DETERMINANTS OF PARTICIPATION IN A COMMUNITY BASED HEALTHINSURANCE SCHEME IN BAMBASI WOREDA, BENISHANGUL GUMUZ REGION

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Declaration

I, the undersigned, declared that this is my work and that all sources of materials used for this Thesis has duly acknowledged.

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This thesis has been submitted for examination with my approval as University advisor.

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AKNOWLEDGEMENT

I doubt my progress even a step forward, without diligent and wisest pursuit of my dearest advisor Dr Anagaw Dereseh deserved with honor and great thanks after my God.

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ABBREVIATIONS AND ACRONYMS

BGRS	Benishangul Gumuz Regional State
CBHI	Community Based Health Insurance
CBHIS	Community Based Health Insurance Scheme
CSIS	Center for Strategies and International Studies
CVL	Commitment of village leaders
DM	Diabetes mellitus
FMOH	Federal Ministry of Health
HC	Health Center
HI	Health Insurance
HCF	Health care financing
HEWs	Health extension workers
HH	Household
HPs	Health posts
ICE	Information, Communication and Education
LMIC	Low and Middle Income Countries
OECD	Organization for Economic Cooperation and Development
OOP	Out of pocket
OPD	outpatient department
SRS	Simple random sampling
UAH	Universal accessibility of health
UHC	Universal health coverage
WBG	World Bank Group
WHO	World Health Organization
WTJ	Willing (ness) to join

ABSTRACT

Background: Due to the failure of proper healthcare resource allocation and poor affordability to health services, many citizens are exposed to impoverishment from health shocks and catastrophic out of pocket health expenditure. The poorest households even abstain from seeking health care. In order to reverse this scenario and meet universal health coverage, a pilot community based health insurance (CBHI) scheme was launched in Ethiopia in 2011.

Objective: The main objective of the study is to examine factors influencing participation in a community based health insurance scheme in Bambasi Woreda of Benishangul Gumuz region.

Method: The study was community based cross sectional quantitative type undertaken in Bambasi Woreda of Benishangul gumuz region. Using two–stage sampling technique, 614 sample households were selected and used for the analysis. After the data is fed into Epi Info 3.7.0, STATA 14 software was applied to clean and analyze the data.

The data were analyzed by frequency tables, summary statistics and logistic regression model.

Results: It is found that 55% of sample households are members of the pilot community based health insurance scheme. 85% of the respondents have information about the recently introduced scheme. The multivariate analysis reveals a number of factors drive enrollment to the scheme. Willingness to join the scheme was more likely among the rich households as compared to the poor (AOR of 95% AOR of CI 2.719(1.144, 6.464). Those who have no awareness on the scheme are less likely to participate than those who have (AOR of 95 % CI (0.051(0.012, 0.212)). Participation to the scheme is also found to be more likely among those who have confidence on commitment of CBHI officials and who accept the benefit packages. Furthermore, illness episode was positivity associated with uptake of CBHI (AOR of 95% CI4.407 (1.802, 10.777)

Conclusions &recommendation: It is concluded that awareness, family size, illness episodes, level of income, benefit packages, distance from health facility were factors influencing participation in a CBHI.The Study also indicates the importance of enhancing awareness, create confidence on the commitment of the scheme officials, and make the benefit package according to the expectation of the community in order to boost uptake of CBHI scheme. It is also noted that adverse selection could be a threat to the financial sustainability of the scheme.

1. INTRODUCTION

1.1. Background

Every year globally 100 million people enter into poverty because of catastrophic health expenditure [5]. Catastrophic health expenditure is when a person spends more than 10% of his total per capita expenditure for health [6]. In Ethiopia the health sector is financed through governmental (21%), External and local donors source (41%), direct out of pocket Expenditure (OOPs health expenditure 37%) and other sources 2% [7]. This clearly depicts that Ethiopian health care system needs to be alertly managed. Because based on WHO definition, Ethiopia suffers a lot with catastrophic health expenditure exposing many people for poverty. The poverty of people again means economic burden of the country.

The challenge that had been facing Ethiopian health sector was limited health care funding or health care financing [2]. The health sector is not only allocated with limited budget but also is inefficient and inequitable [2]. Major health infrastructures and advanced health care services are still centralized in major cities. In Ethiopia, health care utilization and accessibility of the health is not yet satisfactory. In 2011, Ethiopian Outpatient Department attendance per capita was reported as 0.3 from its base line visit 0.27 [7]. So it is mandatory to work on reduction of OOP expenditures and increase the public spending on health. World nations are striving to reduce OOP Expenditure that causes catastrophic health expenditures through risk pooling mechanism like health insurance.

As part of the Universal Health Coverage (UHC) strategy and to provide adequate financial protection against health expenditure, Ethiopia had begun the CBHI enrollment and implementation since June 2011 in 13 pilot Woreda of selected pilot regions. These are Amhara, Oromia, SNNPR and Tigrie regions [7]. From the very beginning chapter of implementation of CBHI in the pilot areas, Ethiopia has been the highest in terms of rapid uptake and inclusiveness of the scheme achievement in Sub Sahara Africa, an uptake of 45.5% from 2011 to 2012. The scheme has initially succeeded with a considerable extent. Currently the pilot regions and districts are scaled up to all regions and 509 districts. Accordingly, the pilot scheme in Benishagul Gumz Regional State was introduced in 2016.

The Ethiopian CBHI scheme is designed for people who live and work in rural areas, and or in the informal sector. Since the vast majority of the country is of informal sector type and unemployed (83.4%), the greater endeavors should be exerted much on CBHI scheme [2].

Even though there are few studies which investigate determinants of Ethiopian CBHI in different part of the country [7, 11, 14], to the best of my knowledge no study has been done in case BGRS. In addition, the previous studies did not control for factors such as social networks, perception on the design of the scheme and trust on CBHI officials that potentially influence the success of CBHI uptake. Therefore, this study will add knowledge in the area by identifying the factors driving incidence of participation in CBHI scheme in Bambesi Woreda. .

1.2. Statement of the problem

Challenges to meet UHC had been among the health system issue not only in Ethiopia but also the key agenda worldwide especially of the developing Nations.[2,3] In this regard, the main problems include not only the limited accessibility but also the lack of needed quality, equity and efficiency of the health care given [3]. Efforts being made to achieve UHC faced challenges due to increasing health care cost overtime which makes difficult to provide affordable health care services for the poor [4]. Due to limited affordability to care and lack of access, on average one person in Ethiopia visits health facilities to use outpatient care only ones in three years. This is very low as compared to what is recommended by WHO that is 3 visits per year [1, 7].

One critical issue that can be raised while we are discussing about universal accessibility of health, is escalation of health care and treatment cost [4]. Ethiopia and most developing countries are dependent on donor's funds and OOPs health expenditure to cover their health care spending. However both of these means of spending for health are not reliable sources. As countries

become dependent up on OOP expenditure for their health care with a predominant spending for health, their citizens face catastrophic health expenditures or health shocks [6].

Furthermore since the poor are unable to pay for even a little, a health shock strikes drastically pushing them into poverty and unmanaged illness related disability and mortality. They even fail to pay abstaining from seeking health care. So a domestic based self-reliant and sustainable means of health sector funding should be established. This can be done through appropriate implementation of the health care financing reform (HCF). Risk pooling through health insurance is one building block of HCF. It is important to develop health insurance schemes in order to mobilize resources for the health system and to provide financial protection against catastrophic health expenditure in low and middle income countries [5, 10].

However, several studies in a number of countries shows that micro health insurance schemes suffer from low uptake, social exclusion, and adverse selection problem. Despite such concerns, CBHI is the proposed way and under implementation scheme in Ethiopia since 2011. So the primary goal of CBHI is to bring about financial protection against the poor and improve accessibility of health services as well as financial protection through risk pooling [9]. Even though initially in the pilot regions CBHI achievement was fascinating and impressive, with time after the scaling up program continued to be implemented, challenges were facing. Among these adverse selection, increased dropout rate, declining rate of enrollment and inadequate preparedness of health facilities were observed [7]. Thus more factors that contribute for better progress and enrolment decisions should be studied.

Even though factors of deterring and favoring CBHI were studied in Ethiopia, there are untouched areas within the country like BGRS. This research work is supposed to address major factors influencing the enrollment for health insurance in region BGRS, Bambesi Woreda. These mainly include adverse selection, health status, household size, culture and belonging to a certain ethnicity. Unlike previous studies, it also investigates the role of perception on the design of the scheme and trust on the CBHI officials in influencing enrolment decision. The other issue specific to this study will be investigating how social intimacy of people to share social customs like Senbete contributes to participate in CBHI enrollment.

