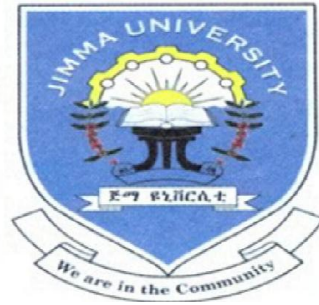


Determinants of enrollment to Community Based Health Insurance among Rural Households in Jimma zone, southwest Ethiopia: Case- Control Study



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Jimma, Ethiopia

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Abstract

Background: Community-based Health Insurance is not-for-profit type of health insurance in which members regularly pays small premiums into a collective fund to be used for medical care and treatment during illness. It has an advantage of minimizing the equity gap, reducing out-of-pocket spending and enhancing utilization of the health care system. In Ethiopia, even though there is an increasing advocacy for this scheme as part of a broader solution to health care financing problems, in Oromia region particularly in Jimma zone, enrolment in such scheme remains very low.

Objective: To identify determinant factors for enrolment to community-based health insurance scheme among rural households in CBHI implementing districts of Jimma zone, southwest Ethiopia.

Methods: A population based Case-Control study was conducted on randomly selected 355 cases and 355 controls from March15-April15/2018 in CBHI implementing districts of Jimma Zone. Face to face interview technique using structured questionnaire was used for household survey to collect data. Data was coded and entered in Epi data v.3.1 and exported to SPSS v. 23 for statistical analysis. Multivariable logistic regression analysis was conducted to identify determinants of enrolment in CBHI. Finally adjusted odds ratios with 95% confidence intervals and p-values <0.05 were considered to declare statistically significant variables as independent predictors of CBHI-enrolment. The study had gotten ethical approval from Institutional Review Board of Jimma University.

Results: Seven hundred and ten (355 cases and 355 controls) household heads were participated in the study out of 724(362 cases and 362controls) yielding a response rate of 98%. Household heads from middle wealth quintile [1.23(1.08-2.97)], poor health status [10.32(3.8-27.7)], family size>5members [3.0(1.3-6.7)], being model household [4(1.5-11.6)], <60min travel time on foot[3.7(1.9-7.0)], being exposed to health facilities[2.4(1.6-4.5)], being exposed to indigenous community insurances[2.9(1.5-5.7)],those who trust on CBHI committee[23.2(9.2-46.8)],having favorable attitude towards CBHI [6.8(3.4-13.8)] and having awareness on CBHI [8.3(3.4-13.8)] were more likely to be enrolled in to CBHIS than those households in lowest wealth quintile, having good health status, family size<5 members, those who are not considered as model households, those who travel >60min to the health facilities, those who are not exposed to HF, those who are not exposed to indigenous community insurances, those who not trust CBHI committee, having unfavorable attitude and lack of awareness towards CBHI with their respective AOR with 95%C. I.

Conclusion: Wealth quintile, perceived health status, family size, being a model household, distance to health facilities, being exposed to health facilities, being exposed to indigenous community insurances (iqub, idir), trust on CBHI committee, attitude and awareness towards CBHI were determinants of enrolment to CBHIS.

Recommendation: Equipping rural households with a good understanding about CBHI, availing new CBHI contractual health facilities at reasonable distance and collaboration with education sector to enhance the CBHI scheme membership is recommended.

Key words: Determinants, CBHI, Enrolment, rural households, Jimma, south west Ethiopia

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Abbreviations

CBHI	Community Based Health Insurance
CBHIS	Community Based Health Insurance scheme
CHF	Community Health Fund
CSA	[Ethiopian] Central Statistics Agency
Co-BHS	Cooperative Based Health scheme
E.C	Ethiopian Calendar
EDHS	Ethiopian Demographic and Health Surveys
EHIA	Ethiopia Health Insurance Agency
EIC	Ethiopian Insurance Corporation
ETB	Ethiopian Birr
FMoH	[Ethiopian] Federal Ministry of Health
HH	Households
HI	Health Insurance
HSFR	Health Sector Financing Reform
HSTP	Health Sector Transformation Plan
IRB	Institutional Review Board
LMIC	Low and Middle Income Countries
NHA	National Health Account
NHIS	National Health Insurance Scheme
OOP	Out- of –Pocket
PCA	Principal Components Analysis
SES	Socio Economic Status
SHI	Social Health Insurances
SPSS	Statistical Package for Social Science
SRS	Simple Random Sampling
UHC	Universal Health Coverage
UNDP	United Nation Development Program
US	United States
USAID	United States Agency for International Development
USD	United States Dollar
WHO	World Health Organization
WTJ	Willingness to Join
WorHOs	Woreda Health offices

Chapter-1: Introduction

1.1 Background

How health services are paid for is a key aspect of health system performance. While raising sufficient resources is obviously imperative to running a health system, how those resources are used to buy goods and services – how payment is effected, in other words – is just as important. The global health community time suggests, a predominant reliance on public funding for health services is central to ensuring access to health services whilst also protecting families from potentially impoverishing levels of direct out-of-pocket payment(1).

