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Determinants for Rural Households Willingness to Pay for Community Based Health Insurance: The case of Boloso Sore District in Woliata Zone, South Ethiopia, Ethiopia


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Abstract

Transforming health system of rural households through Community Based Health Insurance package is one of the interventions by the government of Ethiopia to address rural community. However, majority of rural households not enrolled in community based health insurance program in Boloso Sore district. This study, thus designed to assess the existing situation of households WTP and to assess factors determining WTP for CBHI in Boloso Sore district. Both quantitative and qualitative data were collected from sampled households for analysis. The data were collected from both primary and secondary data sources. To do so, semi-structured household interview questions and check lists were developed and conducted with sampled respondents. Descriptive statistics employed following econometric analysis of the data collected from 386 households selected using simple random sampling from nine Kebeles of Boloso Sore district. Binary logit regression analysis showed that age, education level, employment status, saving practice, land size, distance to health facility and access to health education have positive and significant association with WTP for CBHIs. Therefore, the findings indicated that health education, saving practices and road facility need to be promoted by the government to improve CBHIs of the rural community.

Keywords: Rural Households, Binary Logit Model, Willingness to Pay, CBHIs

Introduction

Low and Middle Income Countries (LMICs) suffer the catastrophic financial burden due to out of pocket Payments, which accounts 30% to 85% of the total healthcare spending. In sub-Saharan Africa (SSA), out-of-pocket expenditures constitute approximately 40% of total health expenditures, imposing huge financial burdens and limiting access to healthcare services in some of the poorest countries around the world. Ethiopia is one of the countries with the highest proportion (34%) of healthcare expenditures generated from households as a means of out-of-pocket Payments.

The synthesis of studies conducted in different parts of the countries shows that the uptake of health insurance is influenced by individual health seeking behavior, socio-economic status of the households, place of residences. Additionally, a systemic review in LMICs shows that stringent rule of some of the scheme, lack of adequate legal and policy framework in support of health insurance and inappropriate benefit of package are the main barriers in utilization of health insurance scheme. Furthermore, socio-cultural practice, and distance to health facility are another factor that influence uptake of community based health insurance (Phillips et al.). (Allen et al.), a previous paper published from this study, elicits rural consumers' Willingness to Pay for attributes of healthcare facilities in Kentucky. The authors use a conditional logit model to determine the willingness to pay value of health care facilities. However, the conditional logit model does not account for differences between different customers but assumes customers are homogenous or the same in their preferences or choices so does not account for heterogeneity between consumers.

Health insurance is among the solutions promoted for LMICs since the 1990s to improve access to healthcare services because it avoids direct Payments of fees by patients and spread the financial risk among all the insured members. To mitigate the catastrophic health expenditures imposed by out-of-pocket expenditures, Ethiopia has taken the initiative of healthcare financing reform. In 2011, Ethiopia introduced the health insurance scheme in 13 pilot districts in the four major regions: Amhara, Oromia, Tigray and Southern Nations, Nationalities and

Peoples (SNNPs). In 2015, Ethiopia also decided to expand the implementation of CBHI scheme to 80% of the districts and enroll at least 80% of households by 2020. However, the enrollment rate to health insurance scheme in Ethiopia is still low and varies from region to region. In 2018, the enrollment at national level was around 48%, which ranges from 36% in Oromia Region to 61% in SNNPs Region. Similarly, the premium of the scheme also varies across and within the regions in the country, which ranges from 34.4 Ethiopian birrs (ETB) in SNNPs Region to 132 ETB in Tigray Region (CBHI Pilot Study Report).

In Ethiopia, the impact of the Community Based Health Insurance (CBHI) program is increasing the utilization of health care services and enhancing financial protection by decreasing out of pocket expenditure was found to be very positive as expected in the pilot designs. According to the findings of the pilot evaluation, members were more than two times more likely to visit healthcare facilities when sick than non-members. This has been one of the trigger factors for the scale-up decisions by the Ethiopian government. Studies by other researchers on the impact of the Ethiopian CBHI schemes on health care access also showed the program as having a positive effect in increasing access to modern health care. The studies show that prior to the implementation of CBHI the share of outpatient care utilization of insured and uninsured households in pilot districts was almost similar (38% for insured and 39% for not insured). In the post-CBHI period, the utilization of outpatient care shows an increase for the insured while it declined for non-insured households (CBHI Pilot Evaluation).

