

# Community Based Health Insurance Enrollment and Associated Factors in Sidama Region, Ethiopia

**Berhanu Bifato** (✉ [berhanubif12@gmail.com](mailto:berhanubif12@gmail.com))

Hawassa College of Health Science Department of Public Health, Hawassa

**Amanuel Ayele**

Hawassa College of Health Science Department of Public Health, Hawassa

**Muse Rike**

Hawassa College of Health Science Research and Publication Core Process, Hawassa

**Dalecha Dangura**

Sidama Regional Health Bureau Medical services core process, Hawassa

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## Research Article

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# Abstract

**Background:** Community based health insurance is accepted as a capable tool of health system improvement and improves the health status of enrollees. Its mechanisms look for to protect low-income households from health related risks through mutual risk sharing at the community level. Even though Government's efforts, the Community based health insurance enrolment rate remained low.

**Objective:** To assess the community based health insurance enrollment and associated factors in Sidama Region, Ethiopia.

**Methods:** A community based cross-sectional study was conducted in Sidama Region, 2020 using a pretested structured questionnaire. The study was conducted in randomly selected 770 households. The data entry was made by using Epi-info 2007 software. The data was analyzed by using SPSS version 20. Logistic regression statistical model was used to compute odds ratio with its 95% confidence interval to test the associations between dependent and independent variables. Then variables found to have  $P < 0.25$  in the bi-variable analysis taken as candidate for multivariable analysis. A P-value of 0.05 with a confidence interval of 95% was used to declare level of statistical significance.

**Result:** Among 770 sampled households, 762 were interviewed and the response rate was 98.9%. About 20.2% of the respondents were enrolled in the scheme. Covariates such as ages 31-59 years (AOR :2.62, 95% CI :1.48-4.66) and  $\geq 60$  years (AOR : 2.87, 95% CI :1.23-6.74), households who had no formal education (AOR:1.66, 95% CI:1.02-2.72), affordability of premium (AOR:0.28, 95% CI: 0.15-0.54), knowledge on CBHI (AOR: 3.53; 95% CI: 1.21, 10.27) and perceived quality (AOR: 0.52, 95% CI: 0.25-0.87) had statistically significant association with community based health insurance enrollment.

**Conclusion:** The prevalence of community based health insurance enrollment was low. This study identified the need to create knowledge and bring behavioral change in the community on the scheme in general. This study also revealed that regular contribution issue needs improvement based on affordability of households and building their trust on the program and efforts should be devoted to enhance quality of healthcare services to increase the enrollment.

## 1. Introduction

In the world, particularly in the developing countries, a large number of people are suffering and dying due to lack access to even the most basic medical care. This is due to the inability of the poor and unexpected health shock, to pay for health care services (1). Direct out of pocket payments are prominent health care funding system in LMICs (2, 3). In Ethiopia, households Out of Pocket expenditure was 34% (4) that risks the households to catastrophic health expenditure and has negative impact on health care access and utilization.

Preventing public from out-of pocket charges for healthcare at the time of use is an important step towards avoidance of the financial hardship associated with paying for health service (5). Community

based health insurance is recognized as a capable tool of health system upgrading for low-income people and improves the health status of enrollees and enhances productivity and labor supply (6). However, securing health enrolment is critical for sustaining such scheme and many factors including insurance scheme design features such as benefit package, inflexible payment schedules and lack of awareness and clients' satisfaction has a crucial role for the successful implementation of such scheme (7).

Appropriately implemented CBHI schemes would add on better health financing and better utilization of health care in developing countries (8). Community based health insurance mechanisms seek to protect low-income households from health related risks through common risk sharing at the community level(7).

Ethiopia launched Community Based Health Insurance in four selected regions in 2011(4). National overall enrolment was found 45.5% and regionally the enrollment was 44%, 35%, 49%, 34% in Oromia, SNNP, Amhara and Tigray respectively (9). After evaluation of the findings, government of Ethiopia had scaled up to 161 districts with main intentions of improving quality, financial access, remove/reduce financial burdens on households during illness, mobilizing additional resources for the health sector and reach universal coverage(10).