1.3. Significance of the study

Following the introduction of CBHI in Ethiopia, several studies have examined the uptake and renewal decision in the initial pilot regions (Tigray, Amhara, Oromiay and SNNP). However there are no studies done in the recently scale up regions including Benishagul Gumuz regions. Therefore, this study can serve as a baseline evidence regarding factors of the CBHI scheme of Bambasi Woreda in particular and the region in general. The kebele or local governors are also able to use the outcome as an input to improve major gaps of their effort leading to better achievement of the program. The study also provides knowledge to the literature by examining the effect of perception on CBHI design and trust on CBHI administrative bodies on the scheme uptake.

2. LITERATURE REVIEWS

2.1. Theoretical literature reviews

The World Health Organization indicates that globally "approximately 100 million people are pushed under the poverty line each year simply because they use health services for which they are forced to pay out of their own pockets" [5].Having lost any protection from the governments, the poor are forced to search for other financial resuscitation means that can be borrowing or networking to address unexpected costs associated with health shocks [10]. Most of governments fail to allocate sufficient budget to the health sector, in turn fail to protect the poor. Having stressed this, World Bank (WB) and WHO called UN member countries to sign an agreement on UHC on December 2012 to endorse UHC. Since then WB and WHO identified UHC as top priority agenda for sustainable development. **"**Achieving UHC and equity in health are central to reaching the global goals to end extreme poverty by 2030 and boost shared prosperity**.** *"Jim Yong Kim, President, World Bank Group, 15 January 2014*.

Following these world governments were asked to prioritize UHC through maximizing mandatory prepayment means and establishing large risk pools to reduce OOP expenditure for health. As *Jim Yong Kim, President, World Bank Group said on 6 December 2013,* despite not the single most important means to achieve the UHC, health insurance was recommended or put as one key action to be taken to achieve UHC. One mechanism to increase public health spending and effect the resource mobilization and risk sharing is employing health insurance [10].

Since 1990s CBHI with potential beneficiaries had been emerging in a number of developing countries. [10]. One of the developments of CBHI among low and middle income country is in Ethiopia. Ethiopia is implementing the program since its introduction in four pilot regions and 13 districts in 2011.Majority of the articles were made focusing on factors of CBHI with positive and negative influences. Most of the demographic and socioeconomic variables were found to be significantly associated with WTJ community based health insurance. According to them age was negatively synchronized with WTJ CBHI**.** This might be as a result of the behavior of the scheme design for which age greater than 18 years are not covered with the benefit package.

The statistical significance was put this way as the younger hhs are 6% more likely to join the scheme as compared to the older (95% CI of AOR: 0.914, 0.974). This result matches with study conducted in the Senegal by Jutting J. P. (2004). These age related influences were more elaborated by [7] as the younger age groups are more likely to join the scheme for their innovative nature [9]. This explanation is slightly different only with the above scenario presented by [11] regarding the factor of age with CBHI saying benefit package was the reason that as proportion of family with elderly and reproductive age groups link negatively with a two percentage point in demanding CBHI [11].

Even though CBHI scheme exclude the lowest income groups, the schemes are capable of mobilizing resources and financing the health care demands making them financially protected. Unlike Ethiopian CBHI scheme, majority of studies shown that adverse selection was able to affect enrollment. For example [12], and also the sub-Saharan review of CBHI among 9 articles, 6 of them reveal adverse selection [9, 11, 12]. [7] Appreciated Ethiopian scheme design for its socially inclusiveness and freedom from adverse selection. This study how ever revealed the possible reason to be coercion from local governors increasing its coverage to a large pool with minimal adverse selection and socially inclusive.

2.2. Empirical literature reviews

As far as adverse selection is concerned, in a study made in Senegal revealed that the scheme was suffering both from adverse selection and social exclusion. (Jutting 2004) however this study fails to explain the degree to which this selection affects the scheme. There is no explanation on severity of the adverse selection. [13], on the other hand put the influence of adverse selection generally as if with in a scheme 30% and less of members take health care service per month the scheme will be effective[13]. With this regard the study made in Edo state Nigeria shown that 56% of the members were getting ill with in the past three months. As confirmed in [13] the study stated that adverse selection put less influence on survival of the scheme [13, 16].

In Ethiopia since the beginning of the CBHI scheme an extensive study [7] was done focusing mainly on the determinants for enrollment, both from supply and demand side. The paper revolved centered the scheme‘s inclusiveness of uptake, the role of adverse selection and the third is role of quality of care for the uptake. The result indicated that the scheme was not only socially inclusive or is pro poor, but also no adverse selection and it was highly influenced by the quality of the care given in each health facility. The new finding or discovery regarding the main factor to determine willingness to participate in a CBHI scheme by this journal was influence of quality of health care given in the health facilities. This paper was written reviewing 17 papers which are mainly qualitative and put the results as discussed above. The paper has addressed many factors that may affect the enrollment of the household to the scheme. The health status, distance from the health facility , the household head gender, the income level, the educational status, family size and the number of family member less than or greater than 18 years were predicted to have not statistically significant evidence of association on enrollment. [9].

The other factors like quality of care being given, networking CBHI with other community based social programs like PSNP have and the little amount of the premium compared to other sub-Sahara countries are those factors positively affecting or favoring enrollment for CBHI. However

this literature lacks to incorporate variables like belongingness to a certain ethnic group especially minors, culture and trust to both the program and the implementing body. It was predicting trust of the household to the modern care, but not as a factor mentioned. Despite this strong side of all, the paper fails to assess the effect of compulsory (mandatory) insurance and perception of solidarity on participation of CBHI scheme. Another study in Adama Ethiopia by Birku Reta Entele, and Naemeka Vincent Emodi, 2016 revealed that both perceived or self-assessed health status and actual illness are associated with willingness to pay for CBHI [17]. This notion was also shared by a study done in Oromya region in 2016[14]. However, [7] have brought an opposing result concluding that both self-assessed health status and chronic illness were not associated with willingness to have CBHI in Ethiopian scheme. The methodology used by [7] is more advanced in that it has used not only cross sectional but also longitudinal design before and after program implementation so that we apt to accept the latter [9].

Finally the unique variable to be investigated in this work will be effect of commitment of CBHI officials available at each hierarchical authority level on progress of CBHI scheme. The previous studies did not gain sufficient data on its actual effect. So, one focus of this study will be to examine the effect of commitment of CBHI officials.

2.3. The design and implementation of CBHI in BGRS

In BGRS, the CBHI program was introduced since September 2016 as part of scaling up of the pilot program which was initially introduced in four main regional states of the country in 2011. Among 20 Woredas in BGRS, three pilot Woreda (Dangur, Bambasi and Kemashi) are selected and begun enrollment. There are 29,089 total eligible HH s in the region. Of them 18,616 HH are enrolled paying the premium. The main criteria for enrollment is legal kebele ID card and needs to have lived for more than 6 months. Also for those who are unable to pay they will be benefited from fee waiver. The payment interval is made per annum. The region has set the annual premium birr 188 or birr 15.66 per month as that of Oromia region do.

As the other regions of Ethiopia do, the benefit packages are Outpatient and inpatient services including primary health care, specialist services, diagnostic tests, and prescribed drugs that are available at the contractual health centers and the hospitals. The package excludes those services

with cosmetic value like dental replacement and also dialysis. Regarding the scheme management the Kebele administrative are responsible for enforcing or executing the rule and regulations. This includes community mobilization, money collection and deposition to bank account of the Woreda CBHI. The money collectors from the HHs should give a valid receipt. The money collectors are from the community who works as the kebele managers. Regarding the reimbursement claims the payment method they are following is fee for service method. As the Woreda scheme executive manager inform me since the beginning to the past Sene 30, birr 2,455,501 is collected from the Woreda and birr 1,399,410.14 is reimbursed. The 2016/17 health care utilization of the region was 0.5 and the Bambasi Woreda was 1 a bit better health care utilization OPD attendance per capita visit than the regions average. However the figure is far apart from what WHO recommends (2.5)