The poor are eligible for membership in community based health insurance schemes. The contribution of the poor is covered by joint budget allocations from the local district administrations and the regional governments. The federal government also provides a 10% subsidy to the CBHI schemes based on the contributions they mobilize from the paying and the indigent members. The beneficiaries are entitled to a package of services that are available in public facilities with no copayment required at the time of service. In some districts beneficiaries can get service from non-public providers whenever

the prescribed service is not available in the public facilities. During the pilot phase contributions used to vary from ETB 126 to ETB 180 per household depending on the decision of the regional steering committees based on the feasibility studies of the regions before launching the pilot. During the scale-up phase the contribution amount has been harmonized to be uniform across districts and regions to pave the way for formation of larger pools.

However, given those all opportunities of the scheme, less than 50% of the households in the study district are enrolled in health insurance program. Hence, 12,272 (36.4%) are enrolled out of 33,715 households in the rural kebeles of the district up to end of 2020. The district health office plans all households to be enrolled in the scheme every year but they could not achieve it until 2021. On the hand, households repeatedly drop out from the scheme from year to year for unknown reasons. There was no stud has been conducted by assessing factors that determine for households willingness to Pay for health insurance in the study area, except studies conducted on other parts of the region during the scheme's pilot stage that showed huge variations in the willingness to Pay and coverage achieved. There is dissatisfaction by Payment collection as it is non-uniform and convinced community members to be willing to pay for the scheme. As a result community members complain to contribute the amount of money they requested to pay which decided by externals without participating them. Thus, majority of households in the district are not willing to pay for CBHIs and they are also not clear with its importance though they are paying much money for private clinics when they got sick. Hence, this study assessed all factors that determine rural households' willingness to pay for health insurance schemes and associated factors in Boloso Sore district, in Sothern Wolaita Ethiopia.

Methodology

Description of the Study Area

The study district, Bolos Sore, is one of the twelve districts of the Wolaita zone of SNNP Regional State and located between 7.98' and 7.18' North latitude and 37.62' and 37.83' East longitude. It is bordered by Kambata Tambaro Zone in the North

and Northwest, Damot Pulasa district in the East and Northeast, Boloso Bombe district in the West and Northwest, Soddo Zuriya district in the South and Southwest .The district capital is called Areka and it is located 30kms away from the zonal capital, Soddo and 300 kms away from Addis Ababa. The district is characterized mainly as flat land with an average altitude ranges 501masl to 2500 masl. In other words, the agro-ecological zone of this district comprises of low lands (Kolla) 5%, middle altitude (Weynadega) 56% and Dega.39% agro-ecological zones, with estimated area of 23,310 hectares or 233.1 km², which is 5.17%, the total area of the zone and has population density of 371 person per sq km.

According to the result of new projected CSA 2007, the Boloso Sore has a population of 168,575. The district comprises 32 kebeles and there are 1 hospital, 8 health centers and 32 health posts. The availability of these health institutions in the district has been playing major roles to render health services for rural community.

Research Design

The study used mixed approaches to assess qualitative and quantitative data to assess factors affecting households' WTP that needs information including economic, social, infrastructural, and health related. The study used both descriptive and econometric models to investigate demographic, economic, institutional and health related aspects of sampled households.