Even though Government's efforts to address the challenge of high out of pocket spending during use of health services through introduction of community-based health insurance, the Sidama region CBHI enrolment remained low(11).The evidence on the associated factors with Community Based Health Insurance enrollment in the study area is unidentified.

## **2. Materials And Methods**

### **2.1. Study setting and period**

Sidama Regional State is one of the newly formed tenth regional states in Ethiopia, and it consists of 32 woredas and 4 Town administrations. The study was carried out in eleven woredas. It has an estimated population of 3,893,817in 2019(11).In the region, there are 1 referral, 4 General and 13 District Hospitals, 134 Health centers and 532 Health posts. The study was conducted in April 2020.

### **2.2. Study design**

A community based cross-sectional study was conducted.

### **2.3. Sample Size**

The sample size was determined by using single population proportion formula and Epi info 7 on the bases of the following assumption: Proportion of CBHI membership enrolment (35%) which is taken from

a research done in SNNPR (9), margin of error (5%), design effect=2, confidence level of 95% and statistical power (80%). Based on the above information a sample size calculated was 700. For possible non-response 10% contingency was added and the ultimate sample size was 770HHS.

## 2.4. Sampling methods and procedure

In this study, multistage sampling method was applied. Study was conducted in eleven woredas, which are randomly selected among thirty-six woredas. The number of kebeles and households were allocated for each eleven selected woredas proportionally. Then to obtain 770 study subjects systematic sampling techniques were used. The first HH was chosen near as a starting point by drawing a number. The sampling interval was calculated by dividing the total sample size to the total number of HHs in the selected kebeles ( $n/N$ ). The study subjects were addressed using systematic sampling technique.

## 2.5. Data collection tools and techniques

A structured questionnaire was used to collect data via face-to-face interview from the head/spouse of selected households. The questionnaire was prepared first in English, translated to “Sidamu afoo”, and then again translated back to English to check its consistency. Twenty-two diploma and two BSc nurses were assigned for data collection and supervision respectively. To maintain the quality of data, pre-test was conducted on 5% of the sample size in other kebeles, which were not included in the study. Training was also provided for both data collectors and supervisors for one-day.

## 2.6. Operational Definitions

**Community based health insurance enrollment:** Households that are involved in CBHI scheme and using or can use health services by their new and renewed membership cards at the time of investigation(12).

**Household wealth index:** Households were given scores based on the number and kinds of consumer goods they own, these scores are derived using principal component analysis. Wealth quintiles are compiled by assigning the household score to each usual household member, ranking each person in the household population by her or his score (13).

**Out of Pocket payment:** Payments from households flow to health facilities in the form of user fees and are highly regressive, with a higher burden on poorer households(12)

**Perceived quality of services:**

The extent of the community’s views on the quality of health service delivery and is measured by one item, two-point Likert scale questions.

## 2.7. Data analysis

Data were entered into Epi-info V.7 and analysis was performed with SPSS V.20. Descriptive statistics was computed to describe the study objectives in terms of appropriate variables. Binary and multi-variable logistic regression analyses were performed to identify the most important variables, which could determine enrollment decision in CBHI scheme. Variables with a p-value of  $\leq 0.25$  on binary logistic regression analysis were entered and further computed on the multivariable logistic regression model(14). Associations between the study and outcome variables were described using odds ratio at 95% CI. The Hosmer– Lemeshow test was checked and the model adequately fit to the data at the p-value  $> 0.05$ .

## 3. Results

### 3.1. Socio-demographic characteristics of study participants

From 770 sampled households, 762 participated in the study which yielded a response rate of 98.9%. The mean age of the respondents was 43.27 years, ranging from 19-70 years with standard deviation of 11.9years.

