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

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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 to protect lowincome households from health-related risks through mutual risk-sharing at the community level. Even though the Government's effort, 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, by using a pretested structured questionnaire. The study was conducted in randomly selected 770 households. The data entry were made by using Epi-info 2007 software. The data was analyzed by using SPSS version 22. Logistic regression statistical model was used to compute the 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 were taken as candidates for multivariable analysis. A p-value of 0.05 with a confidence interval of 95% was used to declare level of statistical significance.

Results: 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 ≥ 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 the regular contribution issue needs improvement based on affordability of households and building their trust on the program and efforts should be devoted to enhancing the quality of healthcare services to increase enrollment.

Keywords: Community based health insurance; Enrollment; Sidama region

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

INTRODUCTION

In the world, particularly in developing countries, a large number of people are suffering and dying due to a lack of access to even the most basic medical care. This is due to the the poor and unexpected health shock's; inability to pay for health care services [1]. Direct out-of-pocket payments a prominent health care funding system in Low and Middle-Income Countries [2,3]. In Ethiopia,

households Out of Pocket expenditure was 34% which risks the households to catastrophic health expenditure and has a negative impact on health care access and utilization [4]. Preventing the 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 services [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 insurance enrolment is critical for sustaining such scheme. Many factors, including insurance scheme design features such as benefit package, inflexible payment schedules, and lack of awareness and clients' satisfaction, have a crucial role in the successful implementation of such scheme [7]. Appropriately implemented Community-based Health Insurance 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, South Nation Nationality and Peoples state, Amhara and Tigray respectively [9]. After evaluation of the findings, the 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 the Government's efforts to address the challenge of high out-of-pocket spending during the use of health services through the 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.

METHODS

Study setting and period

Sidama Regional State is one of the newly formed tenth regional states in Ethiopia, which is found about 275 KM far from the capital city Addis Ababa to the South. The study was carried out in eleven woredas in the Sidama region. It has an estimated population of 3,893,817 in 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.

Study design

A community based cross-sectional study was conducted.

Sample size

The sample size was determined by using single population proportion formula and Epi info 7 on the basis of the following assumption: Proportion of CBHI membership enrolment (35%) which is taken from the research done in SNNPR, the margin of error (5%), design effect=2, the confidence level of 95% and statistical power (80%) [9]. 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 770 HHS.

Sampling methods and procedure

In this study, The multistage sampling method was applied. The Study was conducted in eleven woredas, which are randomly selected among thirty-six woredas. In the study woredas, there are 263,749 households [11]. The number of kebeles and households were allocated for each selected woredas proportionally. Then to obtain 770 study subjects systematic sampling techniques

were used. The first HH will be chosen near as a starting point by drawing a number. The sampling interval was calculated by dividing the total sample size by the total number of HHs in the selected kebeles (n/N) and this interval was used in all kebeles to select study subjects (k=3).

Data collection tools and techniques

A structured questionnaire was used to collect data *via* face-to-face interviews 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, a pre-test was conducted on 5% of the sample size in other kebeles, which were not included in the study. The training was also provided for both data collectors and supervisors for one day.

Operational definitions

Community-based health insurance enrollment: Households that are involved in the 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 four items, two-point Likert scale questions.

Data analysis

Data were entered into Epi-info V.7 and analysis was performed with SPSS V.22. Descriptive statistics were computed to describe the study objectives in terms of appropriate variables. Binary and multivariable logistic regression analyses were performed to identify the most important variables, which could determine enrollment decisions in the CBHI scheme. Variables with a p-value of ≤ 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 an odds ratio at 95% CI. The Hosmer-Lemeshow test was checked and the model adequately fit the data at the p-value >0.05.

RESULTS

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 a standard deviation of 11.9 years.

Regarding the 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

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).

Variables	Categories	Frequency (%)
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 and write	221 (29)
	Able to read and write	238 (31.2)
	Primary education	167 (21.9)
	Secondary and 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)

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 (Table 1).

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 (Figure 1).

Factors associated with community Based Health Insurance enrollment

Age of respondents had shown significant association; accordingly household heads falling in the 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 to enroll in CBHI than those had family sizes less than three (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 to enroll in CBHI than who had formal education (AOR: 1.66, 95% CI: 1.02-2.72). 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 to enroll in CBHI than who had poor knowledge (AOR: 3.53; 95% CI:1.21-10.27).

In our study, premium (regular contribution) affordability had shown significant association both in bivariate and multivariate analysis. That 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. Households having chronic illness had shown significant association both in bivariate and multivariate analyses with (COR: 0.06, 95% CI: 0.04-0.09) and (AOR: 0.26, 95% CI: 0.100.61). Those households that had no chronic illness in the member were 74% less likely to enroll 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 who encountered no illness in the past three months were 92% times less likely to enroll in CBHI than their counterparts.