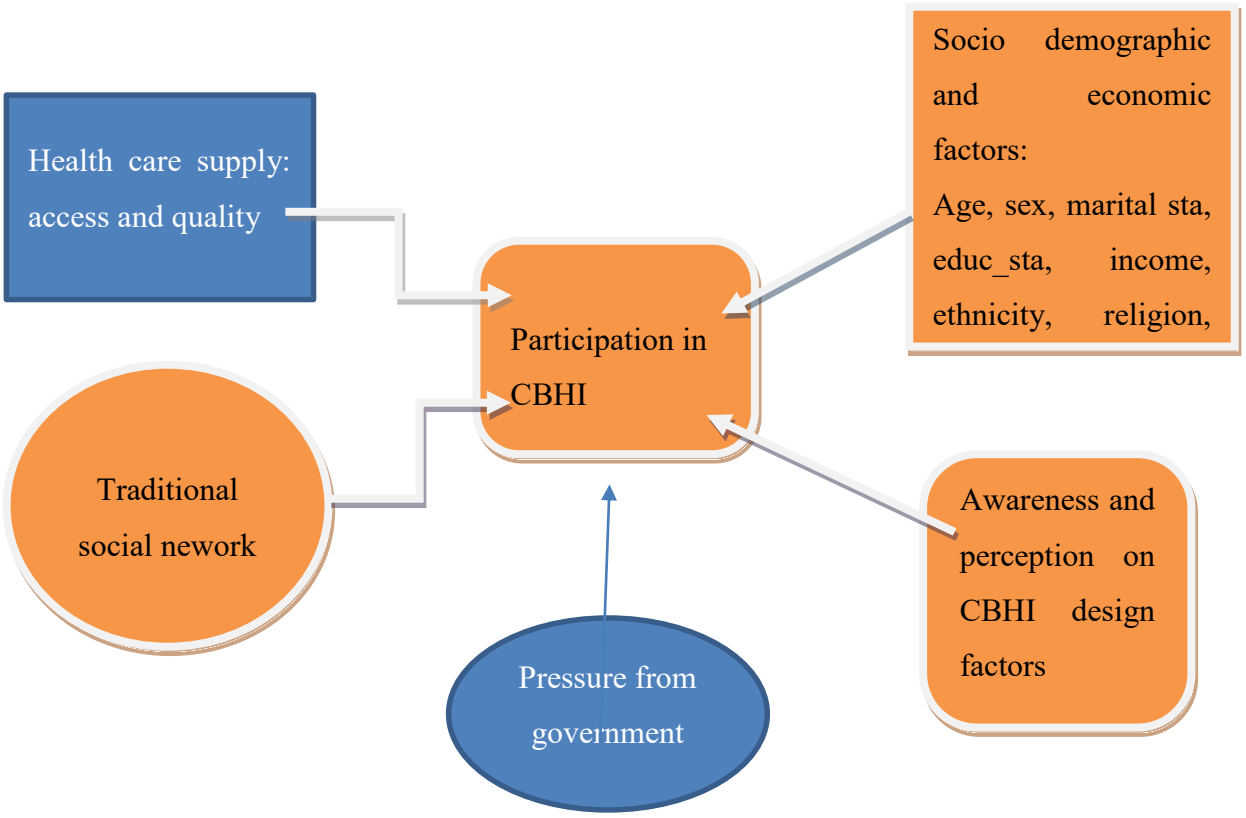
After the program implementation the health care utilization of the region is expected to be improved. This is because of absence of incurring a lot with OOP health expenditure. Since Bambasi is expected to be the best model representing the region encompassing all kinds of demographic elements as well as the maximum possible outcome is predicted, I have chosen Bambesi Woreda as my study area. Also the Woreda has very hard to reach kebeles from health facility.

In Ethiopian scheme design, following the launch of CBHI in 2011, the implementation is continued setting goals expanding to all the regions. The main aims are improving the limited health care utilization or health seeking behaviors and risk pooling or financial protection by reducing OOP expenditure. The premium level has a little bit variation among the regions In BGRS and Oromia regions to 10.50 in SNNPR in case of core family members of a HH i.e. a family with 5 individuals is considered one set of HH in payment and after it exceeds 5 members birr 18 is added per each member in both Amhara as well as Benishangul and birr 2.10 for the remaining regions [9].

The above premium variation was a result of nature of the design being decentralized and community based. Even though the Abt associate made the feasibility study to estimate costs with the regional government how much to pay, decision is passed over by the community. It is voluntary to decide whether to participate or exit (drop) into and from the scheme. The Federal

government covers 25% of all premiums and the regional government also covers cost of 10% of indigenous groups or poorest of the poor population.

2. Conceptual Frame work



1. **Fig 1 conceptual frame work**

3. OBJECTIVES

3.1. General Objective

The general objective of this study is to examine factors influencing participation in a community based health insurance scheme in Bambasi Woreda of BGRS.

3.2. Specific Objectives

i. To assess awareness of the health insurance among the target people.

ii. To assess perception on CBHI design.

iii. To identify factors associated with participation in CBHI scheme in Bambisi Woreda Benishangul gumz region

4. MATERIALS AND METHOD

4.1. STUDY AREA AND PERIOD

Bambasi Woreda is one of the 20 Woreda of BGRS in Assosa zone located 40 kms East to Assosa (capital city of BGRS) and 640 kms West of Addis Ababa. The main road or high way from Addis Ababa passes through Bambasi town to Assosa. It is bordered by the Mao-Komo special woreda on the southwest, Assosa town in the northwest, Oda Woreda in the northeast, and by the Oromia Region in the south east. The Woreda consists of 33 health posts and only 2 health centers. The district is a home for a number of ethnic groups. Namely Berta (33.6%) Amhara (42%), Gumuz, Shinasha, Mao &komo,Oromo(12.2), Tigrie,5.8% and others. There are 42 kebeles out of which 2 are urban. The name ―Bambasi‖ is given for both the Woreda and its town Bambasi after the longest mountain ―mount Bambasi‖ in Asossa zone there in Bambasi.

The size of the population is estimated to be 62,300 in 2017/2018. Of which only 30,434 are males. The Berta ethnic group is characterized by black color and polygyny, a husband marries multiple wives. The populations' main means of livelihood is agrarian and semi agriculture with animal and plant farming. The major or dominant religion is Muslim (66%) and orthodox (26%) the remaining quotient is others like protestant. The health care utilization of the Woreda in 2016 was 1(one) which actually is better than the regions annual OPD attendance per capita of 0.5(zero point five).However this figure is very distant from WHO recommendation of 2.5. The data was collected from 1st to 30thApril 2018.

4.2. Study Design

A community based cross sectional study was employed.

4.3. Source of data

The source population for the study was all households found in Bambasi Woreda.

4.4. Study population

The study population was households found in randomly selected kebele of Bambasi Woreda.

4.5. Sample size determination

The sample size was determined using single proportion formula, with the assumptions of 5% margin of error and 95% CI;

Z α/2 = Critical value =1.96, 10% non-response rate and design effect of 1.5 for that two stage sampling steps are done

Where, n= required sample size. demand

Taking P=0.52 for proportion of demand of community based health insurance [11]:

$$n = \frac{(Z\ \alpha/2)^2\ (1\text{-}p)}{d^2}$$

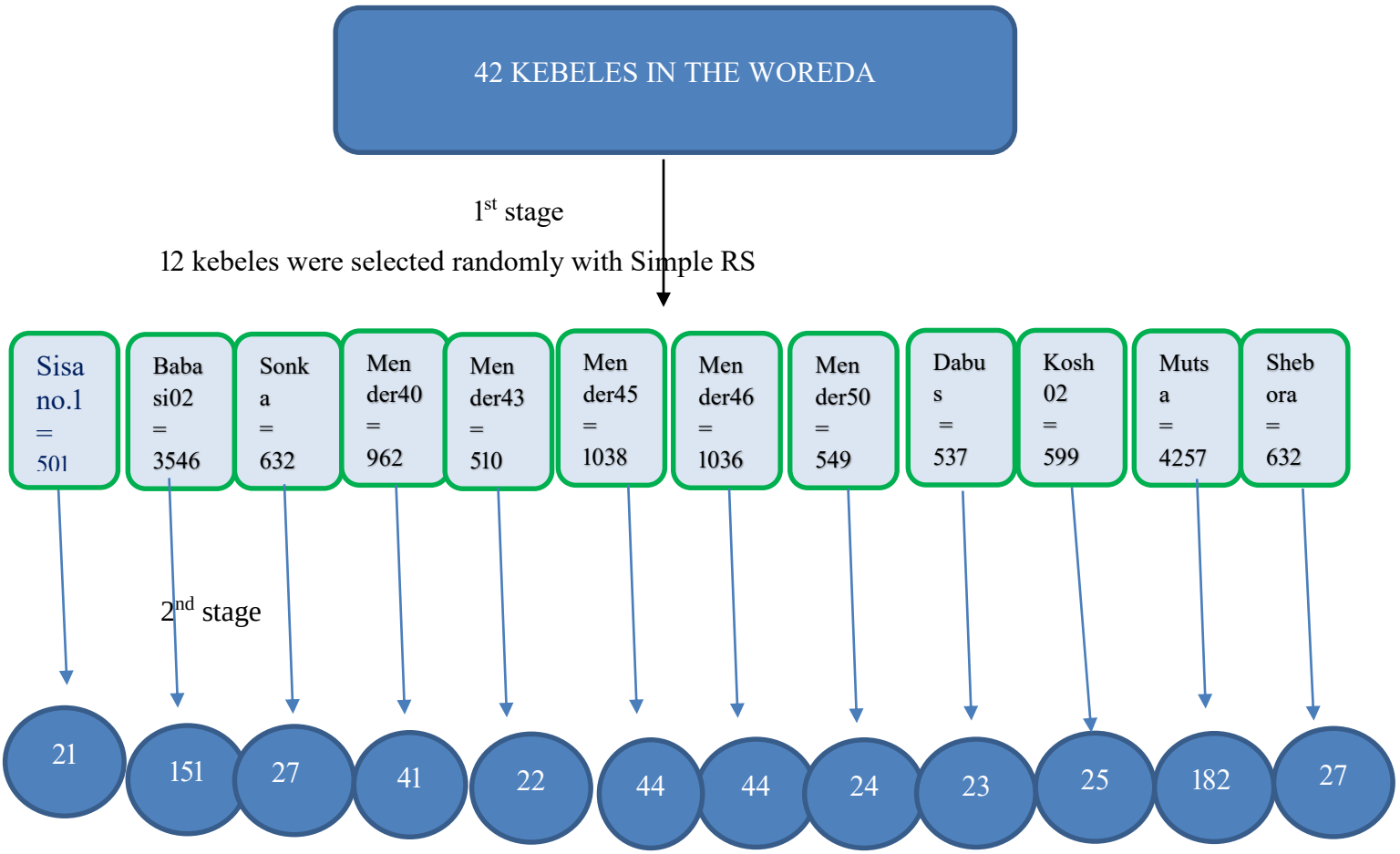
$$= \frac{(1.96)^2\ (0.52)*(0.48)}{(0.05)^2} = \frac{3.841*0.25}{0.0025} = 384.16$$

