Willingness of community based health insurance uptake and associated factors among urban residents of Oromia regional state, Oromia, Ethiopia, a cross-sectional study

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Abstract

Background: Globally, Millions of people cannot use health services because of the fear of payment for the service at the time of service delivery. From the agenda of transformation and the current situation of urbanization as well as to ensure universal health coverage implementing this program to the urban resident is mandatory. The aim of this study is to assess the willingness of community-based health insurance (CBHI) uptake and associated factors among urban residents of Oromia regional state, Oromia, Ethiopia, 2018.

Methods: A community-based cross-sectional study was conducted. From the total of eighteen towns; six towns which account for 33% of the total were selected randomly for the study. One population proportion formula was employed to get a total of 845 households. A pre-tested, semi-structured interviewer-administered questionnaire was used to collect the required data. Double-Bounded Dichotomous Choice Variant of the contingent valuation method was used to assess the maximum willingness to pay for the scheme, and a multiple logistic regression model was used to determine the effect of various factors on the willingness to join and willingness to pay for the households.

Result: About 839 (99.3%) of the respondents participated. The mean ages of the respondents were 40.44 (SD ± 11.12) years. 621 (74.1%) ever heard about CBHI with 473 (56.3%) knowing the benefits package. Out of 839, 724 (86.3%) were willing to uptake CBHI of which 704 (83.9%) were willing to pay if CBHI established in their town.

Conclusion: If CBHI established about 86.3% of the households would enroll in the scheme. Having education, with a family size between 3 & 6, having difficulty in paying for health care and less than 20mins it took to reach the nearest health facility were the independent predictors of the willingness of CBHI uptake. The Oromia and Towns Health Bureau should consider the availability of health facilities near to the community and establishing CBHI in the urban towns.

Keywords: Willingness, Community based health insurance, Urban, Households
**Background**

Community-based health insurance schemes help to give financial protection and decrease direct out-of-pocket payment for health care based on the assumption of risk-pooling and community solidarity to risks of falling sick [1]. CBHI schemes allow people’s resources to be pooled to cover the costs of unpredictable health problems and keep individuals and households from the risk of catastrophic medical expenses in exchange for out-of-pocket payments [2, 3].

To achieve universal coverage for health care; government and donor agencies in a number of developing countries are not implementing Community-based health insurance schemes (CBHI) as social protection and an alternative measure. Community-based health insurance schemes are becoming increasingly recognized as one of health care financing strategy in developing country [4].

The health sector transformation plan (HSTP) of Ethiopia has put very motivating goals and desires to renovate the health system to deliver equitably and quality care. It is the first the envisage of stage of Ethiopia path towards universal health coverage through strengthening primary health care and as part of the second growth and transformation plan (GTP II) of the country. The main programs of HSTP are ensuring equity and quality health care services, the information revolution, woreda (the third-level-administrative divisions of Ethiopia) transformations, and caring, respectful and compassionate health workforce [5].

The three goals of woreda transformation program are: developing high-performing primary health care units (PHCU), the graduation of model Kebeles (the smallest unit of local government in Ethiopia), and achievement of universal health coverage with financial risk protection; which focuses on CBHI [6].

After successful completion of the 20-years health sector development program (HSDP); the Government of Ethiopia developed a road map in which the health sector envisioned beyond strengthening primary health care unit was placed as a strategy. Health sector transformation plan is part of this strategy which is implemented from the Ethiopian fiscal year 2008 to 2012 (July 2015 – June 2020) [5, 7].

As part of health care financing strategy, the government of Ethiopia endorsed and launched CBHI scheme in 13 pilot woreda in Amahara, Oromia, south nation nationalities peoples and Tigray regions in 2010/11 to provide a risk protection mechanism for those employed in the rural and the informal sectors. The 13 pilot woredas are still implementing CBHI and they are on the way to expand it to 185 woredas [8].

Community-Based Health Insurance (CBHI) scheme in Oromia began in 2001 Ethiopian fiscal year (FY) in four zones and four woredas and currently expanded into 134 additional woredas distributed among all zones. The objective of the scheme is to improve health service utilization by reducing direct out of pocket payments and improve the quality of health services [9].

Even though enormous activities were undertaken to guide and support the program since the regional cabinet passed a decision to expand the program, still the performance was very low ranging from 23% enrolment rate in the pilot woredas to 25% in the two phase expansions of 71 woredas [10].

In the current study area, there are no published data on demand of CBHI. It is believed that this study will help policy makers to address factors which affect the HHs willingness to uptake (WTU) make the benefit of planned CBHI scheme. The objective of this study was to assess willingness of community based health insurance uptake (WCBHIU) and associated factors among urban towns of Oromia region, Ethiopia, 2018.

