that predominantly lives in rural areas. In addition about sixty-two percent of Nigerians live in rural areas. [8]

A study by Barnighausten et al examined WTP among informal sector workers in Wuhan, China, found that these workers are willing to pay the equivalent of 4 US Dollars per person per month. [7, 9] Another study in India used unidirectional bidding in a Contingent Valuation (CV) survey to obtain estimates of WTP for health insurance. In this study the median WTP for health insurance is the equivalent of 15 US Dollars per household per month. [7, 10]

In rural Iran, the finding was that households are willing to pay three US Dollars per household per month on the average. [7, 11] In a similar study on WTP for a school based chemotherapy program in Tanzania, greater than seventy percent had WTP greater than 1.25 US Dollars per person per year while the median WTP was 1.25 United States Dollars. [12] In the survey five percent of respondents were not willing to pay any money for the scheme; twenty-five percent of the respondents were willing to pay between 0.1 and 1.24 US Dollars while 70% were willing to pay 1.25 US Dollars and above. [12]

In a related study on WTP for cataract surgery in Tanzania the amount patients reported that they were willing to pay ranged from 0 to 18.75 US Dollars (USD) per person per surgery. The mean was three US Dollars and the standard deviation was six USD. [1] A study in Namibia revealed fairly higher WTP of seven USD per person per month. [2] Rural Nigerian

studies are also available on WTP. Ichoku et al found a WTP of 1.5 USD per household per month. [13] On the other hand Onwujekwe et al in a Nigerian survey found WTP of 1.7 USD per person per month in a rural community while he found a WTP of 2.9 USD per person per month in the urban area. [14]

Previous studies have highlighted various factors that influence individuals and households' WTP for CHI. The first of such factor is age. [2,12,15] A study in Ghana [15] revealed that the premium level that individuals were willing to pay was related to age of the respondents. The younger age group was willing to pay more. A similar finding in Namibia [2] showed that the young respondents show more interest in joining and WTP for the scheme. In a related study in Tanzania, [10] age of household head appeared to affect WTP because seventy-four percent of respondents who were not willing to pay any amount had household heads who were aged fifty and above.

Another important factor that affects WTP is gender. [2,12,14-16] It was noted that males were willing to pay higher amounts for insurance than females in two different communities in Nigeria and in Ghana. [14-16] Closely related to these finding is the finding in Namibia [2] where thirty-one percent of individuals who live in male-headed households are insured compared with twenty-one percent of individuals living in female-headed households. This is however different from the finding in Tanzania [12] where seventy-eight percent of households who were not willing to pay anything for CHI had male household heads and twenty percent had female household heads. Although in this case most of the respondents who were not willing to pay any amount felt it was the government's responsibility to finance the program.

The educational level of respondents also plays a significant role in their WTP. There is positive correlation between educational attainment and WTP. [2,13,14,16] People with more education had a higher WTP. Socioeconomic status also affects WTP. [2,12,13,14,16] Less wealthy households or individuals were willing to pay lesser amounts. Other factors are household size, [13] level of trust in those organizing the scheme, [13,15] previous history of being involved in health insurance and history of large amount spent Out of pocket (OOP) for health [14,17] Whilst previously paying OOP was negatively related to WTP, previously paying for health care using health insurance mechanism was positively related to WTP. [14]

The objective of this study was to assess household heads' willingness to pay for community health insurance and its determinants in rural communities of Ilorin South Local Government area of Kwara state.

2. Methodology

The study was carried out in rural areas of Ilorin South Local Government Area, Kwara state, Nigeria. One of the neighboring local governments (Asa LGA) is currently involved in CHI Scheme under the Hygeia Community Health Plan in collaboration with Amsterdam Institute of Global Health which is responsible for ninety-five percent of the funding. The local government has an estimated population of 315,000 people with an estimated 195,300 living in rural areas.[21] The main type of payment in the health facilities in the LGA is private Out of Pocket financing.

