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Research Article

Determinants of Health Insurance Participation Decision among Household, Iluababor Zone, Southwest Ethiopia: Case Control Study

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Abstract

Background: Recently in Ethiopia, there is an increasing movement to implement community-based health insurance theme as an integral part of health care finance. Despite such increasing effort, recent empirical proof shows entering have remained low. The aim of this study is to spot determinants of enrolment in community-based health insurance in Iluababor Zone.

Methods: Data were collected from 384 household heads by employing case control study design with a multi-stage sampling technique. A binary logistic regression was accustomed to determine the determinants of family decisions for health insurance enrolment. The dependent variable was health insurance participation decision among households which is dichotomous in nature. The independent variables were: Age, Sex, Education, Distance to the nearest health centre, Level of awareness, Quality of service delivery, Income and Out of pocket payments. The data analysis was done using STATA version 14.

Results: From the total sample (384), 271 (70.5%) had bought the health insurance and the remaining didn't. 344 (89.9%) of the respondents were headed by the males and forty (10.4%) were headed by the females. Majority of the respondents were between the age of thirty and fifty (55.2%), attended primary education (51.8%), married (68.2%), farmers (73%), and had family size of < five (54.7%). From 11 proposed independent variables, seven of them were statistically significant at 5% and 10% significance levels and the remaining is not significant. Age has positive relationship with enrolment for health insurance with 0.000, significance level, family size has direct relation with enrolment for insurance with 0.003, significance level, nearness to health centre affect enrolment positively with 0.017, significance level, and awareness about health insurance has the same effect at 0.002, significance level.

Conclusion: Among the major strategies that Ethiopian health sector has on its five-year plan is health insurance. The result of the analysis shows that out of the participants, (70.57%) were members while (29.43%) were not members. Besides, Age, Marital Status, Family size, Chronic illness, Place of treatment, Distance from public health facility, awareness level regarding the program were vital determinant factors that household heads would become members of the scheme.

Keywords: *Determinant; Enrolment; Health Insurance; Households; Ethiopia*

Abbreviations

CBHI: Community Based Health Insurance; CI: Confidence Interval; HI: Health Insurance; HIS: Health Insurance Strategy; MDGs: Millennium Development Goals; NGO: Non-Governmental Organization; Sig. level: Significance Level; UHC: Universal Health Coverage; WHO: World Health Organization

Introduction

The necessity of health insurance system emanates from the understanding that health-related issues are life-related ones and therefore a sensible and balanced health system needs to be designed in a nation [1]. Because, a fair health system is important in that it enables us provide a quality health services for the community [2]. Hence, addressing important inefficiencies in the health-care sector is a fair practice that would help reduce spending and improve the quality of care [3]. Over the past two decades, many low-income and middle-income countries (LMICs) have found it progressively more difficult to maintain sufficient financing for healthcare services in an equitable [4]. This distressing scenario triggered WHO and other international body to propose an alternative approach in the late 1990s; thereby, various forms of health care financing have been emerged [5]. Health insurance schemes are classically risk-pooling approach that tries to spread health costs across households with different health profiles to ensure better access and enables cross subsidies from rich to poor populations [6].

According to community-based health insurance (CBHI) was introduced and launched in 2011 and was begun to be implemented in 13 districts of four most populous regions (Amhara, Tigray, Oromia and the then Southern nations nationalities and peoples (SNNP) with the aim of decreasing out-of pocket (OOP) expenditure that hampers accessibility to health care. Since its establishment [7], there has been increasing movement to support and spread pilot schemes in different parts of the country. For instance, by the end of June 2017, the number of scheme has grown in to 377 pilot Woredas.

Despite increasing support and spread of CBHI as noted before, recent empirical evidence shows enrolment has remained low across the scheme in being implemented areas indicating that CBHI has continued to fail to reach satisfactory levels of participation amongst targeted population [8]. As of June 2019 the federal ministry of health (FMOH) annual report shows, the overall enrollment rate in the pilot scheme was 55.5% [9].