n=384 x 1.5 (design effect) = 576+ (576*10%) non-response rate = **634**

Therefore, final sample size for this study was considered to be **634**.

4.6. Sampling procedure

The study was conducted in Bambasi Woreda. To obtain study subjects, the respondents were selected using a two –stage sampling technique. Firstly, out of a total of 42 kebeles of the Woreda, 12kebeleswere selected randomly by simple random sampling. Then, the number of households that were included in to the study was determined proportionally in accordance with the total number of households in the sampling frame of the selected kebeles. The sampling frames (list of all households) were obtained from family folder of the kebele administration office. Finally, the respondents were selected by systematic random sampling from the framed list.



(2ndStage) = n [number] of each keb/N*634, Adding all sample HHs in each kebele gives total samples size = **634**

Finally sample households were selected from the sample kebeles by systematic random sampling using the sampling frame.

Fig 2. Sampling procedure

4.7. Variables of the study

A. Dependent Variable:

The dependent variable is participation of a household in a CBHI scheme.

Independent Variables

These are a set of explanatory variables with a potential to affect or bring a change on the dependent variable. These are

Socio demographic factors: age, sex, ethnic group, family size and structure of the family.

Socio economic factors; income, level of education.

Awareness: knowledge on the concept of health insurance.

Commitment of CBHI officials: perception on the loyalty and commitment of government officials to properly manage CBHI scheme.

Social networks: if HH is a member of Senbete, Zikir or any other support groups

Access and quality of care: the geographical proximity of nearest health center and presumption on the availability of quality health care.

4.8. Data collection techniques or methods

The questionnaire was adapted from "Ethiopian Economics Association Poverty Dynamics, Health Shocks and Coping Strategies in Ethiopia" initially in English and then translated into local languages for interview. The questionnaire gathered data on the following areas: 1) Socio-demographic characteristics, 2) Awareness about CBHI, 3) Perceptions about CBHI and 4) Health related factors.5).Cultural and traditional customs 6) access and quality of care using structured, pre-tested, interviewer administered questionnaire prepared in Amharic. An interview with a pretested and structured questionnaire for data collection was utilized. Eight trained data collectors and two supervisors were participated in the data collection task. The overall process for data collection was coordinated by principal investigator. The data was collected from 1st to 30thApril 2018.

4.9. Operational definitions

Insurance: is a contract that protects the insured from out of pocket payment.

Health insurance: is insurance against the risk of incurring medical expenses among individuals and families.

Community based health insurance: is an insurance scheme arranged for informal sector managed and operated by governmental structure that provides risk pooling to cover all or part of the costs of health care services.

Participation in a community based health insurance: acceptance and use of community based health insurance scheme.

Awareness: having information on CBHI.

Income: > or < 27,000 birr/households/year-the income household/family earned in a year as a result of crops production and rearing of animals that is calculated in assuming each household has five average family size.

4.10. Data analysis technique

The study used descriptive method such as frequency and percentage as well as regression model for data analysis. Data was entered into Epi Info 7 and analyzed using the STATA 14 software. The econometric model to analyze the data might be represented the following way. Decision of participation for CBHI scheme as an individual health behavior involves: a discrete decision of participating in a CBHI scheme (to become insured) or not participating in the scheme (not insured) this situation makes the outcome variable to be binary in nature. When the outcome variable is dichotomous, the possible binary regression model is the *linear probability model (LPM*) in which the binary response variable is regressed on the relevant explanatory variables by ***using*** the standard ***OLS*** methodology. But LPM suffers from several estimation problems due to its restrictive fundamental assumption that the probability of something happening increases linearly with the level of the regressor. This very restrictive assumption can be avoided if we use the logit and probit models. Also we use linear model if the outcome variable is continuous while the logistic model for dichotomous dependent variable.

Logit models impose the condition that predicted values must be on the **unit interval**, and produce consistent covariance matrix estimates assuming the distributional assumptions are correct. On the other hand, ***linear regression models*** have the disadvantages that predicted values may by less than zero (-∞, 0) or greater than one (1, ∞), and that the ***OLS*** covariance

matrix estimate is inconsistent [15]. Therefore, this study used logit model where the ***dependent*** variable is the ***log*** of the ***odds ratio,*** which is a linear function of the explanatory variables. If the data are available at the individual level, ***nonlinear-in-the-parameter*** estimating procedures (***maximum*** Likelihood) can be employed to estimate the parameters of predictors.

The logit model can be specified as:

$$y_i = \ln\left(\frac{p_i}{1-p_i}\right) = \frac{e^{zi}}{1+e^{zi}} \ldots\ldots\ldots\ldots 1$$

Where:

$$Z_i = \beta_o + \sum \beta_i x_i + u_i$$

Yi = is a dichotomous dependent variable

β_o = constant

β_i= parameter of *xi* predictor

X_i= is i[th] independent variable in the model

u_i= is the error term `

More specifically for this study the above stated model can be written as follows to express participation of the households in the insurance scheme.

$$P[CBHI] = \beta o + \beta 1AG + \beta 2ED + \beta 3FS + \beta 4TG + \beta 5I6M + \beta 6Q + \beta 7R + \beta 8K + \beta 9CVL + \beta 10Ma + \beta 11Sn + \beta 12TM + \beta 13I + \beta 14D + \beta 15\,MS + \beta 16Cu + ui \ldots\ldots..2$$

Where

P (CBHI) = probability of participation in CBHI scheme.

P (CBHI) = 1 if the HH is insured

P (CBHI) = 0 if the HH is not insured

The following 15 variables are explanatory or independent variables I preferred to be examined.

$\beta o = constant\ or\ intercept$

Ag = Age of the household head

Ed = educational status of the HH head.

Fs = Family size.

Ill6 = health status of the HH in the past 6 months

Q = quality of the health services given

R = Religion of household head

K = Knowledge or awareness of household head on CBHI

Co = commitment or diligence of CBHI officials

Ma =willingness to participation of HH head to mandatory scheme

Sn = social network

TM = express trust of the household head to modern health care

TG = express trust of the household head to Officials

I = income of the HH head as estimated by monthly consumption

D = distance to nearest health center in minute

MS= marital status of the HH head.

Cu = Culture of becoming a member for Senbete or participate in Zikr or Juma.

From the above stated model the probability of participation of a household head is given by the expression $p_i = \frac{1}{1-e^{-z_i}}$ where $z_i = \beta_1 + \beta_2 X_{i2?}$ and the probability of not participating in a CBHI scheme is given as $1 - p_i = \frac{1}{1+e^{z_i}}$. Hence, the log of the odds ratio is the natural log of the two probabilities i.e. $(\frac{p_i}{1-p_i})$.

