Determinants of Willingness to Pay for Community-Based Health Insurance in Ethiopia: National Household Survey

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ABSTRACT

The existing evidence on households' participation in Ethiopia's community-based health insurance (CBHI) scheme is limited, lacks representativeness, and lacks disaggregation. Thus, this study aims to assess households' willingness to pay (WTP) for CBHI membership and identify the factors that influence their decision to enroll. From February to May 2020, a nationwide cross-sectional household survey was conducted involving CBHI member and non-member households. The primary theories that informed this study were utility theory, social capital theory, and the health belief model. Sample included 5,976 households from 166 EAs—118 in CBHI regions and 48 in non-CBHI regions. A two-stage stratified cluster sampling used to select enumeration areas (EAs) and households from within these areas. The maximum amount of money at which participants responded "yes" in the bidding game exercise was used to measure WTP. Data were analyzed using STATA Version 16. Household expenditure was adjusted for key factors. Analyses explored WTP for CBHI by region, membership, and livelihood, with WTP based on mean maximum values. Linear regression identified influencing factors. The findings reveal that 30.9% of participants were active CBHI members. The average WTP increased with each additional family member, both in rural (AMD = 9.3 [6.8, 11.9]) and urban areas (AMD = 7.2 [1.0, 13.4]). In urban areas, WTP was also positively associated with the ability to pay (ATP) for CBHI (AMD = 64.1 [6.3, 121.8]). Male respondents and those who were literate in urban areas had higher mean WTP values of AMD = 39.8 [13.1, 66.4] and AMD = 56.8 [26.1, 87.4], respectively. Additionally, holding leadership positions in health and women's development initiatives positively influenced WTP. The study found that 30.9% of participants were active CBHI members. WTP for CBHI was higher among larger families. In urban areas, WTP was positively associated with the ability to pay (ATP) for CBHI, particularly among male and literate respondents. Community leadership roles in health and women's development also positively influenced WTP. To improve the CBHI scheme, adjustments should be made to premiums based on households' ability to pay. Community engagement should be strengthened, service quality enhanced, regional disparities addressed, and performance regularly monitored.

Keywords: Community Based Health Insurance, Determinants, Ethiopia, National Survey, Willingness to Pay

I. INTRODUCTION

Health care financing seeks to provide sufficient resources for healthcare services, improve efficiency, and maintain affordability, ensuring that everyone has access to the care they need (World Health Organization, 2010). However, in developing countries, the majority of healthcare expenses are covered through out-of-pocket (OOP) payments during the time of service, making healthcare unaffordable for most and resulting in a regressive system. In many African countries, out-of-pocket (OOP) payments make up as a minimum 40% of total healthcare spending (Leive & Xu, 2008). In Ethiopia, households contribute 31% to overall health spending (Ministry of Health, 2019b). This leads to significant financial strain, including poverty, particularly for low-income families (Adebayo et al., 2015; Xu et al., 2003). Many developing countries have introduced health insurance systems like social health insurance (SHI) for formal workers and CBHI for the informal sector to reduce this burden (Rao, 2004).

CBHI schemes are designed as risk-pooling mechanisms to protect people who work in the informal sector—such as farmers, pastoralists, and small business owners—from unaffordable user fees or catastrophic health expenses. The system distributes financial risk among all participants, improving healthcare access for low-income individuals (Adedeji et al., 2017). Ethiopia launched a CBHI pilot in 2011 across 13 districts in four regions. By 2015, it expanded to other districts, and by 2019, over 657 woredas were involved with 45% of households (4.9 million) enrolled (MOH, 2019a).

CBHI schemes aim to address the growing demand for healthcare and the limited availability of resources while promoting cross-subsidization to support the most vulnerable populations (Adedeji et al., 2017). For cross-subsidization to work effectively, contributions must reflect households' ATP and WTP, while healthcare use should be driven by need. WTP is the amount a consumer is willing to pay for the benefits of goods or services (Ramadhan et al., 2015). A flat-rate contribution system, which overlooks variations in households' WTP, risks exceeding some households' capacity to pay while missing opportunities to collect more from those willing and able to contribute more. Therefore, to generate adequate revenue for CBHI and provide financial protection, premium rates should be set according to members' ATP and WTP (Preker et al., 2002).

Determining households' ATP and WTP, along with establishing variable premium rates in the informal economy, is challenging due to the difficulty of consistently evaluating household income and wealth. Consequently, many countries lack comprehensive national data to assess ATP and WTP for CBHI. Instead, they depend on small-scale studies, insights from other nations, and guidance from donors and international organizations to develop benefit packages. (Nosratnejad et al., 2016). Similarly, there is no data on ATP and WTP for Ethiopia's CBHI program, and this study seeks to address that gap.

1.1 Statement of the Problem

The introduction of CBHI in Ethiopia is aimed at alleviating the financial burden of healthcare on households, especially those in the informal economic sector. Despite its expansion since 2011, CBHI enrollment and WTP remain inconsistent across regions and socio-economic groups. Many households, particularly in rural areas, still pay for healthcare services out-of-pocket, which exacerbates financial hardship, especially for the economically disadvantaged. Furthermore, the lack of representative data on households' ATP and WTP for CBHI has hindered the formulation of equitable premium rates. This research addresses the gap in understanding the determinants factors of WTP for CBHI, particularly given the variability in socio-economic and geographic factors across Ethiopia. Without this understanding, it is challenging to develop sustainable financing strategies for CBHI, potentially leading to under-enrollment and financial instability of the scheme.

1.2 Research Objectives

The major objective of this study was to assess the WTP for CBHI membership and to identify factors that affect decisions to join. The specific objectives includes:

i. To assess households' WTP for CBHI membership across various regions and socio-economic groups in Ethiopia.
ii. To compare WTP for CBHI between urban and rural settings and explore the reasons behind any disparities.
iii. To identify key determinants that influence WTP for CBHI.

