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Willingness to pay for community based health insurance among households in the rural community of Fogera District, North West Ethiopia

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Abstract: *Introduction:* Community-based health insurance schemes are becoming increasingly recognized as a tool to finance health care in developing countries. The Ethiopian government is now implementing community-based health insurance for citizens in the informal and agriculture sectors as a pilot basis. *Objective:* This study was conducted to assess the willingness to pay for community based health insurance and associated factors among household heads in the rural community of Fogera district, North West Ethiopia, 2013. *Methods:* A community based cross-sectional study was conducted. Multistage sampling technique was undertaken to get a total of 528 households. Pre-tested, structured interviewer administered questionnaire was used to collect the desired data. Double-Bounded Dichotomous Choice Variant of the contingent valuation method was used to assess the maximum willingness to pay for the schemes, and a multiple linear regression equation model was used to answer how much one is willing to pay once one decides to enroll in the scheme. The degree of association between independent and dependent variables were assessed using coefficient and p-value. *Results:* The study revealed that, 80% of respondents expressed willingness to enroll in the community-based health insurance system. The average amount of money willing to pay for the scheme was 187.4Birr per household per annual. Based on the multiple linear regression model; being male [B=17.28], large household size [B= 4.54], schooling experience [B=1.85], farmer household [B=33.79], merchant household [B=58.50], richer household [B=14.94] were significantly associated with the willingness to pay for community based health insurance scheme. *Conclusion and recommendation* the willingness to pay for the Community-based health insurance scheme was encouraging. However, the amount of the premium should consider the family size, wealth status and the willingness of the households.

Keywords: Willingness, Community Based Health Insurance, Rural, Households, Fogera

1. Introduction

The catastrophic nature of health care financing mechanism for the poor and often rural population has been a source of concern in the countries of Africa (1). According to WHO; 150 million people globally suffer financial catastrophic shock each year, and 100 million are pushed into poverty because of direct payments for health services (2,3).

Community-based health insurance schemes are becoming increasingly recognized as an instrument to finance health care in developing countries (4), With certain weaknesses such as low capital start up base, small size of risk pool, lower level of revenue mobilization, limited management capacity, isolation from more complete benefits (5).

Community-Based Health Insurance (CBHI) is a type of insurance mean for informal sectors through contributing some amount of money that is owned, designed, and managed by their members, and the schemes are a not-for-profit type of health insurance that has been used by poor people to protect themselves against the high costs of seeking medical care and treatment for illness(6,7). It is mainly financed by the contributions/premium regularly collected from its members (8, 9).

Community-based health insurances have the potential to

Provide financial protection for underserved segments within the population, minimizing the equity gap and reducing out-of-pocket spending, increase awareness regarding the value of insurance, building self-belief among participants through community control mechanisms, and enhancing utilization of the health care system (10).

In sub-Saharan Africa, out-of-pocket expenditures constitute approximately 40% of total health expenditures, imposing financial burdens and limiting access to care in some of the poorest countries around the globe (11,12).

A study in India revealed that 70% of the rural populations were willing to pay $ 5.6 USD per household per a year (13). A research in North Central Nigeria rural community revealed that 87% of the respondents were willing to pay for CBHI, and the mean amount of money were $3.26 USD per household per annual (14).

Study in Rural area of Cameron indicates that rural households on average were willing to pay $2.5 per person per month (13). Average household heads were willing to pay US$ 8.6 per year in Burkinfaso (15).

A survey study in Ethiopia Stated that, the willingness to join was 94.7% and the poor were willing to pay up to 5% of their monthly income (16). CBHI has been implemented in Ethiopia in 13 districts as a pilot basis since 2011, which were selected from Amhara, Oromiya, SNNP and Tigray Regions covering 1.45 million People (16). According to the Amhara Regional State Health Bureau report 2011, every CBHI member in each pilot woreda is expected to pay 5ETB registration fee (a onetime payment) and annual contribution of ETB 180. However, member contribution varies among regions and also within regions. It varies from ETB 132 in Tigray to ETB 34.4 in SNNP (10).

Hence, this study was aimed to assess the willingness to pay for community based health insurance and its determinants among households in Fogera District.

2. Methods

The study was carried out in the rural community of Fogera District from June to November 2013; the town of the Fogera district is located 15 km away from Bahir Dar the capital of Amhara National Regional State and 580 km from Addis Ababa the capital of Ethiopia. It hosts 28 rural Kebeles and more than 220,000 people. Fogera district is one of the three pilot areas of community-based health insurance in the Amhara National Regional State. The schemes have started in June 2011.

The study utilized community-based cross-sectional study design with quantitative data collection method. The study population included all households in rural community of Fogera Districts North West Ethiopia. Respondents who were working in the formal organization in the rural community were excluded from the study.