Regarding educational status of respondents 459 (60.2%) had no formal education and 303(39.8%) had formal education. The annual income of the households as calculated by principal component analysis showed that in a category of Poor 306(41%), Medium 152(19%) and Rich 304(40%). The annual household income, as estimated from the amount earned from sales of coffee, khat, maize, and local products in one year time, was 5000 ETB ranging between 900–15000ETB.(**Tab.1**)

**Table 1: Socio-demographic characteristic of the study participants on community based health insurance enrollment and associated factors, in Sidama region Ethiopia 2020(n =762)**

<b>Variables</b>	<b>Categories</b>	<b>Frequency (%)</b>
Age of Respondents	<30	136(17.8)
	31-59	527(69.2)
	>= 60 Years	99(13.0)
Sex	Male	544(71.4)
	Female	218(28.6)
Marital status	Married	710(93.2)
	Divorced	15(2)
	Widowed	35(4.6)
	Separated	2(0.2)
Religion	Orthodox	80(10.5)
	Muslim	44(5.8)
	Protestant	628(82.4)
	Others	10(1.3)
Ethnicity	Sidama	695(91.2)
	Amhara	36(4.7)
	Gurage	26(3.4)
	Others	5(0.7)
Occupation	Agriculture	539(70.7)
	Merchant	181(23.8)
	Government employ	22(2.9)
	Laborers	19(2.5)
	Others	1(0.1)
Family size	<3	156 (20.4)
	3-6	487(64.0)
	>=6	119(15.6)

Educational status	Unable to read & write	221(29)
	Able to read & write	238(31.2)
	Primary education	167(21.9)
	Secondary & above education	136(17.8)
Wealth index of households		
	Poor	306(41%)
	Medium	152(19%)
	Rich	304(40%)
Annual income of households	>1200	94(12.3)
	1200-3600	150(19.7)
	3600-7200	308(40.4)
	>7200	210(27.6)

### 3.2 Community based health insurance enrollment and renewal status

Regarding enrollment rate, about 154(20.2%) participants were member in Community Based Health insurance. Among one hundred fifty four enrolled in CBHI, only 94 participant were renewed their membership card prior to study period (fig.1).

### 3.3. Factors associated with community Based Health Insurance enrollment

Age of respondents had showed significant association; accordingly household heads falling in age group of 31-59 years and above 60 years were 2.62 and 2.87 times more likely enrolled in CBHI than age group less than 30 years with (AOR :2.62, 95% CI: 1.48-4.66) and(AOR: 2.87, 95% CI :1.23-6.74) respectively. Household family size was a significant determinant of enrollment in the scheme. Households who had family size 3-6 were 4.23 times more likely enroll in CBHI than fever family size (AOR : 4.23, 95%CI : 2.45-7.37).

Education of respondents was showed significant association in multivariate analyses. Respondents who had no formal education were 1.66 times more likely enrolled in CBHI than those had formal education (AOR :1.66, 95% CI:1.02-2.72)(**tab.2a**).

Knowledge of respondents towards community-based health insurance was showed significant association. Those knows the services covered under community based health insurance were 3.53 times more likely enrolled in CBHI than those had poor knowledge (AOR: 3.53 ; 95% CI:1.21-10.27). Information towards CBHI was also showed significant association. Those had ever heard about community based health insurance were 0.09times less likely enrolled in CBHI than those had no information (COR: 0.09 ; 95% CI:0.02 - 0.39) but it was not found significant in multivariate analysis(**tab.2b**).

In our study, premium (regular contribution) affordability had showed significant association both in bivariate and multivariate analysis. Those thought premium payment is not affordable were 72%less likely enrolled in community based health insurance (AOR: 0.28, 95% CI: 0.15-0.54) than the opposite. (**tab. 2b**)

Households having chronic illness had showed significant association both in bivariate and multivariate analyses with ((COR :0.06, 95% CI: 0.04-0.09) and (AOR : 0.26, 95% CI: 0.10-0.61).Those households had no chronic illness in the member were 74% less likely enrolled in community based health insurance. Similarly, households with no history of any illness in the past three months also had showed significant association (AOR: 0.08, 95% CI: 0.03-0.17)). Those encountered no any illness in the past three months were 0.08 times less likely enrolled in CBHI than counterparts. (**tab.2b**)

Regarding perceived quality of health care services, our study had showed that those perceived the quality of services was medium, were 48% less likely enrolled in CBHI than those perceived the quality of services was good in the health facility (AOR :0.52, 95% CI : 0.25-0.87). (**tab.2b**)