This is a cross-sectional descriptive study to assess the willingness to pay for Community Health Insurance among household heads in rural communities of Ilorin South Local Government. The study population included household heads in the rural communities of Ilorin South Local Government of Kwara State. The minimum sample size for this study was determined using the Fisher's Formula. A sample size of 360 was derived and surveyed. Multistage Sampling technique was used. 1 of the 3 political wards that have rural communities was selected by simple random sampling by balloting method. Five of the rural communities were selected from the randomly selected ward by simple random sampling by balloting method. Proportional allocation of the sample sizes was done to the five selected communities based on the population of each of the five randomly selected communities. The houses in each selected community were enumerated and the number of houses needed selected by simple random sampling by balloting without replacement in each community

based on the number of respondents needed in each community. The list of all households in each house (where there are more than one household living in a building) was generated and one of them was selected from the list by simple random sampling for questionnaire administration. A household is a group of persons who live together and eat from the same pot. The household head is the person responsible for leadership and financial decisions in the household.

Pre-tested semi-structured interviewer administered questionnaire was used to generate quantitative data. The questionnaire was adapted from the Community Health Plan – Kwara Central Survey 2009 Questionnaire developed by a collaboration of Amsterdam Institute for International Development, PharmAccess Foundation, Center for Poverty-Related Communicable Diseases, University of Amsterdam and University of Ilorin Teaching Hospital. The questionnaire was pretested in Oke-ose, a rural community of Ilorin East LGA about 30 kilometers from the study area. Household heads above the age of eighteen and those who are not currently on any insurance scheme in the last one year were included in the study. Those that were eighteen and below and those who were currently on any insurance scheme were excluded from the study.

In eliciting willingness to pay (WTP), Double-Bounded Dichotomous Choice variant of Contingent Valuation Method was used. This was supported with open-ended question for those who do not pick a 'yes' for either the first or second option. This will enable respondents to pick lower amounts (as low as zero) or higher amounts (higher than the stated options in the DBDC-CV Method)

The analysis was done using EPI INFO version 4.3.1; and frequency tables and cross tabulations was generated. Chi-square test was used to determine statistical significance of observed differences in cross tabulated variables. Level of significance was predetermined at a p-value of less than 0.05.

Clients' consent was obtained before interview. The nature of study, participation status, benefits of the study and confidentiality issues were made clear to the respondents before obtaining their consent.

3. Result

Three hundred and sixty household heads were interviewed. The age distribution of respondents ranged from 20 to 75 years while the mean age of household heads interviewed was 42.88 $\pm$ 12.90. Larger proportion of household heads were males, they accounted for 303 out of 360 (84.2%) respondents. Almost half (144, 40%) of household heads that responded to the questionnaires had no formal education, about a fifth (78, 21.7%) had attended primary school while others attended Quranic, secondary and tertiary institutions. The main occupation of the respondents was farming (181, 50.3%). This is followed by civil service job. Only a small proportion, 17 (4.7%) do not earn a living. Number of household members varied greatly among the respondents. Those with household size ranging between one and three are 92 (25.6%). Those with household size of four to six are 186 (51.7%). This group accounted for the highest number of respondents. Those that have household members between seven and nine are 67 (18.6%) while those that have household size greater than 9 are 15 (4.1%). Household heads that were willing to pay 250 naira and below were 67 (21.4%).

Household heads that were willing to pay between 251 and 500 naira are 57 (18.2%) while those that were willing to pay between 501 and 750 Naira, 751 and 1000 Naira, and greater than 1000 Naira were 154 (49.2%), 31 (9.9%), and 4 (1.3%) respectively. The mean amount of money that respondents were willing to pay was 522 Naira. The median was 600 Naira and the modal amount was 600 Naira.