**Methods**

**Study design and setting**

The community-based cross-sectional study design was conducted. The study was conducted in six towns of Oromia regional state from May 26 to July 30, 2018. Oromia regional state is the first populous and broader state among the nine regional states of Ethiopia. It’s bordered with all regional states except Tigray regional state and has two international borders Kenya with South and South Sudan with West. Administratively, Oromia regional state is composed of twenty zones and eighteen towns which are subdivided into 333 woredas (the smallest administrative unit) and 7011 Kebeles (the smallest administrative unit). Projections from the 2007 population and housing census estimate the total population for the year 2017/18 to be 36,839,051 with the sex ratio between males and female is almost equal(1:1) and average annual population growth rate of 2.9% (%2.7 & %4.6 in rural and urban respectively). On average 123 populations live per Sq. Km and there is a variation from one zone to another zone. In the year 2017, there are 79 hospitals, 1366 health centers, 6559 health posts, 2 regional laboratory and 7 blood bank unit government health facilities and also 7 private hospital, 150 private health centers, different level 3149 private clinics and 1701 pharmacies, 8 and 5 government development organization hospitals, and health centers respectively providing health services in the region. The health service coverage of the region is 97% & 98% by health centers and health post respectively.

**Sample size determination**

The sample size was calculated using a single population proportion formula by “Taro Yamane” [11], as follows;
\[ n = \left( \frac{Z^2}{2p(1-p)} \right) / d^2 \]

\( P = \text{expected rate of willingness to join a community-based health insurance scheme} = 0.5 \) (since there is no Urban willingness to join study conducted in the country so far)

\[ d = \text{Margin of sampling error tolerated} = 5\% \]
\[ = \text{Critical value at 95\% confidence interval of certainty} (1.96) \]
\[ = (1.96/2+0.5 \times (1 - 0.5))/(0.05/2) = 384 \]

By adding the expected non-response rate of 10%, the sample size was 290HHs, but since the study utilized multi-stage sampling, this sample size was multiplied by 2 for the design effect. Hence, the final sample sizes for this study is \( 2 \times 384 + 10\% = 845 \).

**Study population**

The sample was obtained using stratified multi-stage simple random sampling technique. Eighteen selected towns were stratified into three strata based on their rank given by the regional state government. Two towns were selected randomly from the first level and from 2 “A” level three and one from 2 “B” level. Finally, six towns from all levels were selected randomly from all towns in the region. Twelve kebeles (the smallest administrative division); two from each were selected using lottery methods from all selected study towns. In the second stage, 845 households were selected using computerized simple random sampling technique. The households who are selected to participate in the study were allocated proportionately to the size of households of those kebeles. The sampling frame was developed by using the identification number of the houses which were given by the kebeles (Fig. 1).

**Data collection**

Data were collected using an Interviewer administered pretested, a structured and standardized questionnaire by 12 trained data collectors. The questionnaire was adapted from previous similar studies for data collection purpose [3, 7, 9] and. It was initially prepared in English and then was translated into Afan Oromo (the local language) and later on back to English to check for consistency. Supervisors followed the data collectors and provided any necessary correction on the spot.

‘Double-bounded dichotomous choice variant of the contingent valuation method’ was used in which respondents were asked two successive binary questions for their ability to pay the stated number of premiums for CBHI. First the respondents were asked their ability to pay double of the first bid (premium) for CBHI. If their responses to initial bid was “no,” they were asked for their ability to pay half of the initial bid. Finally, open-ended question for those who did not pick a ‘yes’ for either the first or second option was used to enable respondents to pick lower amounts (as low as zero) or higher amounts (higher than the stated options in the double bounded dichotomous choice contingent valuation Method). This helped the researchers to separate those respondents whose real ability to pay were zero from those respondents who were willing to pay something but less than the lowest bid.

**Data analysis**

The collected data were cleaned, coded and entered into EPI Data version 3.1 and then exported for analysis to SPSS version 20. The data was analyzed using binary and multivariate logistic regressions 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 was assessed using odds ratio with 95% confidence interval and \( p \)-value < 0.05 declared statistical significance.

**Results**

**Socio-demographic characteristics of respondents**

A total of 845 participants from six urban towns of Oromia was planned to participate in the study, out of which 830 study subjects were enrolled; with 322 (39.2%) from Adama, 101 (12.1%) from Asella, 94 (11.3%) from Ambo, 108 (13.2%) were from Nekemte, 147 (18%) were from Shashemene and the rest 6.2% from Holleta town; making a response rate of 98.2%. The reason for non-participation was unwillingness.

Among study participants 315 (38%) were in the age group of 35–44 years with median 38 years. (interquartile range of 32 to 46 years), 449 (54.4%) were male, 438 (52.8%) were husbands by a head to the household followed by 366 (44.1%) spouses by a head to the household. About 424 (51.1%) were orthodox by religion, and 659 (79.4%) were married. By occupation 288 (34.7%) were merchants and 293 (35.2%) were educated within grade 9–12. The average family size of the household was 3–6 for 455 (54.8%) of the participants (Table 1).