However, the basic disadvantage of the logit model is it is difficult to interpret the coefficients of the estimated model and we depend our interpretation on the odds of occurrence of an event by estimating the odds ratios [12]. After extensive review of the literature on participation of individuals on CBHI and expectation of the researcher about the influence of the explanatory variables on the dependent one, description of variables with expected sign of controlled factors are presented in Appendix Table 1

4.11. Ethical considerations

Prior to launching the actual data collection, ethical clearance were given from AAU, SPH, and Ethical Review committee. Having a Formal letter, from Addis Ababa University, SPH to BGRS RHB, a written permission and supportive letter was obtained to the respective offices and kebeles. Oral or written consent was taken after aims and side effects are told and cleared. Information given was confidential and used only for the purpose of the research. The information obtained from the respondents was identified by their code numbers the study was conducted entirely. No any risk and no direct benefit to the participants for their participation. Full right to stop the study any time they want or refuse to respond to some of the questionnaires.

4.12. Dissemination of results

The thesis will be presented to the School of Public Health as partial fulfillments of the requirements for the Master's Degree in Public Health Economics and the abstract will be disseminated to the study area concerned bodies.

5. RESULTS

5.1 Characteristics of respondents

Of 634 sampled households, 614 participated in the study yielding a response rate of 97.15%. The mean age of respondents was 46, with a SD of 42 years old. Of all, 475 (77%) were male, 294 (48.8%) orthodox Christians, 253(41.2%) Amara ethnic group. As shown in the Table1, the second largest ethnic group is Berta 161(26.4%).The median number of the household size is 5 ranging from 1 to 18 (Table 1). Regarding the distance of home of the household to the nearest health center, it was reported that the average time it takes to reach the nearby health facility by usual means of transportation was 48.8 minutes with a SD of ± 34.2. The yearly median household income was estimated from the amount gained from sales of maize, teff, livestock and other local outputs such as dairy products, etc. It is estimated being 27,000 ETB ranging from 1,000 to 82,000 ETB. Among 614 respondents 298(48.53) earns less than 27,000 and 316(51.47%) earns >=27,000etb. Among all 366 (59.61%) of the households use electric light and 68(11.07%) use lamp as a source of their light (Table 1).

Table1. Socio- demographic characteristics of the households by CBHI status

Variables	Insured HHs		Uninsured		Total	
	Frequency	%	Frequency	%	Frequency	%
Sex of Respondents (614)						
Male	302	66	173	34	475	100
Female	34	24	105	76	139	100
Religion						
Muslim	109	41	158	59	267	100

Orthodox	71	24	222	76	293	100
Protestant	5	10	47	90	52	100
Others	0	0	2	100	2	100
Ethnic group						
Amara	167	66	86	34	253	100
Berta	46	29	115	71	161	100
Tigrie	80	73	30	27	110	100
Oromo	47	53	43	47	90	100
Educational status						
No education	89	45	108	55	197	100
Informal education	106	66	55	34	161	100
Grade 1-8 (primary)	84	54	72	46	156	100
Secondary &above	57	57	43	43	100	100
Marital status						
Divorced	6	25	18	75	24	100
Married	314	58	231	42	529	100
Single	2	20	8	80	30	100
Widowed	14	20	21	80	31	100
N	*336*		*278*		*614*	

5.2. Health related variables (health status and health service utilization)

With respect to health status and health related variables, 27(4.49 %) of the respondents graded their family's health status to be very poor and 37(6.15 %) very high. 77(12.79%) of the participants had at least one member with chronic disease or disability; and 250 (30.9%) of the households had at least one member who had faced illnesses 6 months before data collection. Among the ill 304 (83.06 %) had sought care and treatments for the illness they felt. The median expenditure of the 304 households who sought treatments was 400 ETB which ranges from 20 to 3000 ETB (Table 2).

Table2. Health related variables by CBHI status

	Insured HHs		**Uninsured**		**Total**	
	N	%	N	%	N	%
Health status of the respondents as assessed						

(rated) by themselves.						
Very high	15	41	22	59	37	100
High	46	26	129	74	175	100
Medium	229	74	82	26	311	100
Poor	25	39	39	61	64	100
Very poor	21	78	6	22	27	100
Chronic illness in the Household						
No	263	50	263	50	526	100
Yes	73	83	15	17	88	100
Illness experience in the past 6 months						
No	103	33	201	67	310	100
Yes	233	75	77	25	304	100
Seek Treatment for the illness						
No	259	76	52	24	67	100
Yes	16	17	51	83	311	100
Modern health care providers can be trusted more than traditional healers?						
Agree	27	19	113	81	140	100
Disagree	259	67	125	33	384	100
Neither of.	19	51	18	49	37	100
Strongly agree	2	17	10	83	12	100
Strongly disagree	29	71	12	29	41	100
Satisfaction with the health care given?						
High	191	51	181	49	132	100
Medium	93	71	38	29	111	100
Low	191	51	181	49	372	100
Availability of drugs						
Always available	69	86	11	14	80	100
Usually available	86	98	2	2	88	100
Rarely available	30	67	15	33	45	100
Not available	36	59	25	41	61	100
Waiting time to access health services?						
Less than 30 minutes	82	66	43	34	125	100
30 to 60 minutes	63	68	30	32	93	100
1 hour to 3 hours	151	48	161	52	312	100
More than 3 hours	11	64	6	36	17	100

5.3. Awareness about CBHI

Awareness about community based health insurance scheme was assessed and 522 (85.02%) have awareness about CBHI. In this respect knowledge index was regressed in the bivariate estimate and was significant to predict participation of HHs on to CBHIS. The detailed scores of the respondents on knowledge index were tabulated in table 3 respondents (13%) of the respondents have poor knowledge or understanding on the concept of CBHI. 227 (38%) of the respondents have medium knowledge on the concept of CBHI. 303 respondents (49%) of the respondents have high (good) understanding or knowledge on the concept of CBHI.

Table3. Awareness by CBHI status

	Insured HHs		**Uninsured HHs**		**Total**	
	Frequency	%	Frequency	%	Frequency	%
Having Info about CBHI?						
Yes	328	63	194	37	502	100
No	8	9	84	91	92	100
Information source about CBHI						
CBHI officials	208	68	97	32	305	100
Mass media	6	67	3	33	9	100
Friends/neighbors	31	48	33	52	64	100
From health facility health workers	83	58	61	42	144	100
Knowledge index about the concept of health insurance						
Poor	16	11	68	100	84	100
Medium	89	39	138	100	227	100
High	231	76	72	100	303	100

5.4. Perception on the design and benefit package of the scheme

450(74%) agreed on suitability of the time interval they are asked to pay the premium.

Table4.perception on design related variables

CBHI officials are committed to implement and support CBHI scheme effectively		
Agree	322	52.44
Disagree	244	39.74
No idea	48	7.82
Mandatory community based health insurance increases participation rate of HHs to CBHI.		
Agree	163	26.55
Disagree	367	59.77
No idea	84	13.68
Benefit packages meet the health care need of the members		
Agree	166	27.04
Disagree	404	65.80
No idea	44	7.17
CBHI officials are trustworthy in properly administering and using the finance collected from CBHI members		
Agree	325	52.93
Disagree	39	6.35
Neutral	222	36.16
Strongly agree	15	2.44
Strongly disagree	13	2.12
The premium is affordable to all		

Agree	408	66.45
Disagree	90	14.66
Neutral	75	12.21
Strongly agree	26	4.23
Strongly disagree	15	2.44
Time interval or season to pay premium is optimum		
Agree	462	75.24
Disagree	53	8.63
Neutral	65	10.59
Strongly agree	28	4.56
Strongly disagree	6	0.98

5.5. Participation in traditional social networks

Social traditional networks are supposed to raise peoples understanding on the concept and benefit of the scheme as well as persuade them join CBHI [9]. In this context, other religious group's memberships were assessed. The orthodox Christian followers used to participate in Senbete and other similar traditional networks. Parallel with orthodox Christians, Muslims also participate in different religious practices every week (Friday) like Juma praying. In this group 324(53%) are members. Also 429 (71.26 %) of the households were members in iddirs or kire. Contradicting to the expectation, these variables have not found to have association with participation decision of households to CBHI.

Table5. Traditional Social networks

	Frequency	%
Do you participate in iddir?		
Yes	429	71.26
No	185	28.74
Do you participate in senbete or other religious groups?		
No	290	47
Yes	324	53
If yes how much do you participate in these groups?		
1 to 2 times per month	147	45.37

1 to2 per three month	36	11.11
3 to 4 times per month	141	43.52

5.6. Participation in CBHI

As the pilot Woreda beginning the scheme, 64% of the total population is registered for membership paying the premium. The uptake of the scheme in the pilot woreda is impressive as the scheme was introduced recently in 2016. Most of the members have issued the membership ID cards and they are using services from contracted health providers. The major reasons for being members of the scheme are reported to be to manage unexpected health shocks and pressure form CBHI officials (Table 7). There are also people who joined the scheme because they got fee waiver benefits as they are among the poorest households in the community. On the other hand, the major hindrance for not participates are lack of quality health care, limited access to health facilities, and unaffordability of the premium. Limited knowledge about CBHI is also supposed to affect the scheme coverage.