II. LITERATURE REVIEW

2.1 Theoretical Review

Understanding the factors that determine WTP for CBHI is crucial for improving healthcare access in developing countries. CBHI schemes aim to reduce financial barriers to healthcare, but their success relies on community participation and affordability. This theoretical framework highlights key determinants—economic, social, behavioral, and institutional—that shape individuals' decisions to pay for CBHI.

According to Utility Theory, individuals make decisions by maximizing their utility, considering the benefits of insurance against its cost (Nyman, 2003). In the context of CBHI, risk-averse individuals are more likely to pay to avoid the financial burden of significant healthcare expenses. Expected utility theory suggests that people consider both the perceived probability of illness and the expected benefits of insurance. Higher perceived risk of illness or potential healthcare costs makes individuals more inclined to pay for CBHI (Bousmah et al., 2021).

Social Capital Theory focuses on trust and community involvement as crucial factors in collective action, such as CBHI participation (Ko et al., 2018). Individuals are more likely to pay for insurance when they trust the scheme and feel a sense of reciprocity within their community. Strong social cohesion fosters collective trust, making individuals more willing to contribute to the insurance pool, confident that others will also participate, thus reducing their financial risks (Donfouet & Mahieu, 2012; Mladovsky & Mossialos, 2008).

Behavioral Economics, specifically prospect theory, explains how individuals assess uncertain situations. It suggests that people are more sensitive to potential losses than gains (Do Hwang, 2021). In CBHI, the fear of losing income due to illness can drive individuals to pay for insurance. Behavioral factors like loss aversion and the framing of CBHI benefits and costs play a crucial role in influencing WTP. Individuals may be more inclined to pay if they perceive CBHI as a safeguard against large, unexpected medical expenses.

Demographic Factors such as income, education, employment status, and household size also influence WTP for CBHI (Abebe & Belayneh, 2023; Negera & Abdisa, 2022). Higher income and education levels are generally associated with a greater willingness to pay, as these individuals are more likely to understand the value of insurance. Moreover, those in the informal sector, lacking access to employer-sponsored insurance, may find CBHI more valuable. Larger households or those with dependent members may also show greater WTP due to higher perceived healthcare needs.

Health Belief Models suggest that an individual's health status and previous use of healthcare services shape their WTP (Wong et al., 2020). Those with chronic conditions or frequent healthcare needs are more likely to value CBHI as a way to reduce ongoing medical expenses. Additionally, the perceived quality of care under the scheme affects WTP, with higher-quality services increasing participation rates.

Finally, Government Policies and Institutional Factors, such as subsidies, regulations, and the design of CBHI schemes, significantly affect WTP. Public subsidies can lower premium costs, making insurance more affordable, particularly for low-income households. Trust in the transparency and sustainability of the scheme's management increases WTP, while flexible payment options and tiered premium structures based on income can further encourage broader participation.

2.2 Empirical Review

CBHI schemes are emerging in sub-Saharan Africa to reduce out-of-pocket healthcare expenditures. Studies in Nigeria and Ethiopia reveal high WTP for CBHI among rural populations, despite low knowledge levels (Banwat et al., 2012; Kado et al., 2020). Factors influencing WTP include education, occupation, wealth status, recent illness, knowledge about CBHI, and access to healthcare facilities (Kado et al., 2020). In Nigeria, the mean WTP was higher than the current premium, suggesting potential for scheme expansion. Demographic factors such as age, gender, and marital status also affect WTP, with higher WTP associated with males, married individuals, and younger respondents (Lawanson & Ibrahim, 2015). To improve CBHI uptake and sustainability, premiums should be tailored to individual socioeconomic factors (Kado et al., 2020). These findings highlight the potential for CBHI to enhance healthcare access in rural African communities.

CBHI schemes in Ethiopia aim to improve healthcare access and financial protection for households. Studies show varying levels of willingness to pay (WTP) for CBHI, ranging from 65% to 83% of respondents. Factors influencing WTP include household income, education, family size, health status, and awareness of the scheme (Abebe & Belayneh, 2023; Kaso et al., 2022; Negera & Abdisa, 2022). Socio-demographic, economic, scheme-related, and health-related determinants were identified as multidimensional factors affecting WTP (Atnafu & Alemu, 2023). Some studies suggest that households are willing to pay more than the current policy price, indicating potential for premium adjustments (Negera & Abdisa, 2022). However, affordability remains a concern for many households (Kaso et al., 2022). Strengthening social cohesion, creating awareness, and considering economic status when revising premiums are recommended to improve CBHI implementation and coverage (Kaso et al., 2022; Negera & Abdisa, 2022).

2.3 Conceptual Framework

The conceptual framework of this study links socio-economic and demographic factors to WTP for CBHI, mediated by household characteristics and involvement in community initiatives. The key variables influencing WTP include:

Household Demographics: Family size, literacy level, sex, and marital status of the household head. *Economic Factors:* Household income (ATP), total expenditure, and regional economic disparities. *Community Involvement:* Participation in local health initiatives, such as Health Development Armies (HDA) or community leadership roles. *CBHI Membership:* Current membership status in CBHI schemes, which can both positively or negatively influence future WTP depending on prior satisfaction or dissatisfaction with service delivery. *Health Factors:* Occurrence of at least one chronic health condition in the last year within the household influencing the perceived value of CBHI.