**Social capital and horizontal trust**

Almost half of the respondents 422 (50.8%), 426 (51.3%), 420 (50.6%), 408 (49.2%), 409 (49.3%), 430 (51.8%) and 408 (49.2%) disagreed with the statements, ‘most villagers of the village can be trusted,’ ‘Most villagers willing to return; what doesn’t belong to them’, ‘Neighbors
can be trusted’, 'Village leaders are trusted’, ‘Villagers concern issues not only relate to themselves’, ‘Villagers provide help if someone really needs it and ‘Lend money to your neighbors’, respectively. About 381 (45.9%), 332 (40%) and 489 (58.9%) disagreed with the statements: ‘Most villagers of the village try to take advantage’, ‘Were Village had a large Family would be a member of this family and I would like to support a project that might benefit other villagers, respectively. A total of 715 respondents disagreed with overall horizontal trust statements (Table 2).

**Health and health-related factors**

Majority of the respondents 380 (45.8%) said the health status of their family is good. Only 95 (11.4%) had a chronic illness and/or disability. 485 (58.4%) of respondents and 516 (62.2%) of respondents family members had encountered an illness in the last 12 months. Latest illness Episode 142 (17.1%) occur within the last 1 month followed by 136 (16.4%) occurring within 7–12 months. Of which 501 (60.4%) got treatment from different facilities and 216 (26%) from private health facility; as 180 (21.7%) chose for its service is efficacious. The total health
care cost for the last 12 months was less than 1000 ETB for 386 (77%) of the respondents; 481 (96%) said it covered by themselves and getting that money was very difficult for 197 (39.2%) of them. And 353 (42.5%) responded that it took 10–20 min to reach the health facility. To 326 (39.3%) of the respondents, a private clinic is the nearest followed by health center for 206 (24.8%). 437 (52.7%) can raise 200 Ethiopian birr (ETB) within a week in case of emergency and it’s from their own cash for 242 (55.4%) of them. A merchant is the main source of income for 323 (39%) of the respondents (Table 3).

Awareness, willingness to uptake and ability to pay for CBHI
From total respondents 619 (74.6%) had heard about CBHI; from these 473 (57%) know the benefits package of CBHI. Among respondents 716 (86.3%) were willing to uptake CBHI; out of this 688 (83.9%) were willing to pay, and 415 (58%) were able to pay 500ETB as annual premium for CBHI. The reason to uptake CBHI for 259 (36.2%) of the participants was for security and peace of mind in times of ill-health. About 50 (46.3%) out of 108 respondents not willing to uptake CBHI, were as a result of not having enough money and around 30 (46.9%) out of 64 respondents not willing to pay for CBHI, was due to a shortage of money. The study indicated that 278 (39.3%) wanted to pay the premium bi-annually followed by 230 (32.5%) wanting to pay annually (Table 4), (Fig. 2).

Table 1 Distribution of socio-demographic characteristics of respondents who participated in the survey, urban towns of Oromia, 2018, Ethiopia (Continued)

| Variables   | Frequency | Percent (%) |
|-------------|-----------|-------------|
| Age category |           |             |
| 15–24       | 25        | 3.0         |
| 25–34       | 221       | 26.6        |
| 35–44       | 315       | 38.0        |
| 45–54       | 168       | 20.2        |
| > 54        | 101       | 12.2        |
| Sex         |           |             |
| Male        | 449       | 54.1        |
| Female      | 381       | 45.9        |
| Relation to the head of the HH | | |
| Husband     | 438       | 52.8        |
| Spouse      | 366       | 44.1        |
| Child       | 18        | 2.2         |
| Others      | 8         | 1.0         |
| Religion    |           |             |
| Orthodox    | 424       | 51.1        |
| Muslim      | 141       | 17.0        |
| Protestant  | 246       | 29.6        |
| Catholic    | 18        | 2.2         |
| Others      | 1         | 0.1         |
| Ethnicity   |           |             |
| Amhara      | 188       | 22.7        |
| Oromo       | 488       | 58.8        |
| Gurage      | 97        | 11.7        |
| Tigre       | 37        | 4.5         |
| Others      | 20        | 2.4         |
| Marital status |       |             |
| Single      | 49        | 5.9         |
| Married     | 659       | 79.4        |
| Divorced    | 46        | 5.5         |
| Widowed     | 74        | 8.9         |
| Separated   | 2         | 0.2         |
| Occupation  |           |             |
| Farmer      | 43        | 5.2         |
| Housewife   | 213       | 25.7        |
| Merchant    | 288       | 34.7        |
| Daily Laborer | 167     | 20.1        |
| Priv. Com. Employee | 3    | 4.0         |
| Self-employed | 15       | 1.8         |
| Others      | 101       | 12.2        |
| Educational status |         |             |
| Can’t read and write | 43    | 5.2         |
Risk factors for the willingness of CBHI uptake

Multivariable logistic regression analyses were conducted to explore the association between dependent and independent variables. So, the study showed that the odds of willingness to utilize CBHI are associated with educational status, family size, easiness of getting money to pay for health care services; the time it took to reach the nearest health facility and frequency at which the respondents want to pay the yearly premium.