Willingness to pay was influenced by the age of the respondents and this was statistically significant with a p-value of 0.0000. Those that were willing to pay the highest amount of premium were those that were aged 30-39 years. The mean of the amount of money that this age group was willing to pay was 622.3$\pm$209.7 Naira. The age group that were willing to pay

the lowest premium were those aged 50 years and above. The mean of the amount of money that this age group was willing to pay was 373.2±264.8 Naira. (Table 6)
The mean amount of money that males were willing to pay was 504.9 ± 260.0 naira. However the mean amount that females were willing to pay was 624.4 ± 283.4 naira. Comparison of these mean amounts was statistically significant with a p-value of 0.005. Educational attainment of respondents had statistically significant influence on the premium that respondents were willing to pay. The p-value was 0.0000. The mean amount of money that respondents were willing to pay increased with level of education. Those with no formal education were willing to pay 396.4 ± 238.7 Naira while the mean value that those with primary, secondary and tertiary education were willing to pay was 526.4 ± 181.7, 620.4 ± 252.3, and 730.9 ± 268.8 respectively. The more educated the respondents were, the higher the amount respondents were willing to pay and this was statistically significant. Comparison of the mean was statistically significant as the p was 0.0000 while the F was 29.12.
The effect of income on their WTP was also statistically significant with a p-value of 0.0000. The mean value of each of the income group showed that the higher the income, the higher the WTP. The mean WTP showed that those with household size of greater than 6 members were willing to pay the least amount of money. They were willing to pay 451.5 ± 263.7 Naira per annum per household member. However those that were willing to pay the highest amount of money were those with household size of 4 to 6 members. This group was willing to pay 566.0 ± 235.1. This was statistically significant with a p value of 0.006.

4. Discussion

The mean WTP per person per annum was found out to be 522.0 ± 266.3 naira (3.48 ± 1.78 US dollars). In Eastern Nigeria, Onwujekwe et al [14] found a WTP of 250 naira per month per person in rural communities for CHI. This is an equivalent of 3,000 naira per person per year. This disparity may be because of the difference in geo-political area and cost of living in both locations. In Burkina Faso, [18] the mean WTP was found to be 4.27 US dollars. Another similar survey by Dong et al in Burkina Faso [19] showed mean WTP of 13 US dollars per household per annum for CHI in a community with average household size of 8 members. This translates to 1.6 US dollars per person per year. This is also similar to the finding from this study which revealed a mean WTP of 3.48 ± 1.78 US dollars.
In Japan, [20] a WTP survey was done for the treatment of common cold, retinal detachment and myocardial infarction. The mean WTP was 29.9 US dollars for common cold, 8,979 US Dollars for retina detachment and 8,976 US Dollars for myocardial infarction. This disparity might be because the WTP survey in Japan was not for an insurance package rather WTP for the treatment of certain illnesses out of pocket.
In Wuhan, China Barnghausen et al [9] found that the mean WTP among informal sector workers was an equivalent of 4 US dollars per person per month for CHI (48 US dollars per person per year). This difference compared to our finding might be because of the differences in prevailing socio-economic situations and level of industrialization which obviously will affect the earning power.
Another study in India used unidirectional bidding in a CV survey to obtain estimates of WTP for health insurance. In this study the median WTP for health insurance is the equivalent of 15 US Dollars per household per month.[7,10] This disparity could be because this WTP was elicited per household instead of per person as was done in this survey. Also in rural Iran, the finding was that households are willing to pay 3 US Dollars per household per month on the average.[7,11] (36 US dollars per household per year). In this case of rural communities in Iran, the WTP was also determined per household.
In a similar study on WTP for a school based chemotherapy program in Tanzania, greater than seventy percent had WTP greater than 1.25 UD Dollars per person per year while the median WTP was 1.25 US Dollars. [12] This is much lower compared to the finding in this survey. The difference might be because the health package in this Tanzania study is limited

to school based chemotherapy program only and not complete basic health package as was done in this study.