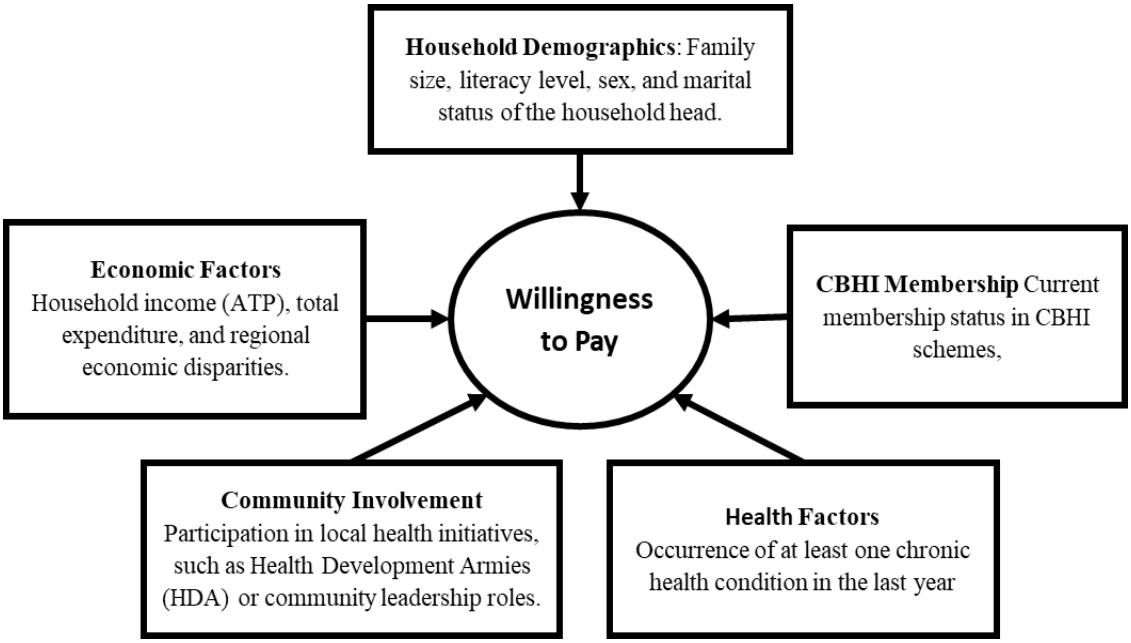

Figure 1
Conceptual Framework

The framework hypothesizes that these factors collectively influence a household's decision to join and contribute to CBHI. In urban areas, higher ATP, literacy, and male-headed households are expected to exhibit greater WTP. In rural areas, factors such as community involvement and larger family sizes play a more significant role.

III. METHODOLOGY

3.1 Study Design and Setting

A nationwide stratified cross-sectional study assessed households' willingness to pay for CBHI. Data were collected from February to May 2020 across all nine regional states and two city administrations. At that time, CBHI had been implemented for at least three years in four regions (Tigray, Amhara, Oromia, and Southern Nations, Nationalities, and Peoples/SNNP), with varying coverage, while other regions were still in the planning stages.

3.2 Study Population

The study included both CBHI member and non-member households in the informal sector from across the country. The household head was the primary respondent, but an adult household member was interviewed in the head's absence, and the family member responsible for managing household goods provided consumption data. Eligible participants were residents of woredas in all nine regions and two city administrations with household heads aged 18 and older. To maximize resource use, the study on CBHI's impact on health service utilization was integrated into the national willingness to pay (WTP) study. It focused on four regions where CBHI had been implemented for at least three years, as recommended by the Ethiopian Health Insurance Agency (EHIA). Woredas with less than three years of CBHI implementation were excluded to ensure a meaningful impact assessment.

3.3 Sampling and Sample Size Estimation

Stratification was based on region, CBHI status, and livelihood style (urban, rural agrarian, rural pastoralist) in CBHI-implementing regions, and region and livelihood style in non-CBHI regions. Woredas were classified into three categories to avoid contamination bias. This led to 27 strata with varying enumeration areas (EAs), used as the sampling frame. A two-stage stratified sampling approach selected 166 EAs, with 36 households per EA. A sampling frame was created for each EA, and households were chosen using systematic sampling. The sample size was estimated with a 50% willingness-to-pay assumption, a 95% confidence level, and a 2.5% margin of error, adjusted for a design effect of 5.2 to account for multistage sampling. To address non-response, the final sample included 5,976 households from 166 EAs—118 in CBHI regions and 48 in non-CBHI regions.

3.4 Study Variables

The outcome variable of interest was households' willingness to pay (WTP). Independent variables included region, household size, CBHI membership status, involvement in community-based health initiatives (such as the Health Development Army (HDA) and one-to-five networks), and enrollment in model family training. Additionally, the number of illness episodes in the household over the past month and the past 12 months, total household expenditure per adult equivalent, and the socio-demographics of the household head (including sex, education level, and marital status) were considered, along with ATP.

3.5 Data Collection Tools and Procedures

The tools used were adapted from standard CSA instruments (CSA, 2016), Demographic and Health Survey modules, and other relevant surveys. Data were collected using the Computer-Assisted Personal Interview (CAPI) method through the CSPro application. The household consumption expenditure survey consisted of three parts: (i) actual consumption and expenditure on food, beverages, and tobacco; (ii) expenditure on nondurable goods and frequent services; and (iii) expenditure on durable goods and less frequent services, recorded retrospectively from days to a year. Daily food and beverage consumption data were collected via diary for each household member and aggregated annually. Local market prices and monetary values for home-produced items were estimated by collecting up to three price quotations per item from different retailers on the same day. A total of 165 data collectors and 55 supervisors, organized into teams of three data collectors and one supervisor, conducted the field data collection over 45 days. They received 12 days of training before starting. Households were visited twice to gather seven days of consumption data. During the first visit, data on background characteristics, healthcare-seeking behavior, and consumption over the past three days were collected. The second visit focused on collecting details about consumption over the following four days.

3.6 Data Analysis

The data were cleaned and analyzed with STATA version 16, following all necessary permissions and licensing regulations. Data from agrarian and pastoralist households were combined and reported as rural. Consumption and expenditure data were aggregated at the household level to account for variations in family size, sex, and age. Household sizes were converted to adult equivalents using the Ministry of Finance scale, and consumption was adjusted using a spatial deflation factor to reflect living standards across different areas (CSA & ICF, 2017). Descriptive statistics summarized the variables of interest, while bivariate and multivariable analyses explored WTP for CBHI by region, membership status, and livelihood. WTP summaries were based on the mean of the maximum reported values, and linear regression analysis was performed separately for urban and rural settings to identify factors influencing WTP.