Accordingly having a certificate/diploma, learning from grade 1–8 and able to read and write were 3.38 (AOR 3.38; 95% CI: 1.27, 8.98), 2.90 (AOR 2.9; 95% CI: 1.16, 7.30) and 3.84 (AOR 3.84; 95% CI: 1.23, 12.01) times higher odds compared to can’t read and write, respectively; after controlling for other effects. Respondents had a family size of 3–6 had higher odds of willingness to utilize CBHI compared to with the family size of less than three (AOR = 1.95, 95% CI: 1.21–3.15). The odds of the willingness of CBHI uptake among respondents with very difficult and difficult in getting money to pay for the health care were 82 and 83% less than those without difficulty (AOR = 0.18, 95% CI: 0.07–0.49) and (AOR = 0.17, 95% CI: 0.06–0.46), respectively.

Table 2 Distribution of social capital and horizontal trust among respondents, Oromia, 2018, Ethiopia

| Variables | Frequency | Percent |
|-----------|-----------|---------|
| Most villagers of the village can be Trusted | Strongly agree | 14 | 1.7 |
| | Agree | 87 | 10.5 |
| | Neutral | 19 | 2.3 |
| | Disagree | 422 | 50.8 |
| | Strongly disagree | 288 | 34.7 |
| Most villagers of the village try to take Advantage | Strongly agree | 20 | 2.4 |
| | Agree | 95 | 11.4 |
| | Neutral | 37 | 4.5 |
| | Disagree | 381 | 45.9 |
| | Strongly disagree | 297 | 35.8 |
| Most villagers willing to return; what doesn’t belong to them | Strongly agree | 12 | 1.4 |
| | Agree | 94 | 11.3 |
| | Neutral | 26 | 3.1 |
| | Disagree | 426 | 51.3 |
| | Strongly disagree | 272 | 32.8 |
| Neighbors can be Trusted | Strongly agree | 2 | 2 |
| | Agree | 50 | 6.0 |
| | Neutral | 19 | 2.3 |
| | Disagree | 420 | 50.6 |
| | Strongly disagree | 339 | 40.8 |
| Village leaders are Trusted | Strongly agree | 90 | 10.8 |
| | Agree | 142 | 17.1 |
| | Neutral | 73 | 8.8 |
| | Disagree | 408 | 49.2 |
| | Strongly disagree | 117 | 14.1 |
| Villagers concern issues not only relate to themselves | Strongly agree | 28 | 3.4 |
| | Agree | 98 | 11.8 |
| | Neutral | 25 | 3.0 |
| | Disagree | 409 | 49.3 |
| | Strongly disagree | 270 | 32.5 |
| Villagers provide help if someone really needs it | Strongly agree | 7 | 8 |
| | Agree | 58 | 7.0 |
| | Neutral | 29 | 3.5 |
| | Disagree | 430 | 51.8 |
| | Strongly disagree | 306 | 36.9 |

Table 2 Distribution of social capital and horizontal trust among respondents, Oromia, 2018, Ethiopia (Continued)

| Variables | Frequency | Percent |
|-----------|-----------|---------|
| Lend money to your Neighbors | Strongly agree | 3 | .4 |
| | Agree | 45 | 5.4 |
| | Neutral | 33 | 4.0 |
| | Disagree | 408 | 49.2 |
| | Strongly disagree | 341 | 41.1 |
| Were Village had a large A family would be a member of this family | Strongly agree | 111 | 13.4 |
| | Agree | 108 | 13.0 |
| | Neutral | 31 | 3.7 |
| | Disagree | 332 | 40.0 |
| | Strongly disagree | 248 | 29.9 |
| I Would like to support a project that might benefit other villagers | Strongly agree | 29 | 3.5 |
| | Agree | 80 | 9.6 |
| | Neutral | 30 | 3.6 |
| | Disagree | 489 | 58.9 |
| | Strongly disagree | 202 | 24.3 |
| Overall horizontal Trust | Agree | 115 | 13.9 |
| | Disagree | 715 | 86.1 |

的风险因素对CBHI接受的意愿

多变量逻辑回归分析被用于探索决定变量和独立变量之间的关联。因此，研究显示，愿意使用CBHI的意愿与教育水平、家庭规模、获得支付医疗服务资金的便利性；到达最近医疗设施所需的时间以及受访者希望每年支付的保费频率有关。

相应地，有证书/文凭、从1-8级学习且能够读写的人，意愿的几率是3.38（AOR 3.38；95% CI: 1.27, 8.98），2.90（AOR 2.9；95% CI: 1.16, 7.30）和3.84（AOR 3.84；95% CI: 1.23, 12.01）倍高于无法读写的人，分别；在控制其他因素后。家庭规模在3-6人之间的人有更高的意愿使用CBHI，相比与家庭规模低于3人（AOR = 1.95，95% CI: 1.21–3.15）。意愿使用CBHI的人在非常困难和困难中获得资金支付医疗服务的几率是82和83%低于没有难度（AOR = 0.18，95% CI: 0.07–0.49）和（AOR = 0.17，95% CI: 0.06–0.46），分别。