Sampling Design and Techniques

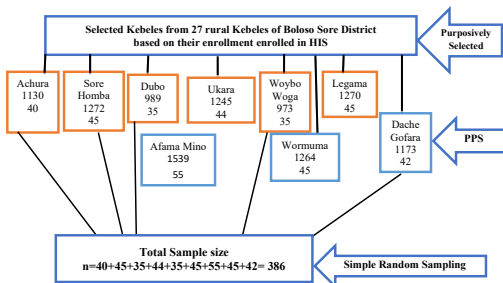
Households in the rural Kebele of district were the source population whereas all households in the sampled rural kebele of the district were the study population. Those permanent residents of the community with household head aged 18 years and above were included in the study. Households with heads or spouses that have been employed in the formal sectors excluded from the study as they could be able to afford their health related costs.

(Yamane) formula was employed to fix the sample size from the total population. The data of household heads from selected nine PAs was computed using the formula. There were a total of households in the nine 10855 households selected PAs.

The Yamane formula is:

$$n = \frac{N}{1+N(e)^2} = \frac{10855}{1+10855(0.05)^2} = 386$$

Sampling Procedure



Data Sources and Data Collection Techniques

The study generated the required data from both primary and secondary sources from Boloso Sore district. Primary data was collected from target households in the sampled kebeles. A representative sample prepared prior to the actual survey based on the criteria set. Secondary data was gathered from reports, magazines, books, websites etc.

Method of Data Analysis

The dependent variable WTP for CBHI has dummy nature by that it assumes either households are Willing to Pay or not. Independent variables include demographic characteristics, economic factors, infrastructural, health and psychological related factors supposed to affect the dependent variable will be analyzed. The collected data were cleaned, coded, entered into STATA 14 version software package for analysis.

According to (Gujarati), Binary logit model was employed for analysis to assess factors that affects households WTP for CBHIs. This model has an advantage over other discrete choice models, it reveals both the probability of WTP and the amount of money the respondents are WTP.

$$Y = \begin{cases} 1 & \text{if } WTP = \beta_0 + \beta_i X_i + \varepsilon > 132 \text{ birr} \\ 0 & \text{if } WTP \leq 132 \text{ birr} \end{cases}$$

Where Y = outcome, WTP = Willingness to Pay, X_i = explanatory variables, β_i = Slope, β₀ = Coefficient, e = error term, 0 = No and 1 = yes.

From models used for dummy dependent variable analysis for the binary response, the Binary logit model was used to compute the probability of household WTP for CBHI (Gujarati).

In estimating the Binary logit model, the dependent variable is WTP for CBHIs which takes the value of 1 if a household is Willing to Pay for CBHI and 0 otherwise. The mathematical formulation of Binary logit model is as follows:

$$P_i = \frac{e^{Z_i}}{1+e^{Z_i}} \quad (1)$$

where, P_i is the probability WTP for the ith household and ranges from 0-1.

Z_i is a function of N- explanatory variables which is also expressed as:

$$Z_i = \beta_o + \sum \beta_i X_i + U_i \quad (2)$$

Where: i = 1, 2, 3,....., n

β_o = Intercept

β_i = regression coefficient to be estimated or logit parameter

U_i = is a disturbance term, and

X_i = Willingness to Pay factors

The probability of HHs belongs to non-participation is:

$$Z_i = \beta_o + \sum \beta_i X_i + U_i \quad (3)$$

Therefore, the odds ratio can be written as:

$$\frac{P_i}{1-P_i} = \frac{1+e^{Z_i}}{1+e^{-Z_i}} = e^{Z_i} \quad (4)$$

Now, P_i/(1-P_i) is simply the odds ratio of WTP. It is the ratio of the probability that the households would Willing to Pay for CBHI to that he/she not Willing to Pay for CBHI.

Finally, by taking the natural log of equation (4) the log of odds ratio can be written as:

$$L_i = \ln\left(\frac{P_i}{1-P_i}\right) = \ln\left(e^{\beta_o + \sum_{j=1}^n \beta_j X_{ji}}\right) = Z_i = \beta_o + \sum_{j=1}^n \beta_j X_{ji} \quad (5)$$

Where L_i is log of the odds ratio in favor of Willing to Pay for CBHI, which is not only linear in X_j but also linear in parameters.