3.7 Data Quality Assurance and Ethical Aspects

The research team underwent ten days of training on the study’s objectives, tools, ethics, and the CAPI method. Data collection tools were translated into local languages, pretested, and checked for quality. To minimize errors, households were visited twice, and data were collected over seven days. The study, approved by the EPHI Scientific and Ethical Review Board (approval number: EPHIIRB-216-2019), adhered to ethical standards with official permissions. Participants provided informed consent, with translated forms ensuring understanding.

IV. FINDINGS & DISCUSSION

4.1 Response Rates

4.1.1 Socio-Demographic Characteristics

The study surveyed 5954 participants, with a substantial representation from the Oromia (27.2%), Amhara (26.5%), and SNNPR (22.5%) regions. In urban settings, Addis Ababa had the highest participation (31.1%). The demographic profile shows a higher proportion of male participants (74.7%) compared to females (25.3%), with rural areas having an even greater male dominance (76.9%). The age distribution indicates that younger individuals (≤35 years) are the majority (37.5%), especially in urban areas (48%) (See Table 1).

Table 1

Sociodemographic Characteristics of Study Participants (N 5954)

Variables	**Response categories**	**Setting**		
		Rural n (%)	**Urban n (%)**	**Total n (%)**
Regions	Tigray	216 (6.9)	106 (8.1)	322 (7.2)
	Afar	180 (1.5)	36 (1.8)	216 (1.6)
	Amhara	828 (28.7)	355 (18.0)	1,183 (26.5)
	Oromia	1,402 (28.1)	288 (23.6)	1,690 (27.2)
	Somali	540 (7.1)	36 (3.2)	576 (6.3)
	Benishangul	108 (1.5)		108 (1.2)
	SNNPR	864 (25.5)	179 (11.0)	1,043 (22.5)
	Gambella	72 (0.5)		72 (0.4)
	Harari	36 (0.2)	36 (1.1)	72 (0.4)
	Addis Ababa		636 (31.1)	636 (6.4)
	Dire Dawa		36 (2.1)	36 (0.4)
Sex	Female	1,063 (23.1)	582 (34)	1,645 (25.3)
	Male	3,183 (76.9)	1,126 (66)	4,309 (74.7)
Age	≤35	1,567 (34.7)	823 (48)	2,390 (37.5)
	36–44	1,060 (25.5)	419 (24.9)	1,479 (25.4)
	45–64	1,112 (27.3)	324 (18.8)	1,436 (25.5)
	65+	507 (12.5)	142 (8.3)	649 (11.6)
Literacy	Illiterate	2,274 (52.7)	269 (16.2)	2,543 (45.2)
	Literate	1,972 (47.3)	1,439 (83.8)	3,411 (54.8)
Household member serving as a leader of WDA/HDA	No	3,827 (89.3)	1626 (95.3)	5,453 (90.5)
	Yes	408 (10.7)	81 (4.7)	489 (9.5)
Household enrolled in model family training	No	3,975 (93.3)	1,629 (96.2)	5,604 (93.8)
	Yes	260 (6.7)	78 (3.8)	338(6.2)
Expenditure	**Category**	**Rural**	**Urban**	**Total**
Average total expenditure per adult equivalent by quintile (ETB)	Poorest	7,786.2	8,635.1	7,817.8
	Poorer	13,394.9	13,620.4	13,416.5
	Middle	19,199.4	20,066.4	19,365.9
	Richer	28,854.3	29,385.0	29,004.0
	Richest	60,326.6	64,880.7	62,694.8

The weighted mean was 20,225.23 in rural areas, 39,748.5 in urban areas, and 24,235.8 overall.

Literacy rates are significantly higher in urban areas (83.8%) compared to rural areas (47.3%). Most households do not have a leader in WDA/HDA (90.5%) and are not enrolled in model family training programs (93.8%). Economic disparities are evident, with urban participants having higher mean expenditures across all quintiles. The weighted mean expenditure in urban areas (39,748.5 ETB) is nearly double that of rural areas (20,225.23 ETB), highlighting significant economic differences between urban and rural populations.

CBHI Membership Status

The overall enrollment rate of households in the CBHI scheme across the four implementing regions was 2.4%, with notable variations between regions (Figure 2).

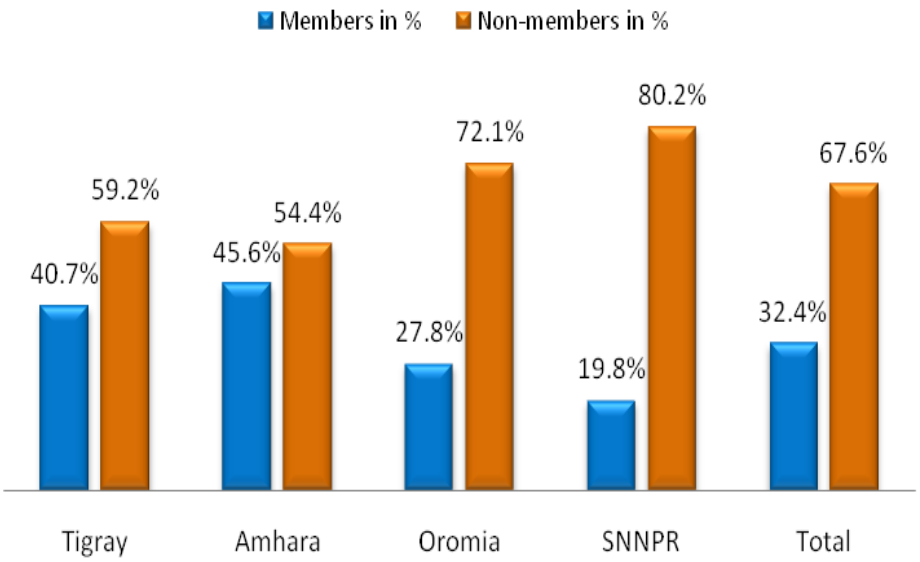

Figure 2
CBHI Membership Status in Implementing Woredas, Ethiopia, 2020

Almost 90.6% of households enrolled in the CBHI program reported financing the scheme through their own contributions, while 9.4% relied on local government funding, specifically for supporting indigent households. In the four regions where CBHI operates, roughly 13.5% of households had a member serving as a leader in the HAD/WDA or one-to-five network, and 10% of households participated in model family training.