In a related study on WTP for cataract surgery in Tanzania the amount patients reported that they were willing to pay ranged from 0 to 18.75 US Dollars (USD) per person per surgery. The mean was 3 US Dollars and the standard deviation was six USD. [1] A study in Namibia revealed fairly higher WTP of 7 USD per person per month. [2] Rural Nigerian studies are also available on WTP. Ichoku et al found a WTP of 1.5 USD per household per month. [13] On the other hand Onwujekwe et al in a Nigerian survey found WTP of 1.7 USD per person per month in a rural community while he found a WTP of 2.9 USD per person per month in then urban area. [14]

This study showed that age of household heads was related to their mean WTP for both health packages. Household heads that were 50 and above were willing to pay the least amount of premium while household heads that were between the age of 30 to 39 had the highest. A study in Ghana [17] revealed that the premium level that individuals were willing to pay was related to age of the respondents. The younger age group was willing to pay more.

A similar finding in Namibia [2] showed that the young respondents show more interest in joining and WTP for the scheme. In a related study in Tanzania [10] , age of household head appeared to affect WTP because seventy-four percent of respondents who were not willing to pay any amount had household heads who were aged fifty and above.

The result of this study revealed that females had a higher mean WTP than males and this was statistically significant. This is at variance with other findings where it was noted that males were willing to pay higher amounts for insurance than females in two different communities in Nigeria and in Ghana. [14-16] Closely related to these finding is the finding in Namibia [2] where thirty-one percent of individuals who live in male-headed households are insured compared with twenty-one percent of individuals living in female-headed households. This is however different from the finding in Tanzania [12] where seventy-eight percent of households who were not willing to pay anything for CHI had male household heads and twenty percent had female household heads. Although in this case most of the respondents who were not willing to pay any amount felt it was the government's responsibility to finance the program.

The result also showed that the more the educational level attained the higher the amount that respondents were willing to pay. This is consistent with findings from previous studies where people with more education had a higher WTP. [2,13,14,16] The income level of respondents also influenced their WTP as WTP increased with higher income and this was statistically significant for both health packages. Respondents with household size of 4 to 6 members were willing to pay the highest premia for both health packages while respondents with household size greater than 6 members expressed the lowest WTP. This was statistically significant.

5. Conclusion

The mean WTP 522.0 $\pm$ 266.3 Naira (3.26 $\pm$ 1.66 US Dollars) and the allowable range for fixing premium are between 250 naira and 1,200 Naira (1.56 $\pm$ 7.50 US Dollars). The factors that affect WTP are age, sex, educational attainment, income, household size, and past health expenditure of household heads. The amount of premium that should be fixed for CHI in these rural communities should range between 250 Naira to 1,200 Naira.

Table 1: Socio-demographic Characteristics of Respondents

Variables	**Frequency**	**Percent %**
Age		
18-29	54	15.8

30-39	108	30.0
40-49	81	22.5
50-59	60	16.7
≥60	57	15.8
Total	**360**	**100**
Mean	42.88 ± 12.90	
Sex		
Male	303	84.2
Female	57	15.8
Total	**360**	**100**
Marital Status		
Single	26	7.2
Married	315	87.5
Widowed	19	5.3
Total	**360**	**100**
Religion		
Christianity	40	11.1
Islam	320	88.9
Total	**360**	**100**

Table 2: Socio-economic Characteristics of Respondents

Variables	**Frequency**	**Percent %**
Education		
No formal	144	40.0
Quranic	23	6.4
Primary	78	21.7
Secondary	56	15.6
Post-Secondary	59	16.4
Total	**360**	**100**
Occupation		
Student	6	1.7
Artisan/Technician	36	10.0
Civil-servant	94	26.1
Trader	32	8.9
Farmer	181	50.3
None/Unemployed	11	3.1
Total	**360**	**100**
Earning money for living		
Earning	343	95.3
Not Earning	17	4.72
Total	**360**	**100**
Monthly Income (Naira)		
≤5,000	76	22.2
5,001-10,000	149	43.4
10,001-20,000	96	56.6
>20,000	22	6.4
Total	**343**	**100**
Mean	**10,007 ± 5,870**	

Table 3: Number of Household Members of Respondents

Number of household members	Frequency	Percentage (%)
1 – 3	92	25.6
4 – 6	186	51.7
7 – 9	67	18.6
> 9	15	4.1
Total	**360**	**100**
Mean household size 5.0 ± 2.7		