Table 1 Description of Variables and Expected Signs

Variables	Specification	Expected Sign
Age	Continuous, number of years	+
Sex	Dummy, 1 if male 0 if female	+/-
Education level	Continuous	+
Family Size	Continuous	+/-
Household monthly income	Conditions	+
Employment Status	Dummy	+
Saving Practice	Dummy	+
Land Holing Size	Continuous	+
Livestock Ownership	Continuous	+
Distance from health facility	Dummy	+/-
Service Satisfaction	Dummy	+
Frequency to be attacked by killer disease	Continuous	-
Health Education	Dummy	+

Source: Own Construct, 2021

Results and Discussion

The data were discussed first, by presenting the background information of the respondent. Then it is followed by a presentation of opinions held by the respondents on the factors that determine effectiveness of rural youth job creation enterprises. This in turn is followed by information on the measures how the government should be adopted to address on factors affecting rural households Willingness to Pay for CBHI. A general sum up of the data analysis concludes this section of the paper. In view of that, the findings are presented as follows:

Age of Household Head (AHH)

Mean age of households WTP for CBHIs in Boloso Sore district was 22.64 years, whereas the mean age of respondents to not willing to pay was 22.69 years. The overall mean age of respondent households' age was 22.67 years and the standard deviation of the survey result was 3.92. The results of the two-tailed tests (10.83) showed that age was positively and significant in rural at less than 1% level.

Total Family Size (TFS)

Mean family size of rural households WTP for health insurance was 5.86 with standard deviation of 2.51 in contrast the mean family size of non-willing respondents was 5.14 with standard deviation of

1.88. In addition to this, the overall mean of family size of respondents was 5.42 with standard deviation of 2.17. The mean comparison showed that family size is statistically significant at less 1% probability level among the households who were WTP for CBHI and not WTP households in the study area. This is in line with the study of (Aizuddin et al.) who explored that family size is an influencing factor that determine WTP heal for CBHI in rural areas.

Sex of Household Head (SHH)

52.6% of households are WTP for CBHI were male headed whereas 47.4% were female headed and those of not WTP was 51.2% of male headed and 48.8% of female headed in the study area. Out of total sampled respondents 51.7% were males headed and 48.3% were female headed. The chi-square result (0.07) showed that sex was statistically not significant. This is indifferent with the study of (Allen et. al.) who found that there is statistically insignificant difference on WTP for CBHI based on their sex.

Education Level of Household Head (ELHH)

From respondents WTP for CBHI about 17.78%, 32.59%, 25.2%, 20% and 4.44% o were illiterate, elementary school completed, primary school completed, high school completed and diploma holders and above respectively whereas from those

not WTP respondents about 16.43%, 27.23% 22.07% 23.9% and 10.33% were illiterate, elementary school completed, primary school completed, high school completed and diploma holders and above respectively. In addition to this from total respondents about 16.95%, 29.31%, 23.28%, 22.61% and 8.05% of total respondents were illiterate, elementary school completed, primary school completed, high

school completed and diploma holders and above respectively. The results of the chi-square test (0.08) showed that the level of education was statistically not significant among WTP and not WTP households in the study area. This is in line with the study of Alison who found that level of education had no significant influence among WTP for CBHIs.

Table 2 Summary on Demographic Characteristics of Respondents

Indicator Variable		WTP HH (135)		WTP HH (213)		Total (348)		Taste statistics	
		Mean	Std.	Mean	Std.	Mean	Std.	t-test	p-value
AHH		22.6	3.8	22.7	3.9	22.7	3.9	10.8	0.000***
TFS		5.8	2.51	5.1	1.9	5.4	2.2	6.5	0.00***
Indicator Variable		Fre.	%	Fre.	%	Fre.	%	χ^2	p-value
SHH	Male	71	52.6	109	51.2	180	51.7	0.07	0.796
	Female	64	47.4	104	48.8	168	48.3		
	Total	135	100	213	100	348	100		
ELHH	Illiterates	24	17.78	35	16.43	59	16.95	0.08	0.994
	Elementary	44	32.59	58	27.23	102	29.31		
	Primary	34	25.2	47	22.07	81	23.28		
	High School	27	20	51	23.9	78	22.61		
	Diploma & >	6	4.44	22	10.33	28	8.05		
	Total	135	100	213	100	348	100		

Source: Own computation from survey result, 2021.