How to finance and provide health care for more than 1.3 billion rural poor and informal sector workers in low and middle-income countries remain the greatest challenges facing the international development community. In fact, in these low income countries where more than 50% of the population live under the poverty threshold, out-of-pocket payments remain the main method of paying for health care. Unfortunately, this mode of payment limits access to quality healthcare to only the relatively rich. Moreover, it can dramatically impoverish entire households(2).

To ensure healthcare related financial risk protection, the world is in the midst of a “financing transition”. This transition refers to a movement away from financing health care through out-of-pocket payments towards health insurance and risk-pooling schemes, one of which has been introduced as community-based health insurance (CBHI) scheme. Prepayment and sharing the burden of sickness through CBHI have been recognized as keys for making health care affordable among the poorest. In addition to alleviating financial barriers at the time of illness, community insurance programs have been touted as a ‘sustainable’ approach to health financing(3) but overreliance on direct payments for health care services is one of the problem that can restrict countries from moving closer to universal coverage, particularly in the poorest countries (4).

CBHI is not-for-profit type of health insurance in which members regularly pays small premiums into a collective fund, which is then used to protect themselves against the high costs of seeking medical care and treatment during illness and it covers the poor, unemployed and those living in the rural areas. It has an advantage of minimizing the equity gap and reducing out-of-pocket spending, increase awareness regarding the value of insurance,

building self-belief among participants through community control mechanisms, and enhancing utilization of the health care system(5).

Many low and middle-income countries (LMICs) are faced with the challenge of raising sufficient funds to finance health services in an equitable way. Although it is expected that governments should play a leading role in this regard, most governments in these countries are constrained by the high proportion of informal workers. Also, other economic contexts such as high public debt and population growth rate in most of these countries have made it difficult to increase government spending on health. As a result, only a small fraction of government revenue is allocated to provide healthcare services for the population. Similarly, the burden of disease in these countries are higher than those in high-income countries. Accordingly, LMICs account for 90 % of the global burden of disease and only 12 % of global health spending(6,7).

In fact, annual estimates show that about 44 million households (representing more than 150 million individuals) face catastrophic expenditure globally while about 25 million households (representing more than 100 million people) are impoverished because of direct healthcare payments. Over 90 % of these occur in LMICs and direct out-of-pocket payments dominate healthcare financing. Such direct payments are inequitable and inefficient in financing healthcare services. This is because they are generally regressive; accounting for a higher proportion of poorer households' income compared to richer households. Thus, many households in LMICs lack adequate financial protection; households face financial catastrophe and impoverishing effects of paying for health services out-of-pocket(7).

Many developing countries introduced health insurance – in order to improve access to care provide financial protection of the sick/poor, mobilize resources for service improvement, and ultimately contribute to improved population health. In many countries health insurance is a strategy for achieving Universal Health Coverage and it provides financial protection of the insured catastrophic health expenditure and increases utilization of formal health care(8). Since their adoption in late 1990s, as an alternative to informal risk-pooling approaches, community-based health insurance schemes (CBHIS) which involve potential clients in determining scheme benefits and scheme management have been implemented in several developing countries(4,9). Despite the proven effects of community based health

insurance schemes in enhancing access to services and financial protection, in Ethiopia there has been limited population enrolment in such schemes.

The health financing in Ethiopia comes from a variety of sources, around 34% of total health expenditure comes from household out-of-pocket payments which have the probability of letting the poor below poverty level(10).

There is strong evidence that CBHI improves resource mobilization to improve health service utilization and provide financial protection for members in terms of reducing their out-of-pocket expenditure; as well it is also one of the health care financing options that may help to extend coverage to rural communities and the informal sector(11). A systematic review conducted to assess the extent to which micro health insurance providing financial protection to low-income households in developing countries shows that, health insurance provides protection to the households from catastrophe and impoverishment resulting from health expenditures(12).