Regarding the perceived quality of health care services, our study had shown that those who perceived the quality of services was medium, were 48% less likely to enroll in CBHI than those who perceived the quality of services was good in the health facility (AOR:0.52, 95% CI : 0.250.87) (Table 2).

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, Those knows services covered under community based health insurance and Perceived Quality of Health care services.

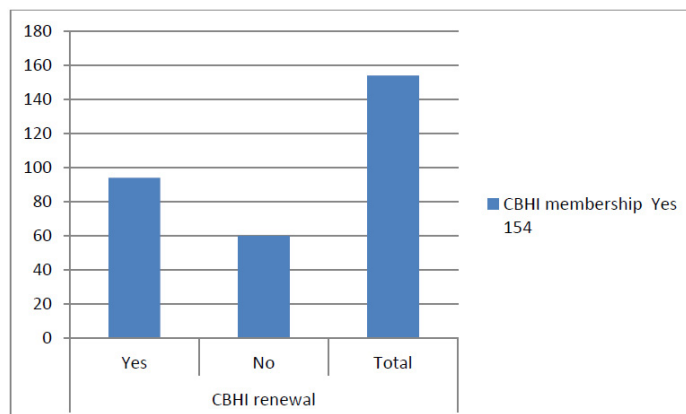The prevalence of community-based health insurance enrollment

Figure 1: Bar graph depicting membership status in community based health insurance in Sidama Region Ethiopia, 2020. (n=762).

Table 2: 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 (%)			
Age of respondents					
<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*
Sex of respondents					
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)	-	-	-
Family size					
<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
Educational status					
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))	-	-	-
Marital status					
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
Annual income					
<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)	-	-	-
Wealth index					
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)	-	-	-
Occupation of the respondents					
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)	-	-	-
Distance to facility					
<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)	-	-	-
Information about CBHI program					
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)	-	-	-
Do you know services covered under CBHI					
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)	-	-	-
Premium payment time convenient					
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
Registration fee affordable					
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
Premium affordable					
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*
Currently have any loans?					

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)	-	-	-
Persons with chronic illness/disability in the HHs					
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*
Any illness encountered in last 3 months					
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*
Perceived quality of Health care services					
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)	-	-	-
Level of satisfaction with health care services and costs					
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

NS= Not found significant in bivariate analysis (p>0.25)

was found 20.2%. It was found to be community based health insurance enrollment was practiced poorly in the study area. The study undertaken on enrolment in different areas had shown a 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 official's commitment to the study area.

Household head's age was significantly associated with community-based health insurance enrollment, accordingly, household heads falling in the age group of 31-59 years and above 60 years were 2.62 and 2.87 times more likely enrolled in CBHI than the age group less than 30 years with respectively. Our findings are slightly similar to 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 sizes 3-6 were 4.23 times more likely to enroll in CBHI than fewer family sizes. This finding is similar to studies done in Fogera district, Northwest 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 has a 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.

The educational level of the household had shown significant association with community-based health insurance enrollment; households who had no formal education were 1.66 times more likely to enroll in CBHI than those who 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

grades 1-8 [18]. But, this finding is contrary to the study conducted in Kenya where women who had primary and secondary levels of education had a higher likelihood of health insurance coverage than those who have no formal education likewise better education was associated with a high probability of being insured in the study conducted in rural Senegal [22]. Another study conducted in the 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 people's negative attitude to the scheme that might be due to their expectation of the quality of services the health facilities render.

In the current study, the knowledge of respondents towards community-based health insurance was showed a positive association. Those who know the services covered under communitybased health insurance were 3.53 times more likely to enroll in CBHI than those who had poor knowledge. This finding is supported by a study conducted in rural Kenya which revealed knowledge is positively associated with health insurance uptake [19,22]. Another study in the 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 who perceive the quality were Medium were 48% less likely to enroll in CBHI than those who 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 the 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 who disagree that the current premium payment was 72% less likely to enroll in community-based health insurance than those who agree. In line with our a study, Study done in Sunsari District showed that for dropouts, a decrease in the 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 with about 50 percentage points less utilized community-based health insurance than those who 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.

CONCLUSION

This study showed that community-based health insurance enrollment was practiced poorly in the study area. 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 to large families, improving the quality of health services are vital to enhancing 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.

RECOMMENDATIONS

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

- Should arrange health insurance education sessions at a different levels 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.

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

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.

Authors' contributions

BB conceived the study, Undertook statistical analysis, and drafted the paper. AA, MR and DD 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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