**Table2a: Factors which are associated with community based health insurance enrollment in Sidama region Ethiopia, 2020 (n=762)**

Variables(n=762)	CBHI enrollment		COR(95%CI)	AOR (95%CI)	P-value
	Yes (%)	No (%)			
<b>Age of respondents</b>					
<30	42(30.9)	94(61.1)			
31-59	94(17.8)	433(82.2)	2.06(1.34-3.15)	2.62(1.48-4.66)	0.01*
>=60 years	18(18.2)	81(81.8)	2.01(1.07-3.76)	2.87(1.23-6.74)	0.02*
<b>Sex of respondents</b>					
Female	38(17.4)	180(82.6)	1.28(0.86-1.93)	0.84(0.48-1.48)	0.54
Male	116(21.3)	428(78.7)			
<b>Family size</b>					
<3	57(36.5)	99(63.5)			
3-6	59(12.1)	428(87.9)	4.17(2.73-6.39)	4.23(2.45-7.37)	0.00*
>=6	38(31.9)	81(68.1)	1.23(0.74-2.03)	1.41(0.66-2.98)	0.38
<b>Educational status</b>					
No formal education	80(17.4)	379(82.6)	1.53 (1.07-2.19)	1.66 (1.02-2.72)	0.04*
Had formal education	74(24.4)	229(75.6))			
<b>Marital status</b>					
Married	146(20.5)	566(79.5)			
Divorced	2(13.3)	13(86.7)	1.68(0.37-7.5)		NS
Widowed	6(17.1)	29(82.9)	1.25(0.51-3.06)		NS
<b>Annual income</b>					
<1200	15(16.0)	79(84.0)	1.32(0.69-2.52)		NS
1200-3600	32(21.3)	118(78.7)	0.92(0.55-1.55)		NS
3600-7200	65(21.1)	243(78.9)	0.94(0.61-1.44)		NS

>7200	42(20.0)	168(80.0)			
<b>Wealth index</b>					
Poor	62(20.3)	244(79.7)	1.02(0.69-1.51)		NS
Medium	29(19.1)	123(80.9)	1.10(0.68-1.80)		NS
Rich	63(20.7)	241(79.3)			
<b>Occupation of the respondents</b>					
Farmer	100(18.6)	439(81.4)	0.73(0.30-1.78)	0.50(0.14-1.84)	0.29
Merchant	48(26.5)	133(73.5)	0.46(0.18-1.16)	0.40(0.11-1.47)	0.17
Laborer & others	6(14.3)	36(85.7)			
<b>Distance to facility</b>					
<5 KM	101(21.8)	363(78.1)	0.78(0.54-1.13)	0.66(0.39-1.12)	0.13
>=5KM	53(17.8)	245(82.2)			

- \* = P < 0.05
- NS = Not found significant in bivariate analysis (P >0.25)

**Table 2b: Factors which are associated with community based health insurance enrollment in Sidama region Ethiopia, 2020 (n=762)**

Variables(n=762)	CBHI enrollment		COR(95%CI)	AOR (95%CI)	P- value
	Yes (%)	No (%)			
<b>Ever heard about CBHI program</b>					
Yes	129(22.1)	454(77.9)	1.75(1.09-2.79)*	1.48(0.74-2.97)	0.27
No	25(13.9)	154(86.1)			
<b>Do you know services covered under CBHI</b>					
Yes	147(22.9)	494(77.1)	4.84(2.21-10.63)	3.53(1.21-10.27)*	0.02*
No	7(5.8)	114(94.2)			
<b>Premium payment time convenient</b>					
Yes	71(35.3)	130(64.7)			
No	83(14.8)	478(85.2)	0.32(0.22-0.46)*	0.58(0.32-1.06)	0.07
<b>Registration fee affordable</b>					
Agree	141(24.7)	431(75.3)			
Disagree	13(6.8)	177(93.2)	0.23(0.12-0.41)*	0.67(0.28-1.56)	0.35
<b>Premium affordable</b>					
Agree	112(32.7)	230(67.3)			
Disagree	42(10.0)	378(90.0)	0.23(0.16-0.34)*	0.28(0.15-0.54)*	0.00*
<b>Currently have any loans?</b>					
Yes	37(19.0)	158(81.0)	0.90(0.59-1.36)	1.10 (0.61-2.00)	0.74
No	117(20.6)	450(79.4)			
<b>Persons with chronic illness/disability in the HHs</b>					
Yes	85(68.0)	40(32)			
No	69(10.8)	568(89.2)	0.06(0.04-0.09)*	0.26(0.11-0.61)*	0.00*