As tabulated below in table 3 respondents who are members of the scheme were interviewed. Majority (148(45.12%)) responded that they are participating because of pressures from government officials.142 (43.29%) were responded that they are participating because of aiming to obtain future health shock management (to finance future health care needs). Also 71(26.20%) responded as they are not participating because of limited quality of the health service being given.

Table 6 Reasons for participation and not participation in the scheme.

	Frequency	%
Why are you willing to participate into the scheme?		
There are household members who were sick and need care	3	0.9
Affordable premium	18	5.35
To manage the future health shock	142	43.29
Pressure from government officials	148	45.12

Free entry is made possible	27	8.23
Why don't you participate into the scheme?		
Limited awareness about the program	26	9.59
Unaffordable of the premium	46	16.97
Limited quality of health service	89	32.84
Less accessible health care	71	26.20
Nobody is sick in the family	1	0.37
Until the program benefit is well known	38	14.02

5.6 Factors Associated with CBHI

The study used logistic regression model to identify factors that predict the decision to join CBHI scheme in the study area.

It is found that those households earning higher income (>27000 ETB) are 2.7 times more likely to participate in the scheme as compared to those who earn lower income. There is also significant variation in the decision to participation in the scheme based on ethnicity background. It is found that those people from Bereta ethnicity are 59 percent less likely to join the scheme as compared to those from Amhara ethnicity AOR of 95% CI 0.414(0.186, 0.919). In terms of access to health services, the study indicated that as distance to reach the nearest health center increases by 20 minute, the probability of participation decreases by 60% i.e. AOR of 95% CI 0.967(0.955, 0.979). This result is comparable to

Awareness was found associated with participation of households to CBHIS. Those respondents who do not understand the scheme better are less likely to participate AOR of 95% CI 0.060 (0.014, 0.266). Not only their awareness but also their more understanding of the concept of the scheme was assessed. Those with good (high) knowledge of the scheme were 4.35(1.20, 15.72) times more likely to participate as compared to those with poor knowledge[1].

[1] The knowledge index measures how much knowledge they have on scheme. The index was created based on 5 awareness measuring questions and graded into three levels, good(high), medium and poor knowledge. If they answer 0 to 2 poor, 3 ad 4 medium and 5 or 6 high or good knowledge. The newly created knowledge index variable

Most of the scheme design related variables are associated with participation of the households to CBHI. Those households who are convenient with affordability are more likely to participate as compared to those who are not (AOR of 95% CI 2.903(1.171, 7.197)). Those who agree on benefit package advantage are more likely than who are not AOR of 95% CI 4.374(1.648, 11.610).

The respondent's perception on commitment of CBHI officials to effectively manage the scheme also influences participation decision of households to CBHI. Those who do not agree on the commitment of CBHI officials to effectively manage the scheme are less likely to participate as compared to those who trust commitment of CBHI officials to effectively manage the scheme. So there is a 73.4% decline in participation of HHs in CBHI due to lack of trust. (AOR of 95% CI 0.266(0.124, 0.569)).

Finally health status also affects participation. Those households who have at least one member who faced illness episodes 6 months before data collection are more likely to participate than who had not(AOR of 95% CI 4.298(1.698, 10.876)). Self-rated health status and chronic disease were found not to affect participation of the households onto the scheme.

Table7 Factors driving probability of CBHI membership (multivariate logistic regressions)

VARIABLE		**Odds Ratios**	
		COR (95% CI)	**AOR (95% CI)**
Ethnicity	Berta	**0.210(0.13,0.82)*** **	**0.414(0.186,0.919) *** **
	Amhara	**1.00**	**1.00**
	Tigrie	1.389	0.117(0.040,0.342)
	Oromo	0.477	0.363(0.107,1.231)
Distance		**0.94 (0.93,0.95)*** **	**0.97(0.96, 0.98)*** **

then estimated in bivariate logit regression. Then the knowledge index variable has associated with the dependent variable and taken to the multivariate logit regression.

Education status	No Education Informal educ From grade 1-4 From grade 5-8 From grade 9-10 Fromgrade11-12 College/TVET &above	**2.74(1.01,2.74)**** 0.71(0.44,1.14) **1.00** 1.72 (0.89,3.33) 0.71(0.328,1.57) 0.35(0.064,1.85) 1.02(1.009,2.73)	0.345(0.433,1.120) 0.087(0.024,0.320) **1.00** 1.232(0.341,4.444) 1.027 (0.177,5.974) 0.05(0.000,574.56) 0.102(0.006,1.748)
Income	<27000 ETB	**1.00**	**1.00**
	>=27000 ETB	**7.01(4.97,10.14)*****	**2.719(1.144,6.464)****
Family size		**1.57(1.44 ,1.72)*****	**1.279(1.036,1.580)****
Awareness	Yes	**1.00**	**1.00**
	No	**0.06(0.03,0.12)****	**0.060 (0.014,0.266)****
Knowledge index (KI)	Poor	**1.00**	**1.00**
	Medium	13.64(7.44,24.98)	4.03(0.90,14.74)
	High	**2.74(1.49, 5.03)**	**4.35(1.20,15.72)**
Affordability	Agree	**7.74(4.52,13.2)****	**2.903(1.171,7.197)***
	Disagree	**1.00**	**1.00**
	Neither	0.73(0.33,1.60)	0.326(0.089 ,1.189)
	Strongly agree	14.70(4.92,43.9)	2.573(0.456,14.506)
	Strongly disagree	0.03(0.00,0.25)	0.03(0.00,0.75)
benefit_package_meet requirement	Agree	**16.37(10.17,26.4*****	**4.374(1.648,11.60***
	Disagree	**1.00**	**1.00**
	No idea	0.85(0.42, 0.28)	1.047(0.185,5.932)
Agreement with premium collection period (season)	Agree	**9.14(4.51,18.50)****	1.64(0.434,6.16)
	Disagree	**1.00**	**1.00**
	No idea	0.59(0.21,1.67)	0.213(0.036,1.259)
CBHI_Officials are_committed to_effectively_manage_the_Scheme	Agree	**1.00**	**1.00**
	Disagree	**0.12(0.08,0.18)****	**0.266(0.124,0.569)*****
	No idea	0.09(0.047,0.19)	0.310(0.087,1.101)
Chronic illness and disability	Yes	**4.86(2.72 ,8.70)***	0.746(0.225,2.473)
	No	**1.00**	**1.00**
Illness episodes 6m prior to data collection	Yes	**5.91(4.16, 8.38)*****	**4.298(1.698,10.86) *****
	No	**1.00**	**1.00**
iddir membership	Yes	1.00	1.00
	No	**0.41(0.29,0.58)****	0.139(0.194 1.235)

***p value< 0.01, **p value< 0.05, p value< 0.1

6. DISCUSSION

Despite the overtime efforts being made to expand health facilities and health workers, utilization of healthcare services is still low in Ethiopia. For instance, on average, one person uses only one outpatient care in three years which is below the WHO standard which recommends 3 visits per year [1, 7]. As a challenge that had been facing Ethiopian health sector was health care funding or health care financing inadequacy [2]. Due to lack of formal insurance scheme and limited tax revenue of the government, the healthcare systems is mostly financed by donor and through out of pocket payment during services utilization. For instance, in 2014, out-of pocket health spending constitute 34% of total health finance [9]. The overtime increase in medical costs could cause catastrophic health expenditures especially for the poor households.

In order to protect the poor from catastrophic health spending and encourage healthcare seeking behavior, an increasing attention is being given for the development of community based health insurance schemes in different developing countries [2, 10]. Ethiopia also designed and introduced community based health insurance scheme to cater the population in informal urban and rural areas. There is also a plan to launch social health insurance scheme for civil servants and private sector workers.

In a cross sectional design, this study investigates factors driving enrollment decision in a community based health insurance scheme in Bambasi District of BGRS. The result shows promising performance in terms of the scheme uptake. About 85% of the study participants have information about CBHI and 55% of the sample households are member of the scheme. The multivariate analysis shows different socio economic and demographic variables such as income, ethnicity family size and distance from nearest health center significantly predict the probability of CBHI membership in the study area.