The sample size was calculated using single population proportion formula with the following assumptions; proportion 94%, which was obtained from Ethiopian National Health Insurance Survey (2005). Using 3% margin of error at 95% confidence level, the sample size was 528 after considering 10% non response rate and design effect of two.

The sample was obtained using multi-stage sampling technique. During the first stage, six Kebeles were randomly selected by simple random sampling out of 28 rural Kebeles of the district. In the second stage, 528 households were selected by using systematic random sampling. A “Kebele” is the smallest governmental administrative unit, and on average has a population of 5000 people.

The dependant variable was willingness to enroll for the community for community-based health insurance while the following factors were included in the model as independent variables: socio-demographic variable*:* age, sex, marital status, family size, number of children), socioeconomic variable*: (*income, wealth, occupation, level of education), health and health-related factors and knowledge about benefit about CBHI scheme.

The questionnaires were prepared by reviewing relevant literatures. Pre- test was done on 10% of the subjects at Addis Zemen Rural District. Data were collected by pre-tested, pre-coded and interviewer-administered questionnaires. The collected data were cleaned, coded, entered into EPI-INFO version 3.5.1 software and transferred and analysed using SPSS computer soft ware package version 20. The wealth status of the households was computed by Principal Component Analysis (PCA). The WTP values that were obtained through the Double-Bounded Dichotomous Choice Variant on the contingent valuation method and the maximum WTP values were subjected to multivariate analysis.

The data were analysed using multiple linear regression to determine the effect of various factors on the outcome variable. The results were presented in the form of tables, figures and text using frequencies and summary statistics such as standard deviation, mean, and percentage to describe the study population in relation to relevant variables. The degree of association between dependent and independent variables were assessed using odds ratio and coefficient with 95% confidence interval and p-value.

The study was reviewed and approved by Institution Research Review Boards, Institute of Public Health at the University of Gondar. The purpose and the importance of the study were explained and written consent was obtained from each participant. Moreover, confidentiality of the information was assured by using anonymous questionnaires and by keeping the data in a secured place.

3. Results

3.1. Demographic Characteristics of Respondents

A total of 528 household heads with100% response rate was studied. The majority of respondents were male (78.2%). One hundred fifty eight (30%) and 152 (29%) of the respondents were in the age group of 30-39 years and

40-49 years respectively. The mean age of respondents was 45 years (±12SD). Five hundred six (95.8%) of the respondents were orthodox Christian. Four hundred thirty three (82%) of the respondents were married and 378 (71.6%) of the household had under five years old age children. The mean family size of the respondent was 5 (± 1.8 SD) (Table 1).

Table 1. *Socio-demographic characteristics of the respondents, Fogera Districts, 2013 (n=528)*

Characteristics	Frequency	Percent (%)
Sex of the household head		
Male	414	78.4
Female	114	21.6
Age (years)		
20-29	50	9.5
30-39	157	29.7
40-49	150	28.4
50-59	96	18.2
Greater than or equal to 60	75	14.4
Religion		
Orthodox	506	95.8
Muslim	15	2.9
Adventist 7 day	7	1.3
Marital status		
Single	20	3.8
Married	433	82
Divorced	40	7.6
Widowed	35	6.6
Household size		
Less than or equal to 5	328	62.7
Greater than 5	200	37.3
Household having children <5 years old (n=378)		
One child	234	61.9
Two or more children	144	38.1
Household having a person above 65 years old age (n=39)		
One person	31	79.5
Two or more person	8	20.5

Three hundred three (57.4%) of the respondents were unable to read and write and only 2.8% of the study subjects had attained secondary education and above. With regard to the occupation, 491 (93%) of the respondents were farmer, petty trader (4.5%) and the others were merchants and daily laborer. The average income of the household per a year was 16,129 per. Only 92 (17.4%) household had a bank account. Twenty five of the respondent main sources of drinking water were from unprotected water point. The wealth status the Households were ranked poor, middle and rich. Thirty three percent of them were categorized as poor wealth status.

3.2. Health and Health Related Characteristics of Respondents

Regarding with the health status of the household, 71 (13.4%) of the member of the household had chronic illness while 152 (29.2%) had any acute illness during the last one year. The average illness episodes were 2.09. The mean medical expense was 432 Birr per year, while the maximum medical expense was 7120 Birr per year. The finding of money to pay for medical expense was difficult for 38% of households who encountered illness in the family. The majority was getting the money (medical expenses) by selling capital asset.

3.3. Household Knowledge on Community Based Health Insurance

Three hundred thirty eight (64%) of the respondents have heard about community based health insurance. Ninety seven (29%) of respondents were getting information through health extension workers and only one percent through mass media. Among the study subjects, 328(62.1%) had good knowledge about the benefits of community based health insurance.