Membership Renewal Plan

Most active CBHI members (85%) intended to renew their membership for the next year, whereas 12% were unsure, and 3% indicated they would not renew (Figure 3).

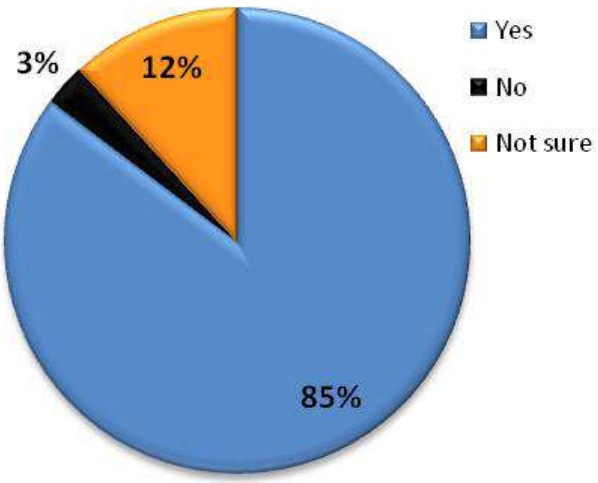

Figure 3
CBHI Members' Plans for Membership ID Renewal, Ethiopia, 2020

Limited availability and reduced quality of health services for CBHI members was the most commonly cited reason (27%) for active members not renewing their membership. The second most frequent reason was the insufficiency of the CBHI benefits package to meet their service needs (25%). Additionally, 20% of households reported receiving no services in return for their contributions in the previous year, leading them to not plan on renewing their membership. The third most frequently mentioned reason was the inefficiency in CBHI scheme management by the district (20%).

When both member and non-member households were asked about their views on the adequacy of the CBHI scheme, 43% found the benefits package inadequate, 33% considered it adequate, and 24% were unsure. The inadequacy of services was among the reasons cited for not intending to renew membership (Figure 4).

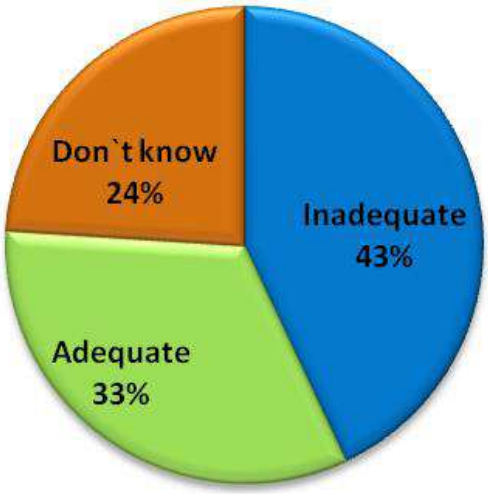

Figure 4
Respondents' Perception of Benefit Package Adequacy, Ethiopia, 2020

4.1.2 Experiences of CBHI Non-Member and Member Households

Out of 4,209 households that are not members of CBHI, 62.6% were aware of the scheme. Among those who had heard about CBHI, the primary sources of information were Kebele leaders/administrations (54.4%, 1,433 out of 2,635), Health Extension Workers (HEWs) (31.5%, 830 out of 2,635), and neighbors, friends, or other CBHI members (29.3%, 772 out of 2,635). For households that are members of CBHI, the main source of information was the Kebele administration for 70% of them, followed by HEWs (42.2%) and health professionals at health centers or hospitals (29%) (See figure 5)