Total Monthly Income (TMI)

Mean total monthly income of WTP and not WTP for CBHI were 1072.21 and 899.68 birr with standard deviation of 881.03 and 754.85 respectively. In addition to this the overall mean of monthly income of the survey was 1,166.61 birr with standard deviation of 1,044.59. The t-test (13.11) shows that, rural households, total monthly income was statistically significant at 1% probability to differentiate WTP and not WTP for CBHI. This is in line with the study of Alison who found that income of households had positive and significant influence among households WTP and not WTP for CBHI.

Total Land Holding Size (TLHS)

Mean total land holding size of households WTP and not WTP for CBHI were 0.71 and 0.37 hectare with standard deviation of 0.28 and 0.26 respectively. In addition to this the overall mean of rural households land holding size in the study area was 0.50 hectare with standard deviation of 0.32.

The t-test (13.11) shows that, rural households' total land holding size was statistically significant at 1% probability to differentiate among households WTP and not WTP for CBHI. This is in line with the study of (Johnston et al.) who found that land holding size of rural households had positive and significant influence among WTP and not WTP households for CBHIs.

Total Livestock Holding Unit (TLU)

Mean number of livestock ownership of households WTP for CBHI was 1.86 with standard deviation of 1.25 whereas the average number of livestock ownership for not WTP households for health insurance in study area was 1.56 with standard deviation of 1.04. This is similar with the study of (Allen et al.) who found that there is statistically significant difference among WTP and not WTP for CBHI based on number of livestock ownership.

Saving Practice of Household (SPH)

From households WTP in the study area 60% of respondents did have practice of saving in contrast from not WTP households 54% of respondents did not have saving practice. In addition to this, the overall saving practice of respondents in the study area was 56.3%. The results of the chi-square test (1.213) showed that saving practice of respondents was statistically not significant among WTP and not WTP households in the study are. This is in contrast with the study of Alison who found that saving practice had positive and significant influence among WTP and not WTP households for health insurance.

Employment Status (SP)

From the respondents WTP 52.6% were employed and whereas the rest 47.4% of WTP were unemployed. In contrast, from not WTP respondents 42.7% were employed while the rest 57.3% were unemployed. In addition to this, from overall respondents about 46.6% were employed while the rest 53.4% were unemployed in the study area. The results of the chi-square test (3.235) showed that employment status of respondents was statistically significant among WTP and not WTP households for CBHI in the study are. This is in contrast with the study of (Johnston et al.) who found that employment status had positive and significant influence among households WTP and not WTP.

Table 3 Summary of Socio-Economic Characteristics of Respondents

Indicator Variable		HHs WTP (154)		HHs not WTP (232)		Total (386)		Taste statistics	
		Mean	Std.	Mean	Std.	Mean	Std.	t-test	p-value
TMI		1072.2	881.0	899.7	754.9	1166.6	1044.6	13.11	0.000***
TLHS (ha)		0.71	0.28	0.37	0.26	0.50	0.32	29.05	0.000***
LO		1.86	1.25	1.56	1.04	1.68	1.14	27.50	0.000***
Indicator Variable		No.	%	No.	%	No.	%	χ ²	p-value
SPH	Yes	80	60.0	134	54.0	196	56.3	1.213	0.271
	No	74	40.0	98	46.0	152	43.7		
	Total	154	100	232	100	386	100		
ES	Employed	80	52.6	90	42.7	162	46.6	3.235	0.072*
	Unemployed	74	47.4	132	57.3	186	53.4		
	Total	154	100	232	100	386	100		

Frequency to be Attacked by Killer Disease (FAKD)

Respondents WTP those who are attacked by killing diseases was 1.54 per year with standard deviation of 0.751 whereas mean frequency of respondents not WTP of those attacked by killing diseases was 1.55 per year with standard of 0.81. This is similar with the study of (Allen et al.) who found that there is no statistically significant difference among WTP and not WTP households based on frequency to be attacked by killer diseases.