<b>Any illness encountered in last 3 months</b>					
Yes	102(64.6)	56(35.4)			
No	52(8.6)	552(91.4)	0.05(0.03-0.08)*	0.08(0.03-0.17)	0.00*
<b>Perceived quality of Health care services</b>					
Poor	47(14.7)	272(85.3)	1.18(0.68-2.05)*	1.10(0.0.51-2.40)	0.81
Medium	85(27.2)	228(72.8)	0.55(0.32-0.92)*	0.52(0.25-0.87)	0.01*
Good	22(16.9)	108(83.1)			
<b>Level of satisfaction with health care services &amp; costs</b>					
Very satisfied	19(26.4)	53(73.6)	0.40(0.22-0.74)*	0.83(0.36-1.89)	0.65
Average	92(26.4)	256(73.6)	0.40(0.27-0.59)*	0.64(0.37-1.09)	0.09
Not satisfied	43(12.6)	299(87.4)			

\* = P < 0.05

## 4. Discussion

In the current study the following variables had significantly associated with community based health insurance enrollment such as: Ages, Family size, Education, Affordability of premium, Knowledge on community based health insurance, and Perceived quality of Health care services.

The prevalence of community based health insurance enrollment was found 20.2%. It found to be community based health insurance enrollment was practiced poorly in study area. The study undertaken on enrolment in different areas had showed higher proportion than our study (9, 12, 15, 16). Compared to this CBHI enrollment in our study area was found to be very low. This variation in enrolment rate may be attributed to socio-cultural, socio-economic, and quality of health care services and officials commitment of study area.

Household heads age was significantly associated with community based health insurance enrollment, accordingly household heads falling in age group of 31-59 years and above 60 years were 2.62 and 2.87times more likely enrolled in CBHI than age group less than 30 years with respectively. Our findings are slightly similar with the study conducted in Kenya(17). On the other hand, the study done in

Thehuldere district and Debub Bench district respondents' in relatively older age groups were negatively associated with CBHI requirement compliance and willingness to join CBHI(18, 19). This discrepancy might be due to the fact that older individuals more fear anticipated sickness than younger individuals hence they buy health insurance with minimum cost and secure health care utilization.

Household family size was an important determinant of enrollment in the scheme. Households who had family size 3-6 were 4.23 times more likely enroll in CBHI than fewer family sizes. This finding is similar with studies done in Fogera district, North west Ethiopia and Tanzania(20, 21). Larger households were more likely to enroll in health insurance than smaller ones. This was attributed to the financial problem that large households faced at times of risk. Accordingly, the more the household have larger family size; the likelihood of being ill at least one member in it would be higher and the more the tendency to enroll in health insurance.

Educational level of the household had showed significant association with community based health insurance enrollment; households who had no formal education were 1.66 times more likely enrolled in CBHI than those had formal education. Consistent with our finding, the study conducted in Debub bench had revealed that respondents who had no education were about 3 times more likely to join the scheme than those who completed grade 1–8(18). But, this finding is in contrary with the study conducted in Kenya where women who had primary and secondary level of education had higher likelihood of health insurance coverage than those who have no formal education, like wise better education was associated with high probability of being insured in the study conducted in rural Senegal(22). Another study conducted in Gida Ayana district Oromia region also depicted that house hold heads having formal education were about 6 fold more likely associated with community based health insurance uptake than those who have no formal education(23). This could be attributed to educated peoples negative attitude to the scheme that might be due to their expectation to quality of services health facility render.