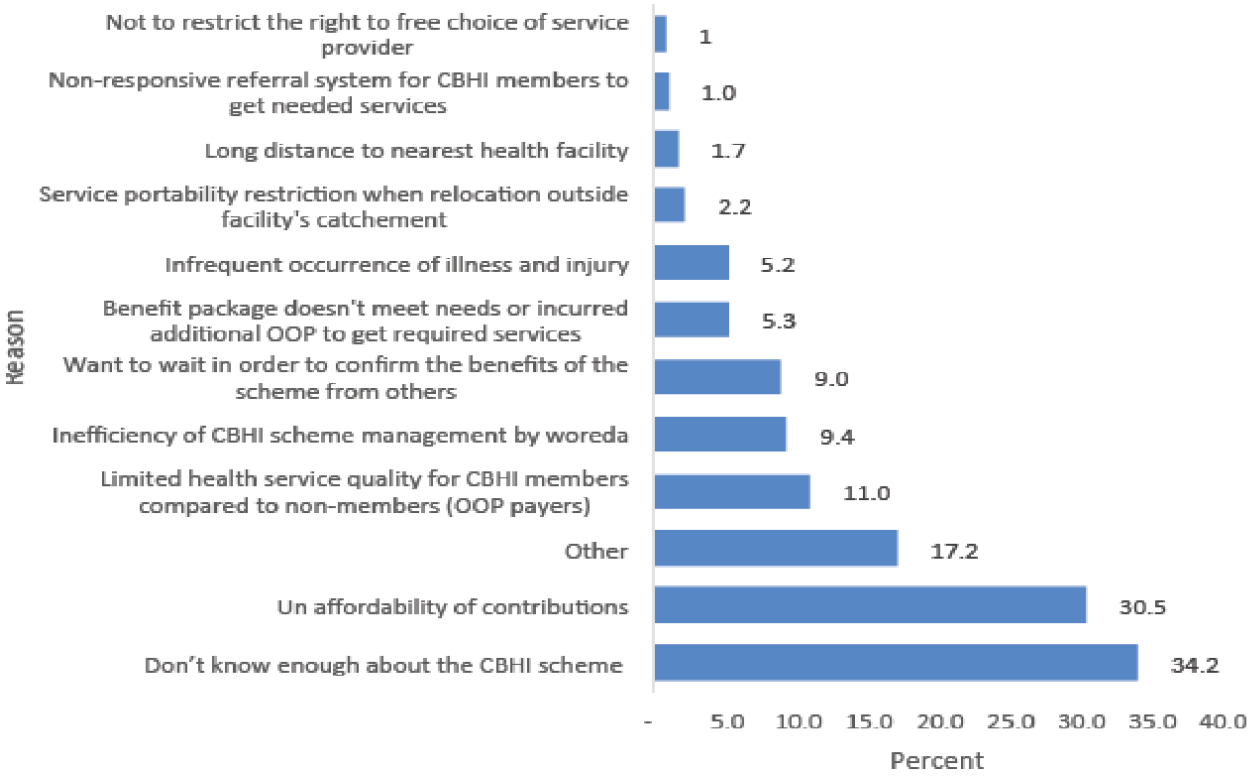

Figure 5
Reasons for Not Joining CBHI among Households That Had Never Enrolled, 2020

Furthermore, out of the households that are currently not enrolled in CBHI, 90.5% have never participated in the program before. The remaining 9.5% had previously been members. Among those who had previously enrolled, 81.7% expressed their intention to rejoin, 9.1% were undecided, and only 9.3% (37 out of 400) had no plans to return. The primary reasons stated by non-CBHI members for not enrolling or rejoining were as follows: 34.2% reported a lack

of information about the CBHI scheme, 30.5% expressed concerns about the affordability of premiums, 11% cited poor quality of health services for CBHI members, and 9.4% attributed their decision to inefficient management of the scheme by the woreda.

WTP for CBHI Membership

In rural areas, 59% of households were willing to pay the current premium of ETB 250, with an average WTP of ETB 244.0 (SD = ETB 175.4). The median WTP was ETB 250 in rural areas. Bidding prices were accepted by 8.3% of rural households when they started at ETB 250 and increased to ETB 400, and rejected by 5.2% when they started at ETB 250 and decreased to ETB 100. In urban areas, 64% of households were willing to pay the current premium of ETB 350, with an average WTP of ETB 361.6 (SD = ETB 210.8) per year for CBHI membership. The median WTP was ETB 350 in urban areas. Bidding prices were accepted by 16.6% of urban households when they started at ETB 350 and increased to ETB 500, and rejected by 10.2% when they started at ETB 350 and decreased to ETB 200.

The table 2 highlighting significant regional and socio-economic variations of mean WTP for CBHI. Urban households consistently show higher WTP compared to rural households across all regions. For example, in Tigray, urban households have a mean WTP of 337.5 ETB (95% CI [299.7, 375.3]), compared to 229.7 ETB (95% CI [203.3, 256.1]) in rural households. Similarly, in Afar, the mean WTP for urban households is 440.3 ETB (95% CI [380.6, 499.9]), whereas it is 323.9 ETB (95% CI [294.6, 353.2]) for rural households. This trend of higher urban WTP is consistent across other regions such as Amhara, Oromia, Somali, and SNNPR.

Table 2

Mean WTP of Rural and Urban Households for CBHI in Ethiopia, 2020

Variables	WTP of rural households (n=3,595)			WTP of Urban households (n=1,621)		
	N	Mean	95% CI for Mean	N	Mean	95% CI for Mean
Region						
Tigray	141	229.7	(203.3, 256.1)	105	337.5	(299.7, 375.3)
Afar	180	323.9	(294.6, 353.2)	36	440.3	(380.6, 499.9)
Amhara	668	237.1	(226.6, 247.6)	298	375.5	(347.7, 403.3)
Oromia	1142	258.2	(244.3, 272.2)	287	314.7	(297.9, 331.5)
Somali	432	270.4	(261.6, 279.1)	36	402.8	(388.8, 416.7)
Benishangul Gumuz	72	259	(223.7, 294.3)			
SNNPR	852	226.9	(217.1, 236.7)	179	367.9	(345.2, 390.7)
Gambella	72	382.6	(330.3, 434.9)			
Harari	36	280.5	(248.6, 312.5)	36	358.3	(330.5, 386.2)
Addis Ababa				608	388.3	(367.6, 409.0)
Dire Dawa				36	336.9	(251.4, 422.5)
CBHI membership status						
Member	1112	242	(234.3, 249.8)	337	375.9	(348.9, 402.9)
Non-member	2483	259.1	(251.7, 266.5)	1284	367.9	(356.3, 379.5)
Occurrence of at least one chronic health condition in the last year						
Yes	495	227	(213.7, 240.4)	255	360	(366.4, 383.7)
No	3100	247.6	(241.3, 253.9)	1366	361.9	(350.6, 373.3)
Sex						
Male	2732	245.5	(238.7, 252.3)	1078	378.6	(365.1, 392.1)
Female	863	240.2	(229.7, 250.6)	543	327.9	(313.3, 342.6)
Marital status						
Married	2873	229.5	(219.8, 239.2)	1076	372.2	(360.6, 383.8)
Not married	722	248.2	(241.4, 254.9)	545	341.3	(321.2, 361.4)
Educational status						
Literate	1603	252.3	(241.9, 262.7)	1388	374.1	(362.7, 385.5)
Illiterate	1992	237.6	(231.6, 243.6)	233	291.2	(270.1, 312.4)
Expenditure quintile						
Poorest	1039	229.8	(222.4, 237.1)	53	284.3	(228.6, 340.0)
Poorer	916	252.8	(236.2, 269.3)	137	310.7	(283.3, 338.2)
Middle	738	246.4	(236.5, 256.3)	285	346.8	(324.5, 369.0)
Richer	563	249.7	(237.7, 261.6)	437	349.9	(334.5, 365.3)
Richest	339	259.8	(239.4, 279.9)	709	394.3	(376.0, 412.6)
Total	**3,595**	**244.3**	**(238.6, 250.1)**	**1,621**	**361.6**	**(351.4, 371.9)**