Distance from Heath Facility (DHF)

From the households WTP 40% were far from health institutions and the rest 60% of respondents were dwell at nearby. On the other hand, from not households WTP only 46% of respondents were near

to the health institution and the rest 54% were far from the health institutions. This is in line with the study of Alison who found that distance from heath facility had positive and significant influence among willing and not willing to pay households to health insurance.

Service Satisfaction (SS)

From the respondents WTP only 34.8% were satisfied by the service of health institution whereas the rest 55.2% of them were unsatisfied by it. In contrast from households not WTP only 43.2% were satisfied by the service from health institution and the rest 56.8% were not satisfied by the service. In addition to this, from overall respondents about 46.6% were satisfied whereas the rest 53.4% were unsatisfied by the service of health institution in

study area. The results of the chi-square test (2.418) showed that service satisfaction of respondents was statistically insignificant among WTP and not WTP for health insurance in the study area. This is indifferent with the study of (Johnston et al.) who found that health institutions' service satisfaction had positive and significant influence among households WTP and not WTP for based health insurance.

Access to Health Education (AHE)

From the households WTP were only 45.2% of respondents had access to health related education whereas the rest 54.8% of respondents did not

have access to health related education. Among households not WTP only 43.7% of respondents had access to health related education and the rest 56.3% of respondents did not have access to health related education in study area. The results of the chi-square test (0.078) showed that access to health related education was statistically insignificant among WTP and not WTP households for CBHI in the study area. This is in contrast with the study of (Aizuddin et al.) who found that access to health related education had positive and significant influence among WTP and not WTP households for health insurance.

Table 4 Summary of Institutional and Health Related Factors

Indicator Variable		HHs WTP for HIS (154)		HHs Not WTP for HIS (232)		Total (386)		Taste statistics	
		Mean	Std.	Mean	Std.	Mean	Std.	t-test	p-value
FAKD		1.54	0.751	1.55	0.85	1.55	0.81	35.63	0.000***
Indicator Variable		No.	%	No.	%	No.	%	χ^2	p-value
DHF1	Near	81	60.0	98	46	179	51.4	6.475	0.011***
	Far	54	40.0	115	54	169	48.6		
	Total	154	100.0	232	100	386	100		
SS	Yes	47	34.8	92	43.2	139	39.9	2.418	0.21
	No	88	65.2	121	56.8	209	60.1		
	Total	154	100	232	100	386	100		
AHE	Yes	61	45.2	93	43.7	154	44.3	0.078	0.78
	No	74	54.8	120	56.3	194	55.7		
	Total	154	100	232	100	386	100		

Note: ***, **, * = significant at 1, 5 and 10 percent respectively

Determinants for Rural Households Willingness to Pay for CBHIs: The case of Boloso Sore District

In the first stage analysis, the Logit model which shows the willingness of households to pay for CBHI. The variables such as age of household head, total family size, sex of household head, education level, total monthly income, total land holding size, total livestock unit, saving practice of households, employment status, frequency to be attacked by killer diseases, distance from health facility, service satisfaction and access to health education had been used for analysis. From these variables age, education level, employment status, saving practice, land holding size, frequency to be attacked by killer diseases, distance to health facilities and

health education access of households heads were significantly affects the households WTP for CBHIs. According to (Cox and Shell), the Logistic Regression analysis, OLS outcome equation considered factors influencing the Willingness of household to Pay for CBHI. Thirteen variables such as age of household head, total family size, sex of household head, education level, total monthly income, total land holding size, total livestock unit, saving practice of households, employment status, frequency to be attacked by killer diseases, distance from health facility, service satisfaction and access to health education six explanatory variables were significantly affects the households WTP for CBHI.