In the current study, knowledge of respondents towards community based health insurance was showed positive association. Those knows the services covered under community based health insurance were 3.53 times more likely enrolled in CBHI than those had poor knowledge. This finding is supported by study conducted in rural Kenya which revealed knowledge is positively associated with health insurance uptake(19, 22). Another study in Gida Ayana district depicted, respondents having good knowledge of community based health insurance had about 2 times more likelihood of utilizing health insurance than those having poor knowledge(23).Possible explanations for this could be the fact that knowledge changes the health seeking behavior of the individuals and enhances the understanding of the advantages and disadvantages of the health service program leading to enrollment.

The quality of health services of health institutions was a significant factor for enrollment in which those perceive the quality was Medium were 48% less likely enrolled in CBHI than those perceived the quality of services was good in the health facility. This finding is in-line with other studies results(24, 25). This might be due to the direct benefits gained from the quality of services delivered by health institutions.

In Ethiopian CBHI scheme, the contribution (premium) was collected from the households at the pre-set flat-rate amount(26). When the contribution rate was made flat-rate automatically; it became more regressive regardless of households' income status(26). Our study also highly supported that those households disagree the current premium payment were 72% less likely enrolled in community-based health insurance than those agree. In line with our study, Study done in Sunsari District showed that for dropout, decrease in premium of the package would have motivated the dropouts to renew the membership(8). Similarly, another study in Gida Ayana district also showed that households disagree with premium affordability were about 50 percentage points less utilized community based health insurance than those that agree(23). Possible explanations for this could be affordability issue may be related to the shortage of money to pay the premium or initially, it might not consider the livelihood status of the community.

## 5. Conclusion

This study showed that community based health insurance enrollment rate of Sidama region was 20.2%. There were identified factors such as: age of the households, family size, education, and knowledge on CBHI, perceived quality of health care services, and affordability of premium had statistically significant association with community based health insurance utilization. Therefore, create knowledge in the community on the scheme, give attention for households with large family, improving the quality of health services are vital to enhance enrollment. This study also revealed that regular contribution issue needs improvement based on affordability of households and building their trust on the program are some of the best way for increasing enrollment.

## 6. Recommendations

The following recommendations may be put forward for successful implementation of CBHI programmes.

### **District health insurance officials**

- Should arrange health insurance education sessions at different level in order to create knowledge and bring behavioral change in the community on the issues related to concepts and principles of community based health insurance in general and
- Improve the quality of health care services that might increase the enrollment.
- The stakeholders had to give emphasis on fewer as well as larger household members to increase enrollment on community-based health insurance.
- They should strongly work on young age household head/spouses simultaneously to that of older age groups to build trust on the program.

## **Regional health insurance steering committee**

- In collaboration with district health insurance management officials, steering committee had to increase trust on pre-set payment or needs to amend premium payment that arises as a challenge.

## **List Of Abbreviations**

AOR : Adjusted Odds Ratio; COR: Crude Odds Ratio; CBHI: Community Based Health Insurance; DE: Design Effect; EDHS :Ethiopia Demographic Health Survey; FMHO: Federal Ministry of Health; LMIC: Low and Middle Income countries; SNNPR: South Nation Nationality and Peoples Region; SPSS: Statistical Package for Social Science

## **Declarations**

### **Ethics approval and consent to participate**

All methods were carried out in accordance with relevant guidelines and regulations. It was approved by the ethical review committee of Hawassa College of Health Sciences and the approval letter with reference number HSC/05/15/1051/1 was obtained. The study participants were briefed about the purpose of the study, their right to participate or not, and written informed consent was obtained from each participants. The collected data were kept confidential.

### **Consent for publication**

Not applicable

### **Availability of data and materials**

Data will be provided through corresponding author on reasonable request

### **Competing interests**

The authors have declared that no competing interests exist.

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Hawassa College of Health Science funded the study. But, they had no role on interpretation of results.

### **Authors' contributions**

Berhanu Bifato conceived the study, Undertook statistical analysis, and drafted the paper. Mr. Amanuel Ayele, Muse Rike and Dalecha Dangura performed major contributions to the study design and statistical analysis. All authors have read and approved the final version of this manuscript.