The study depicts that households with relatively high income level were more likely to participate than lower income groups. It is also found that the poor are less likely to participate in the scheme as compared to the rich**.** This may be as a result of affordability issue. Since the poor do not get enough cash to cover their basic needs and to contribute for health insurance scheme. The household's ability to pay for CBHI decreases with lower income level. Two studies

conducted in Ethiopia proved this evidence similar to this article result [14, 20]. This result implies the importance of providing subsidized premiums and fee waivers for the poorest households in order to make the scheme social inclusive and to ensure equity in the health system.

Among different ethnic groups found in the study area, households from Berta ethnic group are found to be less likely to participate in the scheme. The language barriers between the CBHI officials and the Berta ethnic group might have been contributed for this difference in the participation. The scheme officials may not properly provide adequate information about the benefit and the design of the scheme due to language barrier.

Family size has a positive association with participation decision onto CBHI. A unit change in a household size produces change of probability of participation decision onto CBHI. This may be due to Cost of treatment burden if faced illness, is higher for household with smaller number than larger households. So to save the cost incurred for treatment of many members, households with large family size decide to participate. Also the amount of premium asked is similar up to 5 members and it only increases with each individual added for household member greater than 5. So household members 2 and household members 5 may not be the same in willingness to participate to CBHI. This result is comparable to studies done in Ethiopia [11, 20], Nigeria [16], and India [24]. The CBHI uptak References e review done in LMIC (low and middle income countries) support this evidence [21].

Pertaining the distance of home of the household to the nearest health facility, it was associated negatively with participation decision to CBHI. It was reported that the median time it takes to reach the nearby health facility was 35 minutes, ranging between 3 minutes to 200 minutes. As the study area was one of the regions Woreda at which hard to reach kebeles are there, this variable may affect the tendency of the households whether to participate or not by affecting accessibility of health service. This result is concurrent to the study done in Benchi magi district in 2014[11].

Awareness about the scheme is the other factor that has a potential to positively influence participation in a CBHI. It is found that those who have no information about the scheme are less likely to participate as compared to those who did have awareness about the scheme. The evidence indicates it is necessary to provide first adequate information about health insurance as well as CBHI so as to encourage participation in the scheme. This result was consistent with the study done in Bugna district in 2016 [20].Also this result is supported by studies conducted in India [24], Ethiopia [11].

Not only having information about CBHI matters, but also Knowledge on the concepts of the scheme was found to influence participation decision of the HHs. Those with poor knowledge about the scheme were less likely to participate as compared to those having good knowledge. This result is comparable to result of the study conducted in rural India [24] and Ethiopia [20], also in the CBHI uptake review in LMIC [25]. The explanation behind this finding may be that awareness or knowledge makes decision making for participation easier by rendering people analyze benefits and costs or the risks that will be averted and the risks that faces(catastrophic health expenditure).

The perception of the CBHI design issue, such as affordability of the premium and benefit packages found to be among important predictors of participation decision in health insurance scheme. The Ethiopian CBHI scheme benefit packages excludes some services like ambulatory care, coverage of transportation costs, cosmetic surgery, artificial teeth, eye glasses, cosmetic procedure, treatment of certain chronic illnesses like heart failure and maternity services. Moreover, to ensure financial sustainability of the scheme, accessing services is allowed only from public providers. Also absence of incentives for those who renew their membership on time washout using health services and absence of services outside government facility due to benefit packages [25]. This indicates that it is important to consider the need of the community while revising the premium and benefit packages of the scheme. It is also necessary to provide adequate information why some expensive services are excluded from the benefit package so that they can accept the logic behind excluded services.

The other finding is the confidence of the households towards the commitment of CBHI official's to effectively manage the scheme. Household heads that trust competency or

commitment of CBHI officials to effectively manage or support the program are 4.27 times more likely to participate in the scheme as compared to those who don't trust their commitment. This result is similar with a study done in Nigeria [26]. Therefore, it is necessary to ensure transparency and accountability of the scheme administrative bodies and to involve the target population in the supervision and monitoring activities so as to create confidence on the management and self-ownership to the scheme.

In this study self-rated health status and chronic disease and disability were found not to affect participation of the households to the scheme. However, history of disease episodes or facing illnesses in the past 6 months is found to be significant predictor of participation in to the scheme. This is as a result of the cost incurred by the family for treatment of the cases with repeated visits to health facilities is greater than what they contribute to CBHIS. Similar to previous studies [14, 12], this indicates adverse selection problem drives the scheme uptake and this need attention of the concerned bodies as it latter on could systematically influence the financial sustainability of the scheme.

7. STRENGTH AND LIMITATION OF THE STUDY

7.1. Strength of the study

- In this study bias was minimized by training of data collectors, regular supervision and use of random sampling method. Confounders were controlled by the use of multivariate analysis.
- Since there was no similar study done particularly on participation of CBHI in case of Benishangual Gumz Region, it will serve as baseline information for future studies and improves the uptake of the scheme.
- Unlike previous studies the study also examine the effect of perception on CBHI design and trust of the community of the scheme administrative bodies.

7.2. Limitation of the study

- This study does not show the progress of participation of HHs into CBHIS in the Woreda since it is cross sectional study design.

- The factors expected to influence participation of community based health insurance may not be comprehensive. There could be other influencing factors which this study did not touch.
- Determination of household income may not be accurate as this is based on the knowledge of the respondents to estimates earning for the households from different sources.
- In order to get more detailed info about the participant's knowledge and perceptionqualitative method of data collection tool should have been used. But more or less the research questions are answered by the quantitative tool.

8. CONCLUSION

The findings of the study indicated that the estimated proportion of HHs participating in the scheme was 55%. Most of the respondents have awareness about community based health insurance. Family size, ethnicity, illness episodes, awareness about health insurance and ethnic background are found to be important factors influencing participation decision in the scheme. In terms of economic status, the study shows that the rich are more likely to participate in the scheme as compared to the poor since the rich can afford the premium required to purchase health insurance policy. Distance to nearest health facilities is also found to have negatively related with probability of being member of the scheme. Also certain CBHI design related factors like affordability, benefit package as well as trust on CBHI officials are important predictors of the scheme uptake.

9. RECOMMENDATIONS

This study investigates different factors that could have a bearing on participation decision in CBHI scheme. Based on the findings of the study, the following points are recommended to be given attention by concerned bodies in order to boost coverage of the scheme:

- Regional Health Bureau, Zonal and Woreda health office should work on the expansion of health services in their nearest possible distances so as to improve accessibility of health service. This can be done either by constructing additional health centers or making the health service accessible at health post levels and by assigning health officers.
- Since the poor are less likely to participate in the scheme, the regional administration and Health insurance agency should provide fee waiver and subsidized premium so as to make the scheme inclusive to the poor and ensure equity in the health system.
- It is also necessary to improve awarnesss of healht insurance and knoldege about CBHI scehme by the woreda CBHI officials and health workers.
- It is also necessary to adjust the contribution and benefit package of the scehme based on the need of the community
- Enhancing confidence of the target population on the commitment of CBHI officials to properly administer the scheme resources.
- In order to address adverse selection problem in the uptake of the scheme, the Woreda CBHI branch should take appropriate measures such as putting waiting period for new members before they can get access to services using CBHI membership card.
- The regional health insurance agency should assign CBHI official and workers who can speak local language so as to properly inform the design of the scheme and to get trust of the target population.
- To investigate factors driving the dynamics of membership renewal and drop out decision, further study is recommended to be conducted using panel data analysis.