表2社会资本和横向信任分布

| 变量 | 频数 | 百分比 |
|------|------|--------|
| 大多数村里的村民是可以信任的 | 强烈同意 | 14 | 1.7 |
| | 同意 | 87 | 10.5 |
| | 中立 | 19 | 2.3 |
| | 不同意 | 422 | 50.8 |
| | 强烈不同意 | 288 | 34.7 |
| 大多数村里的村民试图占便宜 | 强烈同意 | 20 | 2.4 |
| | 同意 | 95 | 11.4 |
| | 中立 | 37 | 4.5 |
| | 不同意 | 381 | 45.9 |
| | 强烈不同意 | 297 | 35.8 |
| 大多数村民愿意归还那些不属于他们的东西 | 强烈同意 | 12 | 1.4 |
| | 同意 | 94 | 11.3 |
| | 中立 | 26 | 3.1 |
| | 不同意 | 426 | 51.3 |
| | 强烈不同意 | 272 | 32.8 |
| 邻居可以信任 | 强烈同意 | 2 | 2 |
| | 同意 | 50 | 6.0 |
| | 中立 | 19 | 2.3 |
| | 不同意 | 420 | 50.6 |
| | 强烈不同意 | 339 | 40.8 |
| 村长可以信任 | 强烈同意 | 90 | 10.8 |
| | 同意 | 142 | 17.1 |
| | 中立 | 73 | 8.8 |
| | 不同意 | 408 | 49.2 |
| | 强烈不同意 | 117 | 14.1 |
| 村民关心问题不仅与自己有关 | 强烈同意 | 28 | 3.4 |
| | 同意 | 98 | 11.8 |
| | 中立 | 25 | 3.0 |
| | 不同意 | 409 | 49.3 |
| | 强烈不同意 | 270 | 32.5 |
| 村民提供帮助如果有人确实需要它 | 强烈同意 | 7 | 8 |
| | 同意 | 58 | 7.0 |
| | 中立 | 29 | 3.5 |
| | 不同意 | 430 | 51.8 |
| | 强烈不同意 | 306 | 36.9 |

风险因素对CBHI接受的意愿

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相应地，有证书/文凭、从1-8级学习且能够读写的人，意愿的几率是3.38（AOR 3.38；95% CI: 1.27, 8.98），2.90（AOR 2.9；95% CI: 1.16, 7.30）和3.84（AOR 3.84；95% CI: 1.23, 12.01）倍高于无法读写的人，分别；在控制其他因素后。家庭规模在3-6人之间的人有更高的意愿使用CBHI，相比与家庭规模低于3人（AOR = 1.95，95% CI: 1.21–3.15）。意愿使用CBHI的人在非常困难和困难中获得资金支付医疗服务的几率是82和83%低于没有难度（AOR = 0.18，95% CI: 0.07–0.49）和（AOR = 0.17，95% CI: 0.06–0.46），分别。
### Table 3 Distribution of health and health-related factors among respondents, Oromia, 2018, Ethiopia

#### Health status of the Very poor

| Status       | Frequency | Valid Percent |
|--------------|-----------|---------------|
| Poor         | 31        | 3.7           |
| Medium       | 251       | 30.2          |
| Good         | 380       | 45.8          |
| Very good    | 151       | 18.2          |

#### Reason for not getting Rx

| Reason                              | Frequency | Valid Percent |
|-------------------------------------|-----------|---------------|
| Considering the illness is self-limiting | 10        | 1.2           |
| No enough money                      | 7         | 0.8           |
| Total                               | 17        | 2.0           |

#### No of illness

| Number of Illness Episodes | Frequency | Valid Percent |
|----------------------------|-----------|---------------|
| < 2                        | 477       | 92.4          |
| 2–4                        | 36        | 7.0           |
| > 4                        | 3         | 0.6           |
| Total                      | 516       | 100.0         |

#### Total HC cost

| Cost Range       | Frequency | Valid Percent |
|------------------|-----------|---------------|
| < 1000           | 386       | 77.0          |
| 1000–3000        | 87        | 17.4          |
| > 3000           | 28        | 5.6           |
| Total            | 501       | 100.0         |

#### Time to reach HF in Min

| Time Range      | Frequency | Valid Percent |
|-----------------|-----------|---------------|
| < 10 min        | 262       | 31.6          |
| 10-20 min       | 353       | 42.5          |
| > 20 min        | 215       | 25.9          |

#### Variables

| Variable                                  | Frequency | Valid Percent |
|-------------------------------------------|-----------|---------------|
| HC cost covered by                        |           |               |
| Self                                      | 481       | 96.0          |
| Government/free                           | 3         | 0.6           |
| Community                                 | 5         | 1.0           |
| Others                                    | 12        | 2.4           |
| Strongly agree                            | 98        | 19.5          |
| Agree                                     | 79        | 15.7          |
| Neutral                                   | 77        | 15.3          |
| Disagree                                  | 157       | 31.2          |
| Strongly disagree                         | 90        | 18.3          |
| Total                                     | 501       | 100.0         |