In terms of socio-economic factors, both rural and urban CBHI members exhibit lower mean WTP compared to non-members. Rural CBHI members have a mean WTP of 242.0 ETB (95% CI [234.3, 249.8]) versus 259.1 ETB (95% CI [251.7, 266.5]) for non-members, while urban CBHI members have a mean WTP of 375.9 ETB (95% CI [348.9, 402.9]) compared to 367.9 ETB (95% CI [356.3, 379.5]) for non-members. Households that had at least one member with a chronic health condition in the past year tend to have a lower WTP in both rural (227 ETB, 95% CI [213.7, 240.4]) and urban (360.0 ETB, 95% CI [366.4, 383.7]) settings compared to those without chronic conditions.

Gender also plays a role, with male respondents showing higher WTP than female respondents in both rural (245.5 ETB, 95% CI [238.7, 252.3]) and urban (378.6 ETB, 95% CI [365.1, 392.1]) settings. Education level influences WTP, particularly in urban areas where literate respondents have a higher WTP (374.1 ETB, 95% CI [362.7, 385.5]) compared to illiterate respondents (291.2 ETB, 95% CI [270.1, 312.4]). Additionally, WTP increases with higher expenditure quintiles in both rural and urban households, with the richest urban households having the highest mean WTP of 394.3 ETB (95% CI [376.0, 412.6]).

Overall, the data reveals significant regional and demographic variations in WTP for CBHI, with urban households consistently willing to pay more than rural households. Factors such as CBHI membership, presence of chronic health conditions, gender, education level, and economic status significantly influence WTP.

4.1.3 Factors Influencing WTP for CBHI in Rural and Urban Areas

WTP for CBHI varied significantly across regions and between urban and rural areas in Ethiopia. Compared to Oromia, WTP was lower in SNNPR (AMD = -36.9; 95% CI [-52.5, -21.3]) but higher in Afar (AMD = 60.8; 95% CI [16.3, 105.3]) and Gambela (AMD = 122.4; 95% CI [48.1, 196.7]). In urban areas, WTP was significantly higher in Afar, Somali, Addis Ababa, Amhara, and SNNPR compared to Oromia, while in other regions, WTP did not show a significant difference from Oromia (see Table 3).

Table 3

Associations of Average WTP by Rural and Urban Settings, Ethiopia, 2020 (N = 5954)

Variables	**Urban**	**Rural**
	Adjusted mean difference (95% CI)	**Adjusted mean difference (95% CI)**
Characteristics of household		
Region (Ref: Oromia region)		
Tigray	-20.6 (-46.9, 5.6)	25.0(-16.2, 66.2)
Afar	60.8 (16.3, 105.3)	95.5(19.6, 171.4)
Amhara	-5.8 (-21.7, 10.2)	52.4(17.6, 87.3)
Somali	0.5 (-25.2, 26.2)	64.9(3.7, 126.2)
BenishangulGumuz	-7.9 (-62.1, 46.3)	
SNNPR	-36.9 (-52.5, -21.3)	38.6(2.4, 74.7)
Gambela	122.4 (48.1, 196.7)	
Harari	11.9 (-105.4, 129.2)	32.2(-64.0, 128.5)
Addis Ababa		59.1(30.9, 87.3)
Dire Dawa		33.0(-38.1, 104.1)
CBHI member (Ref: Non-CBHI)	-17.2 (-29.9, -4.6)	-2.2(-38.8, 34.4)
Leader of HDA, WDA or 1:5 network (Ref: No)	23.4 (3.4, 43.5)	-9.6(-63.0, 43.8)
Enrolled in model family training (Ref: No)	10.2 (-14.0, 34.4)	13.6(-43.8, 70.9)
Household size	9.3 (6.8, 11.9)	7.2(1.0, 13.4)
Number of illness episodes in 12 months	1.2 (-4.7, 7.1)	4.9(-7.1, 17.1)
Number of illness episodes in 1 month	6.2 (-2.7, 15.2)	4.6(-16.2, 25.3)
ATP for CBHI	12.6(-0.3, 25.6)	64.1(6.3, 121.8)
Characteristics of household head		
Sex (Ref: Female)	-11.8 (-31.1, 7.4)	39.8(13.1, 66.4)
Education (Ref: Illiterate)	12.4 (-0.2,24.7)	56.8(26.1, 87.4)
Marital status (Ref: Not married)	16.6 (-2.7, 35.8)	-6.2(-34.1, 21.7)

In rural areas, households led by community participation group leaders had higher WTP (AMD = 23.4; 95% CI [3.4, 43.5]), while CBHI members had lower WTP (AMD = -17.2; 95% CI [-29.9, -4.6]). Larger family size was associated with higher WTP in both rural and urban settings. In urban areas, a higher ability to pay (ATP) was also

linked to increased WTP. Male respondents (AMD = 39.8; 95% CI [13.1, 66.4]) and literate respondents (AMD = 56.8; 95% CI [26.1, 87.4]) demonstrated a higher WTP compared to their counterparts.

4.2 Discussion

The study found that factors such as sex, literacy, region, residency, community network membership, family size, and ATP were associated to a household's to join the CBHI scheme. WTP varied between urban and rural areas, with CBHI members having lower WTP than non-members. WTP was found to have a positive association with larger family size, higher ATP, being male, literacy (in urban areas), and participation in community health activities (in rural areas). In rural settings, on the other hand, CBHI membership was found to have an inverse association with WTP.