3.4. Community Based Health Insurance Status

Among 528 households, 408 (77.3%) were not insured, 112 (21.2%) insured and the remaining 8 (1.5%) insured but not renewed. Eighty percent of the respondents (not insured and insured but not renewed) were willing to enroll in community based health insurance schemes. The respondent reasons for not willing to enroll in scheme were; out pocket payment is better than health insurance (42%), cannot afforded to pay (29.8%), poor quality of health services(13%) and others(7.2%). Seventy six percent of the insured respondents perceived that the regular premium of community based health insurance schemes is affordable.

3.5. Mean Value Willingness to Pay (WTP)

The mean amount of money household heads willing to pay was 187birr (±21) per house hold per annual and the median amount was 200 birr. (Figure 1)

The average WTP showed that those with a household size of greater than five members were willing to pay 199.77birr (± 47.65) which is relatively high. While those with household size less than or equal to five members were willing to pay 179.65birr (±51.3) $P < 0.001$. Respondents who heard about CBHI from their neighbors were willing to pay 162.56 Birr (±55) which is higher than other sources of information (Table 2).

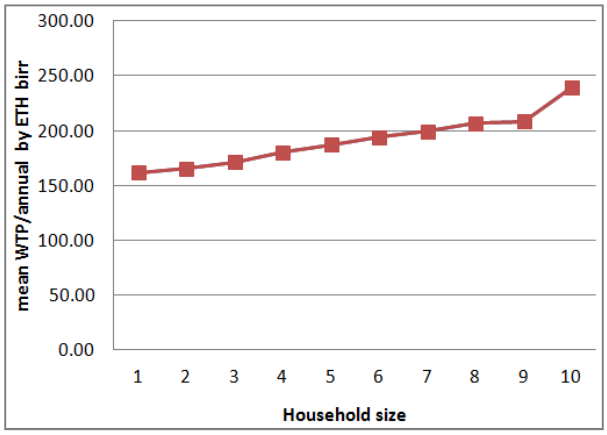

Figure 1. *Mean amount premium WTP for CBHI based on household size , Fogera District, 2013*

Table 2. *Mean amount money willing to pay per a HH/a year by comparing Variables, Fogera districts, 2013*

Characteristics	Mean WTP/birr/	SD(±)	P value
Sex			
Male	193.25	57	P<0.001
Female	162.25	163	F =30.084
Religion			
Orthodox	186.13	50.32	P=0.012
Muslim	227.62	54.05	F=4.5
Adventist	206.67	45.09	
Marital status			
Single	164.47	55.47	P<0.001
Married	192.18	49.17	F =7.24
Divorced	155	50.86	
Widowed	173.65	52.64	
Household size			
≤5 HH size	179.54	51.3	P<0.001
>5 HH size	199.77	47.51	F=17.51
Educational status			
Unable to read & write	179.5	54.18	P=0.002
Read & write	198.54	42.11	F=4.857
Primary education completed	194.48	51.52	
Secondary education & above	187.92	58.13	
Occupational status			
Farmer	190.55	49.28	P<0.001
Merchant	188.33	17.51	F=10.08
Daily laborer	168.75	50.06	
Petty trader	130.48	54.72	
Insurance status			
Insured	193.63	55.03	P=0.307
Not Insured	185.52	49.40	F=1.187
Insured but not renewed	173.33	11.54	
Age category/year/			
20-29	176.25	46.31	
30-39	179.01	49.82	P=0.03
40-49	193.55	46.73	F=2.63
50-59	194.67	51.49	
≥60 years	194.08	59.65	
Wealth	173.4	57.78	
Poor	188.09	41.87	P<0.001
Middle	200.01	48.78	F =10.56
Rich			

1$USD=19.23birr in oct.2013 currency exchange

3.6. Factor Affecting the Amount of Willingness to Pay

Table 3 shows the multiple linear regression results on the relationship between respondents demographic, socioeconomic, health insurance status and health and health-related factors and their level of premium willing to pay for the community based health insurance scheme. The variables were statistically predicted at P< 0.001, F (17,427), R=0.43, R^2 = 0.18, adjusted R^2 =0.15 and Durbin Watson=1. 94.

In multivariate linear regression analysis; Gender, household size, years of schooling, occupation and wealth status of the respondents showed a significant association with the amount money willing to pay for the scheme.

Being male household head was increased the amount by 17.75 birr for the scheme by holding other independent variables constant. The model also predicted that for an additional years schooling, the WTP value increased by 1.85 Birr, other conditions being held constant. Farmer household heads were willing to pay 33.79 Birr more than those who are a petty trader by holding other variables constant.

The head of the household who are merchants were willing to pay 58.50birr more than those who are petty traders by holding other variables constant. Rich households were willing to pay 14.94 birr more than poorer household.