Age of Household Head (AHH): age of rural households influence WTP for CBHI positively in

similar way of expected hypothesis. It positively affects households WTP CBHI at less than 1% significant level. This is due to matured community members have better awareness for health issues than immature community members. The marginal effect of the result approves that when the age of households increases by one year, the probability of households WTP for CBHI increases by 0.007 while all other variables held constant. This finding goes in line with the finding of (Donfouet et al.) who explored that an increase in the age of rural households by one year also increases the probability of paying for health insurance.

Education Level of Household Head (ELHH)

As expected, level of education has a positive and statistically significant influence on WTP for CBHIs at less than 5% significant level. The marginal effect of the survey data result revealed that when rural households' educational level increases by one grade, their WTP for CBHI increases by 0.002 unit while keeping all other variables constant. This shows that one year spent on education or investment in education gives better awareness for households to contribute for CBHI. This finding also goes in line with the finding of (Aizuddin et al.) who explored that an increase in the level of education of rural community by one grade probably increases their awareness to pay for CBHI.

Employment Status (SP)

Previously it was expected that it has positive influence on WTP for CBHI. Likewise, employment status of households has a positive and statistically significant influence on WTP for CBHI at less than 1% significant level. The marginal effect of the survey data result showed that when the employment status of rural community increases by one unit either in formal or informal sectors, their WTP for CBHI also increases by 0.035 while keeping all other variables constant. This finding goes in line with the finding of (Allen et al.) who explored that an increase in the employment status in rural households by one also increases the probability of Paying for CBHI.

Saving Practice of Household (SPH)

Previously saving practice of rural households was expected that it has positive influence on

WTP for CBHI. Similarly, saving practice of rural households has a positive and statistically significant influence on WTP for CBHIs at less than 1% significant level. The marginal effect of the study result showed that when the saving practice of rural households' increases by one unit, their WTP for CBHI increases by 0.075 unit while keeping all other variables constant. This finding goes in line with the finding of Alison who explored that an increase in the saving practice of rural households by one also the probability of paying for CBHI.

Land Holding Size of Household

As expected previously, land size of rural households has a positively and statistically significant influence on WTP for CBHI at less than 1% level of significance. The marginal effect of the survey data result shown that while keeping all other variables constant, an increase of land holding size of rural community by one hectare, the WTP for CBHI increases by 0.808 unit. This finding goes in line with the finding of (Johnston et al.) who explored that an increase in land size of rural households by one hectare also increases the probability of paying for CBHI.

Frequency to be Attacked by Killer Disease (FAKD)

Previously, frequency to be attacked by killer disease was expected that it has negative influence on WTP for CBHI. Unlike the expectation, frequency to be attacked by killer disease has a positive and statistically significant influence on households WTP for CBHI at less than 5% significant level. The marginal effect of the study result showed that when the frequency to be attacked by killing disease increases by one, the WTP for CBHI increases by 0.0035 unit while keeping all other variables constant. This finding goes in line with the finding of (Allen et al.) who explored that there is positive and significant relationship between households WTP and not WTP for CBHI concerning to frequency of occurring killing disease in the community.

Access to Health Education (AHE)

As expected previously, access to health education has a positively and statistically significant

influence on WTP for CBHI at less than 5% level of significance. The marginal effect of the survey result showed that while keeping all other variables constant, an increase of access to health education by one unit, households WTP for CBHI increases

by 0.06. This finding goes in line with the finding of (Akazili) who explored that when making the access of community health education easy, the probability of households paying to CBHI.

Table 5 Results of Logistic Regression

Logistic regression Number of obs = 348 Wald chi² (13) = 82.20
Log likelihood = -156.6981 Prob > chi² = 0.0000

Variables	Coefficient	Std. Err	P> z	Marginal Effect
AHH	-0.02019	0.0055	0.000***	0.007
SHH	0.0626	0.0498	0.210	0.00075
ELHH	0.04752	0.0216	0.030**	0.00201
TFS	0.00237	0.0119	0.842	-0.0046
TMI	-0.00007	0.0000128	0.570	-0.000019
ES	0.1713	0.0469	0.000***	0.03508
SP	0.1862	0.0487	0.000***	0.07507
LHS	0.6414	0.0783	0.000***	0.8082
TLU	-0.0255	0.0214	0.236	-0.0586
FAKD	0.0668	0.02955	0.024**	0.0035
DHF	-0.2443	0.0473	0.000***	-0.1234
AHE	0.1016	0.0475	0.133	0.160002
SS	0.0813	0.0497	0.103	0.0489
Constant	2.1547	0.2307	0.0634*	0.54705

Source: Own computation from survey result, 2021.