Ethiopia has begun establishing a comprehensive and sustainable risk protection system with health care financing mechanisms so as to improving financial access to health care services, improving quality of health care service and increase resource mobilization in the health sector through health institution [10]. However, despite the objective a little attention has been paid to understand factors affecting uptake of community based health insurance (CBHI); this can partly be attributed low enrollment in CBHI [11]. Therefore, the subject should be studied and provides information on factors affecting uptake of CBHI so as to design interventions to increase scheme uptake. There was no updated study that documented on determinants of health insurance participation decision in Ethiopia in general and in Iluababor Zone in particular.

Methods

Study area and study period

The study was conducted in Ethiopia, Oromia regional state, Illu Aba Bor zone, Mettu woreda. Mettu is located in south western part of Ethiopia at the distance of 600 kms from the capital city of Ethiopia, Addis Ababa. Mettu is one of the 14 woredas of Illubabor zone. This woreda has tropical climate and has total area of land 68,723 hectares. The average annual rainfall is 170.1mm and the average annual temperature is 19.9-degree cent grade. Mettu has been an important market of the coffee trade, with several foreigners residing town as early as the 1930s to buy the crops from local farmers.

Study design

To maintain triangulation in its findings, the design manifested the basic features of both the qualitative and quantitative researches. For the accomplishment of the research, descriptive and econometric analyses were applied.

Population and sampling

The target populations of this study were households found in Mettu woreda. A total of five kebeles were purposefully selected. Accordingly, Tulube, Kodo Hirri, Kamise, Burusa and Barowi were selected based on the criterion that they have health center. From each kebele household respondents were contacted proportionally. These were identified with the help of health center and health officers of the woreda. The sample size (N) was determined by using the approach based on precision rate and confidence level.

Sample size

The sample of the study was determined by the following formula.

$$n = Z^2 P \left(\frac{1-P}{d^2}\right)$$

Where,

n = Desired sample size

Z = The standard normal variate at a required level of confidence which is 95% and the Z is 1.96 for this study.

P = The proportion of target population estimated to have the characteristics being measured which is 50% for this study (this proportion is the common for the studies whose variable are not estimated yet).

d = The standard value of the confidence interval or margins of error which is 5% with the standard value of 0.05 for this study.

Thus, $n = Z^2 P \left(\frac{1-P}{d^2}\right)$=> $(1.96)^2$ (.5*.5)/ $(.05)^2$=>384.

Data collection tools and techniques

To collect the necessary data questionnaire have been utilized. The questionnaire was prepared based on different literatures and empirical works. And it includes both close-ended and open-ended items.

Operational definition

CBHI membership: Is when households join CBHI by paying the pre-determined amount of money and becoming eligible to utilize health services.

Data analysis

Descriptive statistics such as mean, percentages, and frequency of occurrence were used to describe the characteristics of health insurance participants and non-participants.

Logistic regression model was used to identify the determinants of households' insurance participation. Drawing upon Gujarati (1988) and [12] the logit distribution function for the participation in CBHI is specified as:

$$P_i = F(Z_i) = \mathrm{F}\,(\alpha + \sum B_i X_i) = \frac{1}{1+e^{-z_i}}$$

Where, is the probability of enrolling/participating in HI; e denotes the base of natural logarithms, which is approximately equal to 2.718; represents the i^{th} explanatory variables; and α and βi are parameters to be estimated. is the function of a vector of n explanatory variables.

Therefore,

$$Z_i = Ln\left(\frac{P_i}{1-P_i}\right) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots\ldots + \beta_m X_m$$

If the error term () is taken in to account, the logistic model becomes:

$$Z_i = \alpha + \sum_{i=1}^{m} \beta_i X_i + u_i$$

The unknown parameter ***β's*** is estimated by likelihood function.

Ethical consideration

The data collection was undertaken after ethical clearance and letter of permission was obtained from ethical board of zonal administration for CBHI scheme respectively. Verbal consents were also taken by data collectors from all respondents.

Results

Socio-demographic characteristics of the study subjects

Table 1 show socio-demographic characteristics of the respondents and out of 384 sample respondents the response rate was 100%. Majority of households were headed by males 344 (89.6%) while only 40 (10.4%) of them were females headed. In the age category most of the respondents were between the ages of 30-50 years old. A majority 199 (51.8%) of the respondents attended primary education, whereas 262 (68.2%) were married, 280 (73%) were farmers. More than half (54.7%) of the respondents had a family size of less than or equal to five (Table 1).