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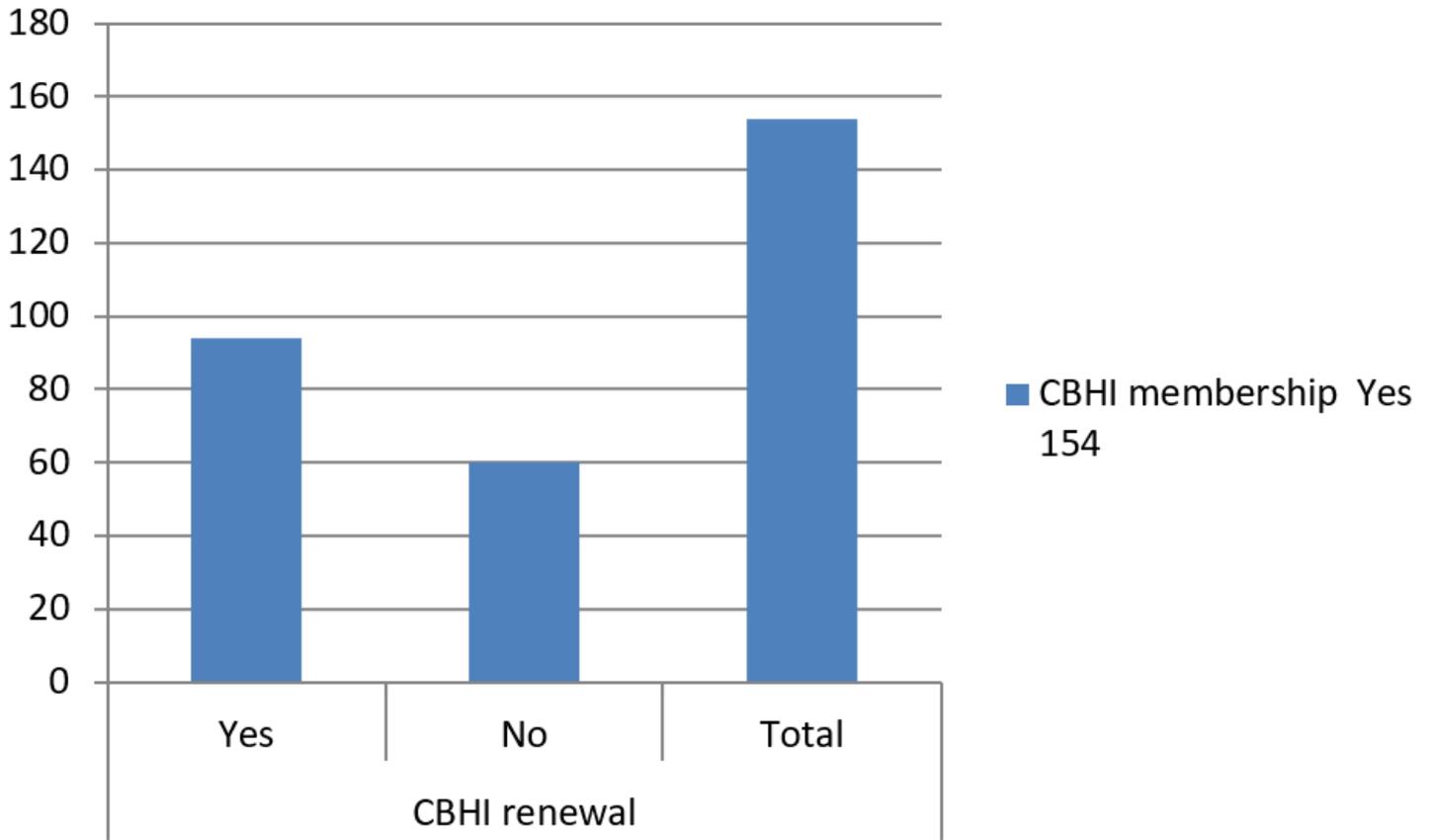
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## Figures



**Figure 1**

Bar graph depicting membership status in community based health insurance in Sidama Region Ethiopia, 2020. (n=762)