Note: ***, ** and * = significant at 1, 5 and 10 percent respectively

Conclusion and Recommendations

The aim of this study was to examine the factors that determine households Willingness to Pay community based health insurance of rural setting of Boloso Sore district. The study used Binary logistic regression model to analyze the determinants of WTP for CBHI among rural households in study area. The descriptive method includes percentages, frequencies, mean, chi-square test for dummy variable and t-test for continuous variable were utilized. From the findings of this study, age of household, level of education, employment status, saving practice, total land size of household, frequency to be attacked by killing disease, distance to health institution & access to health education were significant factors in explaining the difference among willing and non-willing rural households to Pay community based health insurance in Boloso Sore district.

From 386 sampled respondents 154 (38.79%) of the respondents were willing to Pay community

based health insurance while the rest 232 (61.21%) were non-willing to Pay community based health insurance. From all over the respondent households 186 (48.3%) were females but 200 (51.72%) were males. The average age of respondents in the study area was 22.64. From total respondents (386) only 43.7% of respondents have access to community health education while the rest 66.3% of total respondents have no access to community health education. In addition to this, only 39.90% of total respondents had satisfied with the service providence of community health whereas the rest 61.10% of the respondent rural households were unsatisfied with the providence of community health in the Boloso Sore district. Out of total respondents only 46.6% of rural households are employed in different job whereas the rest 54.4% rural households were unemployed in any job in the study area. According to the study result the average monthly income of total respondents was 1,166.61 birr and the

average family size of the respondents in the study area was 5.42. On top of that, this research work aimed to identify determinants of Willingness to Pay community based health insurance in Boloso Sore district. According to descriptive analysis age of the respondents, total family size, total income per month, total land size in hectare, number of livestock owned, employment status, frequency to be attacked by killer disease and distance from health facility institution had have significant relationship among willing and non-willing households to Pay community based health insurance in the district. The study also employed Binary Logit regression model. In the model willing rural households to Pay community based health insurance in Boloso Sore district were taken as dependent variable and fourteen explanatory variables were included. The result of the binary logit models, show that eight of the explanatory variables were found significant determinant to Willingness to Pay community based health insurance in Boloso Sore district; that are age of household, level of education, employment status, saving practice, total land size of household, frequency to be attacked by killing disease, and access to health education.

It is indispensable to forward policy directions based on the findings of the study to formulate strategies. Based on this understanding the following recommendations have been made.

Accordingly, econometric analysis level of education had positive and significant influence on WTP for CBHI, this indicates that education is crucial to increase households' awareness in the community. Hence, government and non-governmental organizations should promote basic education access to rural communities. The concerned bodies should also provide some community health insurance training for those rural households who were illiterate or less educated.

As employment status of rural households had positive significance on WTP for CBHI at less 1% significant level. Therefore government and concerned bodies should invest on job creation for rural households and should decrease the probability of unemployment through different jobs.

Consequently, saving practice rural households had positive and significant relationship among WTP and not willing households to pay health insurance

services. As result, government and policy makers should invest on upgrading of awareness and skill of saving practice of rural households.

As the finding revealed health education had positive influence of the WTP for CBHI at less than 1% significant level. Therefore, government and concerned bodies should simplify accessibility of health education through extension system to increase the awareness of rural community in CBHI.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Technical Terms

The Ethiopian people usually use technical terms, and the Government also exercises in the Official documents and reports.

- Woreda means District
- Kebele means Village
- Dega means High land
- Wynedega means Mid-highland
- Kolla means low land

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