Table 3. *Multivariate linear analysis of value WTP of the community for CBHI, Fogera district, 2013*

Parameter	Value	Un standardized coefficient B	S.E	Standardize coefficient (beta)	P-value
Constant		121.442	24.323		0.000
Age	Num	0.056	.206	0.014	0.786
Gender of HH head	P				
Male		17.284	7.653	0.137	0.024**
Marital status (single ref.)	P				
Married		18.356	11.445	0.135	0.110
Divorced		20.093	15.377	0.098	0.192
Widowed		29.942	15.956	0.139	0.061
Household size	Num	4.543	1.496	0.162	0.003*
Number of Children under-5 years	P				
Two children and above		-1.067	5.458	-0.010	0.845
Schooling by years	Num	1.850	0.891	0.098	0.038**
Occupation (petty trader ref.)	P				
Farmer		33.798	12.910	0.170	0.009*
Merchant		58.509	22.866	0.133	0.011**
Daily laborer		15.681	26.914	0.029	0.560
Any type of illness in HH member	Num	9.360	5.126	0.084	0.069
Ever heard about CBHI	P	-5.158	5.456	-0.047	0.345
Wealth status (poor ref.)	P				
Rich		14.947	5.931	0.140	0.012**
Middle		8.383	5.670	0.078	0.140
Health Insurance status					
(Insured and insured but not renewed)	P	3.686	5.601	0.032	0.511

*p-value at 0.01, **p-value at 0.05; P= proxy (dummy) variable (0, 1); Num= Numeric value

4. Discussion

The average amount of money willing to pay per household per annual was 187ETB or $1.95 USD per person per annual. It accounted only 13% of Ethiopian national health spending per capita ($16.1 USD). This information is very vital to the community and the government to set the amount of premiums for the scheme. The mean amount money willing to pay in the study is greater than study in North Central Nigeria (14). However, this is lower than study done in Iran (18) ,Nigeria National survey(19), Namibia (20), and Burkina Faso (15). The discrepancy might be due to differing socioeconomic status, health insurance experience and level of economic growth.

The multiple linear regression analysis revealed that male household heads were more likely to pay for community based health insurance. This may be as a result of income effect, because female's income is highly dependent on male and earns money less than males in most Ethiopian settings.

Households with larger sizes were willing to pay a higher amount than household with smaller size. This could be as a result of the huge financial burden faced by households when they seek health care services. This finding is supported by study done in North Central Nigeria where the willingness to pay of the rural community was influenced by household size (14).

Number of years of schooling was found to be another factor contributing to increase the amount of premiums willing to pay for CBHI scheme. This is in line with a study done in North Central Nigeria (14) and Burkina Faso (15).

Farmer households were willing to pay higher amount than those who are petty traders. This may be as a result of the farmer household head in a Fogera rural community had relatively high levels of earning money through agriculture. The richest families were more willing to pay a higher amount than the poorer households. This could be as the result from their ability to pay the premium amount of CBHI scheme. This is in line with a study done in India (17).

The mean medical expense was 432 Birr ($22.46USD) per patient per a visit, which is more than the national health expenditure per capita. Fifty nine percent of the households with any type of illness were facing a difficult problem in finding the money for medical expense and 65% of them were making money by selling capital assets. The WHO report also revealed that if households are spending more than 40 percent of their disposable income, they could become impoverished. Given the poverty level of nearly one-half of the population in Ethiopia, it is likely that households who decide to utilize health services could easily slide into poverty.

4.1. Strength of the Study

The study used Double-Bounded Dichotomous choice variant of the contingent valuation method which helps to reduce response bias.

4.2. Limitation of the Study

The Contingent Valuation Method does not test consumer effective demand, i.e. will they really pay the

amount premium they said for the study? And the study only shows the temporal relationship between dependent and independent variables

5. Conclusion and Recommendation

The finding from the study indicated that 80% of the rural household heads in the study area were willing to enroll in CBHI schemes. The study showed that the household heads in the study area were willing to pay an average of 187birr per household per year. The amount willing to pay was influenced by respondent years of schooling, occupation, gender, household size and wealth status within the household. The Ministry of Health need to mobilize the district community based health insurance scheme directorate board to fix the amount of premiums payment based upon the household size. The Regional Health Bureau should mobilize and educate the community about the benefit of community-based health insurance and drawback of out of pocket payment.

Authors' Contributions

Adane Kebede conceived the original idea, involved in proposal writing, designed the study and participated in all implementation stages of the project. Measho Gebreslassie analysed the data and finalized the write up of the manuscript. Mezgebu Yitayal was responsible for critically revising the proposal and the manuscript, and participated in its design and interpretation. All authors were responsible for data collection, initial analysis and drafting of manuscript. All authors reviewed and approved the final manuscript.

Acronyms

ETB	Ethiopian Birr
CBHI	Community Based Health Insurance
PCA	Principal Component Analysis
SNNP	South Nations Nationalities and People
WHO	World Health Organisation
WTP	Willingness To Pay

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