Despite households having high ATP compared to the recommended premium amounts, the study revealed that, on average, WTP was low. At a 10% ATP threshold, urban households could afford an average of ETB 7,239.51, while rural households could afford ETB 2,868.94 on average. However, the average WTP was significantly lower: ETB 361.6 (SD = ETB 210.8) in urban areas and ETB 244.0 (SD = ETB 175.4) in rural areas. This disparity could be influenced by factors such as awareness of the scheme, trust in its management, and community solidarity. Rural households, on average, were willing to pay ETB 244.0 per household per year, while urban households were WTP ETB 361.6 annually for CBHI membership.

The average WTP observed in the rural areas of the current study is higher than what was reported in other small-scale studies conducted in different regions of the country. For example, in the Fogera District, the mean WTP was ETB 187.4 (Kebede, 2014), in the Bugna District it averaged ETB 233 (Garedew et al., 2020), and in the Jimma Zone it was an average of ETB 228 per year (Umeh & Feeley, 2017). This difference in WTP may be due to variations in study scope, as well as the different contingent valuation methods used in these studies.

Previous studies have revealed that the WTP for health insurance premiums is influenced by various socioeconomic and geographic factors (Onwujekwe et al., 2010; Preker et al., 2002). Factors that impact decisions on insurance and the WTP for purchasing insurance include the price of insurance, the level of risk aversion, the household's ATP and income, the anticipated cost of illness (user fee), the likelihood of contracting a disease, and the insurer's expected performance (Folland et al., 2016). Our study also discovered regional variations in WTP, which requires further investigation. In comparison to the Oromia region, WTP was lower in the SNNPR region and higher in the Afar and Gambela regions. In urban areas, WTP was significantly higher in Afar, Somali, Addis Ababa, Amhara, and SNNPR, when compared to Oromia. In all other regions, WTP did not differ significantly from that of Oromia. Furthermore, our study found that CBHI members had lower WTP compared to non-members, possibly indicating dissatisfaction with the benefits package and service delivery of the CBHI. Addressing this disparity may require effective communication about the scheme, managing beneficiary expectations, and improving service quality.

Households with larger family sizes, both in rural and urban areas, demonstrated a higher WTP for the scheme. In urban settings, the average WTP showed a positive correlation with the ATP for CBHI. Male and literate respondents in urban areas exhibited a higher mean WTP compared to their peers. This observation is consistent with previous studies (Bärnighausen et al., 2007; Dror & Preker, 2015; Garedew et al., 2020; Minyihun et al., 2019; Mirach et al., 2019; Nosratnejad et al., 2016). The poorest households in rural areas were unable to afford the specified premium and would face significant financial burdens if required to pay the CBHI premium. This finding is in line with previous studies that indicate the poor allocate a greater portion of their income to premium contributions and out-of-pocket expenses (Claxton et al., 2019; Taddesse et al., 2020). It suggests that implementing a financial contribution system based on the ATP may be more practical than imposing a flat-rate contribution for all households, which could further impoverish the poor.

The recent findings suggest that participation in community platforms and networks has a significant influence on WTP. In rural areas, households headed by community group leaders had higher average WTP. This could be because community networks enhance awareness of the intricacies of insurance. The impact of having a household head serve as a leader in community participation groups (e.g., Health Development Army or one-to-five networks) on average WTP requires further exploration. Membership in professional or social organizations, such as civil society groups or networks, can help households engage with the insurance scheme by providing a platform to share information about insurance plans (Wang et al., 2012).

Despite a positive link between ATP and WTP, there was a notable gap between the two. ATP was about ETB 2300 in rural and ETB 7200 in urban areas, but only 59% and 64% of households, respectively, were willing to pay premiums of ETB 250 and 350. This disparity may be due to methodological issues, such as misunderstanding the scenario and starting point bias, as well as poor service quality and low fee-for-service. Factors like knowledge of CBHI, trust, satisfaction, and alternative insurance coverage also affect WTP. Addressing these issues could help align WTP more closely with ATP and potentially allow for a premium increase.

V. CONCLUSIONS & RECOMMENDATIONS

5.1 Conclusions

The study found that CBHI schemes had a high willingness to pay (WTP), with an average of 244 ETB per household annually in rural areas and 361.6 ETB in urban areas. Although most households can afford the current premium, the poorest households struggle to manage it. WTP was found to increase with family size, ability to pay, and for males and literate respondents. Additionally, it was observed that WTP was linked to participation in community health initiatives in urban areas. However, CBHI members in urban areas had lower WTP, which is likely a result of dissatisfaction.

5.2 Recommendations

To improve the effectiveness and sustainability of the CBHI scheme, several key recommendations are proposed. First, premium rates should be tailored to households' ATP rather than applying flat-rate premiums across the board. This approach is especially important for low-income households in rural areas, as it would prevent them from facing additional financial burdens. Second, enhancing community engagement and education is vital. Literacy and participation in community health initiatives have been shown to positively influence WTP. Therefore, awareness campaigns should be intensified through local channels, such as kebele administrations, health extension workers, and networks like the HDA.

Improving the quality of services and the benefits package is another essential recommendation, as dissatisfaction in these areas contributes to low WTP and renewal rates. Enhancing healthcare quality and expanding the benefits package will likely boost both membership retention and willingness to contribute financially. Additionally, regional disparities must be addressed, particularly since higher WTP is observed in urban areas and regions like Afar and Addis Ababa. This suggests the need for region-specific strategies, considering local economic conditions, healthcare needs, and the effectiveness of CBHI implementation.

Lastly, regular monitoring and evaluation of CBHI performance are crucial. Continuous assessments of the scheme's management, as well as periodic evaluations of household satisfaction and affordability, will help identify and address emerging issues. This approach will ensure that WTP remains aligned with the financial sustainability of the CBHI, leading to improved outcomes for all stakeholders involved.

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