Variables	Categories	Frequency	(%)
Sex	Male	344	89.6
	Female	40	10.4
Age	18-29	102	26.6
	30-50	212	55.2
	>50	70	18.2
Marital status	Single	64	16.7
	Married	262	68.2
	Divorced	28	7.3
	Widowed	30	7.8
Education	Illiterate	50	13
	Primary	199	51.8
	Secondary	90	23.4
	Diploma and above	45	11.7
Occupation	Farmer	280	73
	Merchant	70	18.2
	Other	34	8.9

Monthly income	<500	180	47
	500-1000	90	23.4
	>1000	114	29.7
Family size	≤5	210	54.7
	>5	174	45.3

Table 1: *Socio-demographic characteristics.*

Health care characteristics of respondents

Table 2 shows health care characteristics of the respondents. Out of 384 study participants, 271 (70.5%) of them bought health insurance whereas 113 (29.43%) did not. Regarding awareness on the benefits of buying health insurance, (62.5%) of the sample respondent have a good awareness while 37.5% have no or limited information about the benefits of buying health insurance. Moreover, 140 (36%) had chronic illnesses and 123 (32%) of them had experienced illnesses in the last three months. Among those who encountered illnesses in the last three months, 123 (32%) sought medical treatment whereas 261 (68%) of them didn't seek treatment due to the difficulty of covering the cost of medical treatment. The table also shows about the distance to health facility and most of the respondents (73%) mentioned that the distance of health center is less than or equal to 10 km. Looking at the place of treatment, 27%, 67%, 6% got treatment at Private clinic, Government health center and Government hospital respectively (Table 2).

Variables	Categories	Frequency	(%)
Buy Health Insurance	Yes	271	70.57
	No	113	29.43
Awareness Level on Benefits of HI	Good	240	62.5
	Not good	144	37.5
Chronic Illness	Yes	140	36
	No	244	64
Experienced illness in the last three months	Yes	123	32
	No	261	68
Seek treatment	Yes	123	32
	No	261	68
Place of treatment	Private clinic	105	27
	Government health centre	255	67
	Government hospital	24	6
Distance from public health facility	≤ 10 km	245	73
	>10 km	89	27

Table 2: *Health care characteristics of respondents.*

Discussion

Table 3 indicates econometric result of dependent and independent variables by using logit model. The econometric software STATA was used to estimate parameter coefficients. Out of the 11 proposed variables, seven of them were statistically significant in the model while the rest were not significant. The significant variables are: Household head age, marital Status, Family size, chronic illness, place

of treatment, distance from public health facility and awareness level. Age is expected to have an influence on their decision to enroll. Likewise, household head age in the model signifies that there is a direct relationship with decision to enroll. That is as the family head become older and older their demand to participate in the scheme get maximized. Thus, among the expected variables age is one of the variables showing significantly determine the dependent variable that is enrollment in the model. This study is line with study done in Gondar Amahara region [13]. This might be explained by as people age, they become more vulnerable to chronic diseases, impairments, and other health problems that necessitate more regular and intensive medical attention. This increasing healthcare usage by older people plays a significant role in the statistical relationship between age and community health insurance coverage. Younger people, on the other hand, frequently have lower wages and fewer financial resources than older adults, leaving them more reliant on community-based or subsidized health care options. Furthermore, younger people may be more likely to enroll in community health insurance programs because they perceive a reduced immediate need for coverage or prefer to prioritize other financial commitments over health insurance [14].