Table 4: Premium respondents are willing to pay for the insurance per person per year

Premium (Naira)	Number of respondents	Percentage (%)
≤ 250	67	21.4
251-500	57	18.2
501-750	154	49.2
751-1000	31	9.9
>1000	4	1.3
Total	**313**	**100**

Table 5: Descriptive Statistics for Amount willing to pay

	Naira ₦	Dollars $
Minimum	50	0.33
Mean	**522.0**	**3.48**
Median	600.0	4.00
Mode	600.0	4.00
Standard deviation	**266.3**	**1.78**
Maximum	2,000	13.33
Range	1,950	13.00
Range WTP	**266.3-788.3**	**1.78-5.26**

Table 6: Determinants of Willingness to Pay

Age	Mean Willingness to pay
18-29	602.0±234.1
30-39	622.3±209.7
40-49	531.8±271.7
≥ 50	373.2±264.8
P=0.0000 f =18.54	
Sex	
Male	504.9±260.0
Female	624.4±283.4
P=0.005 students' t test=7.93	
Education	
No formal	396.4±238.7
Quranic	453.3±264.2
Primary	526.4±181.7

Secondary	620.4±252.3
Post-secondary	730.9±268.8
P=0.000 f =29.12	
Income level	
≤ 5000	376.5±207.4
5001-10000	502.3±216.8
10001-15000	619.7±260.5
>15000	759.2±312.1
P=0.000 f =24.61	
Household size	
1-3	494.0±309.4
4-6	566.0±235.1
≥ 7	451.5±263.7
P=0.006 f =5.19	

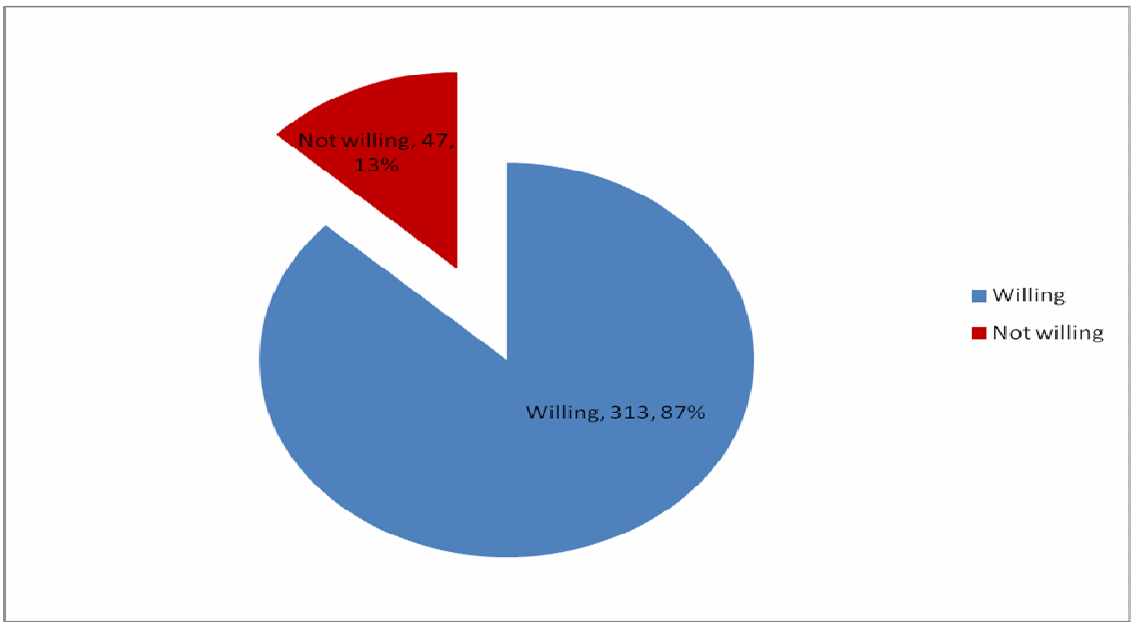

Figure I: Respondents' willingness to be involved in CHI

Full word count: 4,635

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