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APPENDIXES

Appendix 1: Description of the dependent and explanatory variables

Table8. Study Variables

No	Variables	Description of variables	Measurement	Expectation
A	Dependent variable			
1	$P[CBHI]$	A dummy Variable Whether the person is currently participating in the CBHI (1) or not (0)	Dummy variable	
B	Independent Variable			
1	AG	Age of the household	Continuous	-
2	ED	Educational status of the household head in terms of year of schooling	Categorical	+
3	Fs	Family size	Continuous	+
4	TG	A Dummy variable to express trust of the HH head to CBHI officials to implement CBHI	categorical	+
5	$I6M$	A Dummy variable to express whether person experienced an acute illness within the past 6 months from now (1) otherwise (0)	Dummy variable	-
7	R	Religion of household head	Categorical	+
8	K2	Awareness of CBHI Capable of defining, etc. 1= if they have awareness and 0= otherwise	Dummy	+
9	Com	Commitment of CBHI officials as expressed with their acceptance. like trust,	categorical	+
10	Sn	Social network and support (availability of someone to help in case of health shocks) 0 if no and yes if	Dummy	-

		otherwise		
11	TM	A Dummy variable to express trust of the household head to modern health care = (1), otherwise 0	Dummy	+
12	Ma	HHs reaction to Compulsory/mandatory CBHI_?	Categorical	+
13	D	Distance to the nearest health center	Continuous	-
14	I	Income as expressed with annual income	Continuous	+
15	Ki	Knowledge index	Categorical	
16	Aff	Affordability	Categorical	
17	Bp	Perception to benefit package	Categorical	
18	Cu	Is representing culture if the HH is member of Senbete, or any other groups	Categorical	-

Appendix 2: Knowledge about the concept of health insurance scheme

Table 9. Knowledge Index

			Answers			
			Correct	**%**	**Incorrect**	**%**
Only those who are very poor should join to CBHI.			383	62.38	**231**	**37.62**
Incorrect	383	62.38				
Correct	147	23.94				
No idea	84	13.68				
Only those who are sick should join to CBHI.			**505**	**82.25**	**109**	**17.75**
Incorrect	505	82.25				
Correct	51	8.30				
No idea	58	9.40				
Payment of the premium is to finance future health care needs			**313**	**51**	**301**	**49**
Agree	271	45.02				
Disagree	133	22.09				
Neither of.	133	22.09				
Strongly agree	42	6.98				

Strongly disagree	13	2.16				
Payment is unreturnable premium used to manage un expected future health shocks			**431**	**71.59**	**183**	**28.41**
Incorrect	106	15.62				
Correct	431	71.59				
No idea	77	12.79				
CBHI is like saving scheme, you will receive interest and get your money back			**362**	**58.96**	**252**	**41.04**
Incorrect	362	58.96				
Correct	138	22.48				
No idea	114	18.57				
Without using health services, If you claim to the insurer, the money you contributed will be returned back to you.			**138**	**22.92**	**350**	**58.14**
Incorrect	138	22.92				
Correct	350	58.14				
No idea	114	18.94				
Respondents knowledge /understanding/of CBHI concepts						
Poor	84	14	-	-	-	-
Medium	227	37	-	-	-	-
High	303	49	-	-	-	-

Appendix 3. Consent form English version

Addis Ababa University, School of public health

Questionnaire Consent Form

Good morning/afternoon. My name is _____ (Interviewer).

My name is----------and I am going to conduct an interview with you on behalf of **Mr.** TILAHUN ALEGN

A postgraduate student at Addis Ababa University, school of public health. He is now conducting a research entitled “Determinants of Participation in a Community Based Health Insurance Scheme Bambasi Woreda, BenishangulGumuz Regional State". As the study is directly related to head/spouse/de facto head of households, you are one of them selected randomly to participate in this study. Therefore, you are kindly requested to participate in this study and provide the information required from you. I would like to ask you a few questions if I may, but you can refuse to answer any question I ask. You may end the interview at any time.

You can also refuse to participate in the study entirely. Your refusal will not restrict you from obtaining the required medical care when you need.

The interview will last approximately 20 minutes. Your responses will be kept confidential and there will be no way of linking your individual response to the final results of the study findings. We would like to inform you that the responses that you provide to the questions are very essential, not only, for the successful accomplishment of the study, but also for producing relevant information which will be helpful in the planning and implementation of uptake of community based health insurance so as to access to health service in avoiding financial barrier.

Are you voluntary to respond to the questions?

If yes; proceed with the interview, if No; thank him/her and end.

CRITERIA FOR RESPONDENT

Only head of household or spouse can be used as respondent. The head of HH has to be a living member of the HH and determined by the HH members themselves. The head of HH can be female. (If the head of household or spouse cannot provide information the interviewer can ask the de facto head of HH (e.g. who earns main income) spouse

Appendix 4

Questionnaire English version

Code No. ----------

Kebele ---------- Sub kebele/village/Gott----------Household ID No.

Date ----------Time started----------Time ended----------

Section A. Socio economic and demographic questions

	Question	Alternative responses(Circle the response
01	Sex of the households head?	1. Male 2. Female
02	How old are you?	_____years old.
03	What is your religion?	1. Orthodox 2. Protestant 3. Catholic 4. Muslim 5.Others(specify)____

04	To which ethnic group do you belong?	1. Oromo 2. Amhara 3. Tigre 4. Berta 5. Other ,specify ----------
05	What is the highest level of school you have completed?	1. No education at all 2. informal education 3. Grade 1-4 4. .Grade 5-8 5. Grade 9-10 6. Grade 11-12 7. Diploma (including TVET) and Above
06	What is your Current marital status?	1.Single 2.Married 3.Divorced 4.Widower/widowed
07	In average how your household amounts of money earns (by you and other family members in general) per month from different sources. Including agricultural harvest, livestock production and engaging in formal and informal business activities and so on?	_____ Eth Birr
08	What is the source of light in your home?	1. Kerosene Lamp 2. Gas Lamp 3. Candle 4. Electricity (Mains) 5. Torches(Flashlights) 6. Other *[specify]* __
09	How long it takes for you to go to the nearest health center using the usual means of transpiration in minute	_____minutes
10	Do you have someone to relay on during health shocks?	1. Yes 2. No

Section B

Participation in community based health insurance scheme

11	Is your household currently member of CBHI scheme?	1. Yes 2. No

12	If your household is not member of the scheme, why you did not join the scheme?	1. Limited information about the scheme 2. The amount of premium is not affordable to our family 3. Lack of quality care 4. Lack of access to care 5. CBHI officials are not trustworthy 6.There is no one in our family who need medical care 7. Other(specify) _____
13	If your household is not member of the scheme, do you have a plan to participate in the scheme in the near future?	Yes 2. No
14	If your household is member of the scheme, how long you have been member of the scheme?	_____months
15	If your household is member of the scheme, why did you join?	1. Because there are household members who were sick and need care 2. Because the level of contribution is not expensive 3. In order to protect ourselves from unexpected health shock in the future 4. Because of pressure from government/CBHI officials/friends/neighbor 5. Because we got fee waiver benefit and we did not need to contribute for the scheme 6. Other (specify)_____
16	If your household is member of the scheme, do you have a plan to renew your contract next time?	1. Yes 2. No
17	If your household is member of the scheme, is there at least one family member who used CBHI membership card to access healthcare services?	1. Yes 2. No

Section C

Issues on the design of CBHI scheme

18	The contribution of CBHI is affordable to the majority of the community?	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
19	The interval of CBHI contribution is appropriate as compared to the income generation pattern of the community?	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
20	The CBHI benefit packages satisfy the need of the households.	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
21	Insured households get access to quality healthcare services from contracted health facilities	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
22	CBHI officials are committed to implemented and support CBHI scheme	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
23	CBHI officials are trustworthy in properly administering and using the finance collected from CBHI members	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
24	Do you participate in iddir?	1. Yes 2. No
25	How many times do you participate traditional associations or social networks such as senbete	1. I do not participate at all 2. 1 or 2 times per month 3. 3 or 4 times per month
26	If you were participating have you ever been leader or head for the team?	1. Yes 2. No

Section D

Awareness of health insurance scheme

27	Do you have information about CBHI?	1. Yes 2. No
28	If you say yes to the above question what is the source of information?	1. CBHI officials 2. Health professionals in health facility 3. Neighbors/friends 4.Mass media such as ETV/radio
29	Only those who are very poor to pay for health care should join CBHI scheme	1. Correct 2. Not Correct 3. Do not know
30	Only those who fall sick should consider enrollment in CBHI.	1. Correct 2. Not Correct 3. Do not know
31	Mandatory community based health insurance increases participation rate of people to insurance	1. Correct 2. Not Correct 3. Do not know
32	CBHI program are like savings scheme, you will receive interest and get your money back	1. Correct 2. Not Correct 3. Do not know
33	Under CBHI program, you pay money (premiums) in order for the CBHI to finance your future health care needs?	1. Correct 2. Not correct 3. Do not know
34	Without using health services, If you claim to the insurer, the money you contributed will be returned back to you.	1. Correct 2. Not correct 3. Do not know

Section E

Health related variables (quality, utilization, health status, access)

34	How do you rate the health status of you and your family members?	1. Very high 2. High 3. Medium 4. Poor 5. Very Poor

35	Have you ever or any one in your household fallen ill in the past 6 months?	1. Yes 2. No
36	Have you ever or any one in your Households used health care services from modern providers in past six months?	1. Yes 2. No
37	If someone (can be also more than one family member) from your household used healthcare services in the past six months, how much in total your household paid?	In Ethio Birr _____
38	Modern health care providers can be trusted more than traditional healers?	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree
39	Availability of drugs and medical supply	1. Always available 2. Usually available 3. Rarely available 4. Not available
40	Waiting time to obtain health services?	**1.** Less than 3o minutes **2.** 30 to 60 minutes **3.** 1 hour to 3 hours **4.** More than 3 hours