Logistic regression	**Number of obs**	**=**	**384**			
LR $chi^2(11)$	=	41.54				
Prob > chi^2	=	0.0000				
Log likelihood = -206.42	Pseudo R^2	=	0.7614			
Willingness to pay	Coef.	Std. Err.	Z	P>z	[95% Conf.	Interval]
Age	.0309192	.0078041	3.96	0.000	.0156235	.0462149
Sex	-.0512098	.429682	-0.12	0.905	-.8933709	.7909514
Marital Status	.8158942	.2478521	3.29	0.001	.3301129	1.301675
Educational Level	-.0046099	.1283422	-0.04	0.071	-.2561561	.2469363
Occupation	-.008604	.1619388	0.05	0.958	-.3087902	.3259982
Family size	-.8239664	.2793654	-2.95	0.003	-1.371513	-.2764202
Monthly income	-.2055406	.1698328	-1.21	0.226	-.5384067	.1273256
Chronic illness	.3067668	.2841206	1.08	0.0080	-.2500992	.8636329
Place of treatment	-.0741064	.1392121	-0.53	0.0194	-.3469571	.1987442
Distance from public health facility	.4462105	.2574669	1.73	0.017	-.0584154	.9508365
Awareness level	.0872276	.285231	0.31	0.002	-.4718149	.64627
_cons	-.444942	.9461314	-0.47	0.638	-2.299326	1.409442

Table 3: *Bivariate and multivariate logistic regression.*

Family size is significant with Community health insurance. It is expected that as a family have large family size they would resemble to participate in the scheme. In line with the expectation family size have direct relation with decision to participate in the scheme. According to current study family members with high family size has more willingness to join the scheme as compared with less family size group. Literatures signify that similar to the expectation [15]. This might be explained by larger families have higher healthcare requirements and use rates because they have more dependent children or elderly relatives. Furthermore, these larger households typically have lower per capita earnings and fewer financial resources to devote to private or employer-sponsored health insurance premiums [16]. However, from the standpoint of an insurer, larger families reflect a more diverse risk pool, which may offset the higher use rates with a wider base of reasonably healthy individuals. These interrelated factors, including greater healthcare demands, financial limits, and risk pooling dynamics in bigger households, all contribute to the statistical relationship seen between family size and enrollment in community health insurance plans [10].

Distance to the nearest health facility show a positive relation to influence enrollment in the scheme. It has direct relation with decision to participate in health insurance scheme. Thus, distance is among the significant factors which community members consider while deciding to enroll in community health insurance scheme and as health facility's accessibility is quite enough within their reach, they are more ready to enroll since they will not have supplementary costs related to transport and accommodation costs. This finding is in line with study done in different setting [17,18]. This could be explained by individuals living further distant from healthcare facilities encounter major geographical constraints that may deter them from seeking medical care. The time and cost of driving to the nearest health facility can discourage people from seeking preventative treatment or managing chronic diseases. Furthermore, areas located further away from health facilities are frequently characterized by lower socioeconomic status, including higher rates of poverty and fewer financial means. These interconnected factors, including access challenges, utilization barriers, and socioeconomic disparities associated with greater distance to healthcare providers, all contribute to the statistical relationship observed between proximity to health facilities and enrollment in community-based health insurance [19].

Awareness level of beneficiaries is among the factor for household heads utilization of Community health care insurance. The finding is supported by different literatures [20,21]. Awareness level related to level of premium, benefit packages as well as limit to the level where they can get health services are among the awareness level that mostly enable to decide to enroll in the scheme. Different traditional customs were experienced at community level to minimize health risks. Such customs need thorough awareness creation activities as well as sensitization to enable community members perceive the new idea as beneficiary to their family. Then this requires both the supply and demand side for need of health facility. Supply side is to mean the perception towards current health facility accessibility and quality [11].

Conclusion

Among the major strategies that Ethiopian health sector has on its five-year plan is health insurance. And it's classified as social health insurance and community-based health insurance. The main concern of this paper is community-based health insurance. This scheme was mainly established to avoid catastrophic health difficulties and expenditures but the participation of the community was not as needed. It is observed that out of the total sample size only 42% have enrolled in the scheme while 58% are non-participants. From the participants 46% of them have still an out-of-pocket payment and this will create a negative impact on enrollment.

Consent for Publication

Not applicable.

Availability of Data and Materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing Interests

The authors declare that they have no competing interests.

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No financial support was obtained to conduct this study.

Authors' Contribution

BT: involved in conceiving the idea, study design, data analysis and interpretation, writing the manuscript and managing the overall progress of the study, MT Made the analysis and interpretation of the study, and wrote the result, discussion and conclusion parts. RW Wrote sections of the manuscript and the literature review part. Participated in analysis and reviewed the final manuscript. UG Participated in data analysis and literature review, wrote the result section and reviewed draft of the manuscript. All authors read and approved the final manuscript.

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