#### Getting money to pay for healthcare

| Difficulty in paying                      | Frequency | Valid Percent |
|-------------------------------------------|-----------|---------------|
| Very difficult                            | 197       | 39.2          |
| Difficult                                 | 161       | 32.1          |
| Not difficult                             | 144       | 28.7          |
| Total                                     | 502       | 100.0         |
| Self                                      | 481       | 96.0          |
| Government/free                           | 3         | 0.6           |
| Community                                 | 5         | 1.0           |
| Others                                    | 12        | 2.4           |
| Total                                     | 501       | 100.0         |

#### Covered HC by

| Coverage type     | Frequency | Valid Percent |
|-------------------|-----------|---------------|
| Self              | 481       | 96.0          |
| Government/free   | 3         | 0.6           |
| Community         | 5         | 1.0           |
| Others            | 12        | 2.4           |
| Total             | 501       | 100.0         |

#### Borrow money from

| Source          | Frequency | Valid Percent |
|-----------------|-----------|---------------|
| Yes             | 153       | 18.4          |
| No              | 677       | 81.6          |

#### Nearest HF to home

| Nearest HF        | Frequency | Valid Percent |
|-------------------|-----------|---------------|
| Health center     | 206       | 24.8          |
| Clinic (Private)  | 326       | 39.3          |
| private hospital  | 90        | 10.8          |
Time to reach the nearest health facility in < 10 min and 10–20 min were 63 and 75% less likely willing to join CBHI when compared to the time it took >20 mins. Ability to raise 200ETB during emergency had an association with willingness to uptake CBHI (COR = 2.02, 95% CI: 1.35–3.03); but it doesn’t have an association when adjusted (Table 5).

Discussion

Community-based health insurance (CBHI) is one of the ways to provide health insurance for the informal sector and the rural populace. CBHI, in spite of its problems relating to the extent of resource pooling, has been shown to facilitate and improve access to healthcare services especially among children, pregnant women and the elderly.

The overall aim of this study was to assess the willingness of CBHI uptake and associated factors among the informal sector workers in urban towns. The proportion of willingness of CBHI uptake was 86.3%. Educational status, family size, easiness of getting money to pay for health care services; the time it took to reach the nearest health facility and frequency at which the respondents want to pay the yearly premium were the associated factors for the willingness of CBHI uptake.

Age of the respondents, wealth, knowing the benefits package of CBHI and ability to pay 500 ETB (USD $17.9) as annual premium were variables having a statistically significant association with the willingness of CBHI uptake in crude; but have no association when adjusted. Age with 45–54 categories was 4.51 (COR = 4.51: 95% CI, 1.5–13.58) times more likely willing to uptake CBHI than 15–24 age category. Those able to raise 200 ETB (USD $7.14) during the emergency were 2.02 times more likely to enroll in CBHI than their counterparts (COR = 2.02: 95%CI, 1.35–3.03). Knowing the benefits package of CBHI make the respondents wish to join CBHI (COR = 2.49: 95%CI, 1.61–3.83). And an ability to pay 500 ETB (USD $17.9) as annual premium made them will to uptake CBHI (COR = 21.62: 95%CI, 7.62–61.32).

The willingness of CBHI uptake of this survey is similar to a previously conducted survey in Cameroon 86.2% [12]. This proportion finding is higher than research conducted in Ecuador 69.3% [13]. This high discrepancy may be related to methodological issues and differences in the study areas. But, the current finding is less than that found in 2004 in Ethiopia, in which the probability of willingness to join the scheme was 94.7% [14]. The reason may be attributed to differences in the study areas and time of the study.

Having an educational level of a certificate/diploma were 3.38 times more likely to uptake CBHI, (AOR = 3.38: 95% CI, 1.27–8.98). This finding is supported by another study, in which persons having higher education level were willing to uptake CBHI [15]. It is also supported by a study conducted in Osun State, Nigeria where people with low level of education were less willing to join CBHI [16].

In this finding, respondents with 3–6 family sizes were about two times more likely willing to join CBHI than with less than three family sizes. This finding was also supported by other findings, in which respondents
Table 4 Distribution of awareness on CBHI, willingness to join CBHI and ability to pay for CBHI in Oromia Region, 2018, Ethiopia

| Variables                                      | Frequency | Percentage |
|------------------------------------------------|-----------|------------|
| Ever heard about CBHI                         | 619       | 74.6       |
| Yes                                            | 211       | 25.4       |
| No                                             | 473       | 57         |
| Know the benefits package of CBHI              | 237       | 28.6       |
| Yes                                            | 320       | 38.6       |
| No                                             | 67        | 8.1        |
| Benefits package of CBHI                      | 89        | 10.7       |
| Drugs                                          | 43        | 5.2        |
| Surgery except for cosmetic Surgery            | 8         | 1.0        |
| Inpatient stay                                 | 29        | 3.5        |
| Laboratory Tests                               | 289       | 34.8       |
| Others                                         | 37        | 4.5        |
| Heard CBHI from                                | 42        | 5.1        |
| Radio                                          | 219       | 26.4       |
| HEW                                            | 29        | 3.5        |
| TV                                             | 289       | 34.8       |
| Neighbor                                       | 37        | 4.5        |
| Leader of HAD                                  | 42        | 5.1        |
| Others                                         | 2         | 0.2        |
| Missing                                        | 212       | 25.5       |
| Willing to uptake CBHI                        | 716       | 86.3       |
| Yes                                            | 114       | 13.7       |
| No                                             | 243       | 33.9       |
| Reason to uptake CBHI                         | 68        | 9.5        |
| It provides free access to medical care        | 259       | 36.2       |
| To help others                                 | 15        | 2.1        |
| For security and peace of mind in times of ill-Health | 117     | 16.3       |
| Facing health problem                         | 14        | 2.0        |
| Frequently unable to cover medical care cost at the time of ill-health | 50 | 46.3 |
| Other                                          | 34        | 31.5       |
| Reason for not join the scheme                 | 24        | 22.2       |
| not have enough money to pay                   | 426       | 72.1       |
| Do not need health insurance                   | 415       | 58.0       |
| Other                                          | 301       | 42.0       |
| Willing to pay for CBHI                        | 688       | 96.2       |
| Yes                                            | 28        | 3.8        |
| No                                             | 415       | 58.0       |
| Can pay 500ETB/year                            | 404       | 64.2       |
| Yes                                            | 301       | 42.0       |
| No                                             | 225       | 35.8       |
| Pay the initial bid as annual premium/HH for CBHI | 404     | 64.2       |
| Yes                                            | 225       | 35.8       |
| No                                             | 165       | 27.9       |
| Pay if the premium is double                   | 426       | 72.1       |
| Yes                                            | 362       | 74.2       |
| No                                             | 426       | 72.1       |
| Pay if the premium is halved                   | 126       | 25.8       |
| Yes                                            | 397       | 47.3       |
| No                                             | 114       | 13.6       |
| Max. pay/year as a premium                     | > 1000    | 7.9        |
| < 500                                          | 397       | 47.3       |
| 500–1000                                       | 114       | 13.6       |
| The reason the HH not willing to pay for the scheme | 10       | 15.6       |
| Doubt the management of the fund              | 30        | 46.9       |
| Because of lack of money                       | 30        | 46.9       |
having a large family had a positive association with willingness to uptake CBHI [17, 18].

Different researches showed that, the wealth or socioeconomic standing of households and individuals is associated with the uptake of CBHI [11, 17]. A similar finding was also observed in India that; wealth was associated with uptake of CBHI [18]. Our study supported the above finding in which a respondent with difficulty in paying for the health care was 82% less likely to uptake CBHI compared to those with no difficulty. From this premise, it is conceivable to find that the poor are unwilling to uptake the scheme.

In terms of time taken to reach the nearest health facility within 20 min was also found to affect enrolment to CBHI. This finding was supported by other studies conducted in low and middle-income countries [16].

**Limitation of the study**

The Contingent Valuation Method has the limitation of testing consumers’ demand; that means CVM cannot approve whether the consumer actually pays the number of premiums that they said for the study and the study only shows the temporal link between dependent and independent variables.

Double-bounded dichotomous choice contingent valuation method may result in inflated value because respondents may say “yes” for the amount of money they will be asked to pay and it has starting point bias.

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**Table 4** Distribution of awareness on CBHI, willingness to join CBHI and ability to pay for CBHI in Oromia Region, 2018, Ethiopia (Continued)

| Variables                                      | Frequency | Percentage |
|-----------------------------------------------|-----------|------------|
| Out-of-pocket payment is better than CBHI scheme | 17        | 26.6       |
| Others                                        | 7         | 10.9       |
| Frequency want to pay the yearly premium      |           |            |
| Annual flat rate                              | 230       | 32.5       |
| Bi-annual flat-rate                           | 278       | 39.3       |
| Quarterly a year flat-rate                    | 144       | 20.3       |
| Monthly                                       | 46        | 6.5        |
| Others                                        | 10        | 1.4        |

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**Fig. 2** Willingness of CBHI uptake if established in urban towns of Oromia, 2018, Adama, Ethiopia
As the study employed an interviewer administered questionnaire that might result social desirability and recall bias.

**Conclusions**

Despite the above limitations, in urban towns of Oromia regional state, if CBHI established about 86.3% of the households would enroll in the scheme. Having education, with a family size between three & six, and less than 20 min it took to reach the nearest health facility were positively associated with the odds of willingness of CBHI uptake, but having difficulty in paying for health care was negatively associated with the odds of willingness of CBHIU.

**Abbreviations**

CBHF: Community-Based Health Financing; CBHI: Community-Based Health Insurance; CBHIU: Community-Based Health Insurance Uptake; CHI: Community health insurance; EHSFR: Ethiopia health sector financing

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### Table 5 Risk factors for the willingness of CBHI uptake in survey data in urban towns in Oromia region, 2018, Ethiopia

| Variables                        | Willingness to join CBHI | Crude OR (95% CI) | Adjusted OR (95% CI) |
|----------------------------------|--------------------------|------------------|----------------------|
|                                  | Yes (%) | No (%) |                      |                      |
| **Age of the respondents**       |         |        |                      |                      |
| 15–24                            | 19      | 6      | 1                    | 1                    |
| 25–34                            | 180     | 41     | 1.39 (0.52, 3.69)    | 0.40 (0.70, 2.28)    |
| 35–44                            | 274     | 41     | 2.11 (0.70, 5.59)    | 0.52 (0.09, 2.99)    |
| 45–54                            | 157     | 11     | 4.51 (1.50, 13.58)** | 1.04 (0.17, 6.49)    |
| > 54                             | 86      | 15     | 1.81 (0.62, 5.27)    | 0.38 (0.06, 2.39)    |
| **Educational status**           |         |        |                      |                      |
| Can’t read and write             | 33      | 10     | 1                    | 1                    |
| Can read and write               | 63      | 6      | 3.18 (1.06, 9.52)    | 3.84 (1.23, 12.01)*  |
| Grade 1–8                        | 184     | 20     | 2.79 (1.20, 6.49)    | 2.90 (1.16, 7.30)**  |
| Grade 9–12                       | 236     | 54     | 1.26 (0.58, 2.70)    | 1.38 (0.58, 3.33)    |
| Certificate/diploma              | 161     | 17     | 2.87 (1.21, 6.82)    | 3.38 (1.27, 9.89)**  |
| 1st degree and above             | 39      | 4      | 2.96 (0.85, 10.30)   | 2.79 (0.17, 10.87)   |
| **Family size**                  |         |        |                      |                      |
| < 3                              | 238     | 58     | 1                    | 1                    |
| 3–6                              | 410     | 45     | 2.22 (1.46, 3.38)    | 1.95 (1.21, 3.15)**  |
| > 6                              | 68      | 11     | 1.51 (0.75, 3.03)    | 1.21 (0.55, 2.68)    |
| **Getting money to pay for health care** |         |        |                      |                      |
| Very difficult                   | 164     | 33     | 0.23 (0.10, 0.55)    | 0.18 (0.07, 0.49)**  |
| Difficult                        | 132     | 29     | 0.25 (0.12, 0.59)    | 0.17 (0.06, 0.46)**  |
| Not difficult                    | 137     | 7      | 1                    | 1                    |
| **Time to reach nearest health facility** |         |        |                      |                      |
| < 10mins                         | 217     | 45     | 0.69 (0.40, 1.18)    | 0.37 (0.17, 0.80)**  |
| 10-20 min                        | 305     | 48     | 0.52 (0.30, 0.91)    | 0.25 (0.11, 0.58)**  |
| > 20mins                         | 194     | 21     | 1                    | 1                    |
| **Able to raise 200ETB during emergency** |         |        |                      |                      |
| Yes                              | 394     | 43     | 2.02 (1.35, 3.03)**  | 1.06 (0.58, 1.97)    |
| No                               | 322     | 71     | 1                    | 1                    |
| **Know the benefits package of CBHI** |         |        |                      |                      |
| Yes                              | 426     | 47     | 2.49 (1.61, 3.83)**  | 2.78 (0.61, 10.77)   |
| No                               | 186     | 51     | 1                    | 1                    |
| **can pay 500ETB as annual premium** |         |        |                      |                      |
| Yes                              | 400     | 4      | 21.62 (7.62, 61.32)** | 1.08 (0.47, 17.56)   |
| No                               | 185     | 40     | 1                    | 1                    |

NB: * = significant, *p < 0.05, **p < 0.01 and ***p < 0.001.
reform; ETB: Ethiopian Birr; FMOH: Federal ministry of health; HH: Household; HSFRP: Health sector financing reform program; LMIC: Low and middle-income country; MINS: Minutes; OOP: Out-of-pocket payment; ORHB: Oromia regional health bureau; PCA: Principal component analysis; SPSS: Statistical software for social science; USD: United States dollar; WHO: World Health Organization; WTJ: Willingness to Join; WTP: Willingness to pay; WTU: Willingness to Uptake

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Authors’ contributions
Design and conception of the study: AZ, ML, AD, HL, MA, EM, TD, SG, ID, and DA; Performed the study: AD, MA, EM, DT, SG, HL, AZ and ML; Data analysis and interpretation: AD, MA and HL; Writing of the manuscript: AD, MA; All authors read and approved the final manuscript.

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Availability of data and materials
Data and materials are available and can be shared by the corresponding author.

Ethics approval and consent to participate
The study was reviewed and approved by the Ethical Clearance Committee of Oromia regional Health bureau, Addis Ababa, Ethiopia. Permission letter was obtained from selected study urban and communicated with Kebele leaders. The purpose and the importance of the study were explained and verbal consent was obtained from the parents/guardians of the minors and from each participant (above the age of 16). The verbal consent was preferred because of its adequacy for questionnaire surveys of a non-sensitive nature. Moreover, confidentiality of the information was guaranteed by using unspecified questionnaires and by keeping the data in a secured place.

Consent for publication
‘Not Applicable’.

Competing interests
There is no competing interest among the authors.

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