A study done on dropping out of Ethiopia's community-based health insurance scheme documented that enrolment after inception increase from 41% to 48% a year later. Of those who enrolled in the first year only 82% renewed their subscriptions(13).

Even though Ethiopia endorsed and launched CBHI pilots in some selected woredas of different regions in 2011, its uptake in the country, particularly in Jimma zone of Oromia remains the main challenge. Despite the fact that socio-demographic characteristics, awareness and perception about CBHI as well as health related factors accounted for a great share for low membership of CBHI. There was no study conducted in Ethiopia that documented the factors which affects membership of community based health insurance scheme though some studies have been done on willingness to join and pay.

1.2 Statement of the problem

Financial barriers are the major bottlenecks of access and use of health services. Majority of the poor around the world have to rely on their own resources to finance medical expenditures, as many governments have failed to establish formal protection mechanism and social safety nets. Health related financial stocks are further exacerbated when the primary

income earner in poor households are the ones that require the expensive health care treatments(9).

Globally, every year about 100 million people are pushed in to poverty and 150 million people suffer financial catastrophe because of out-of-pocket expenditure on health services(14).

In many developing countries, initiatives are underway to strengthen voluntary community based health insurance as a means of expanding access to affordable care among the informal sector and as an emerging tool for providing financial protection against health -related poverty. However, increasing coverage with voluntary health insurance in low income settings can prove challenging(15,16).

Community-based health insurance (CBHI) is becoming a prominent and promising concept in tackling financial health care issues confronting the poor rural communities as well it is one of the ways to enhance access to health care services and to protect individuals from catastrophic health expenditures. However, providing access to affordable health care for the informal sector remains a considerable challenge for low income countries striving to make progress towards universal health coverage(17–19). Therefore, innovative measures are needed to encourage all households to enroll in such schemes(20).

Low-income and middle-income countries (LMICs) have difficulties in achieving universal financial protection, which is primordial for universal health coverage. A promising avenue to provide universal financial protection for the informal sector and the rural population is community-based health insurance(7,9).

Evidence from Ghana Demographic and Health Surveillance data showed that, health insurance determines antenatal, delivery and postnatal care utilization. Among uninsured women, more than 50% of the women lived in poverty had two to four children who were born by unskilled attendants. Approximately 33% of the women had difficulty in reaching health care facility. Above all, insured women were more frequently engaged in skilled attendance of labour. However uninsured women more often indicated having difficulties in accessing the health facility(21).

As study done on impact of CBHI enrolment on childhood mortality in sub-Saharan Africa shows that, mortality rate was almost 50% less in those children enrolled in CBHI than non-enrolled which indicates that child health and health insurance enrolment are quite interrelated especially in developing countries like Ethiopia(22). Additionally, a study done on the determinants of community health fund (CHF) membership in Tanzania stated that the demand and supply side factors affect the decision to enroll and remain enrolled in the CHF: on demand side, household's employment status, sex of households head, income, households family size, lack of understanding of risk pooling and supply side factors: lack of drugs and diagnostic equipment which implies poor quality of health service(15,16,18,23).

In Ethiopia even though there is high burden of diseases, utilization of modern health care services is limited. One of the reasons for low utilization of healthcare services is the user-fee charges. Moving away from out-of-pocket charges for healthcare at the time of use is an important step towards averting the financial hardship associated with paying for health service. To avert the difficulties of out of pocket payments Ethiopia launched the CBHI scheme as solution, however, still the CBHI scheme is not accustomed well(24).

Community based health insurance program in Ethiopia was launched in 2011; the aim being to protect households from illness-related catastrophic financial expenditures and to increase access to and use of modern health care services. Even though the overall enrollment rate in the pilot districts reached approximately 52 percent of the target population ; of which 85 percent are paying members and the remaining have subsidized membership and enrolment status is different among regions and piloted districts as well, in order to scale up the schemes, the factors that determines CBHI membership should be identified(25).

The average enrollment for Oromia regional state for pilot and newly expanded districts was 23% and including a 10% non-paying indigent member and 21.5% in Jimma Zone (26). which indicates current coverage of CBHI remains low and there is need to have more insight on why this is so. On the other hand, lack of studies (evidences) on determinants of enrollment in these schemes results in low enrollment in Ethiopia in many places where CBHI were established and therefore this study will put insights on the factors associated

with the enrolment in detail by population based case-control study design by utilizing quantitative method.

In Jimma Zone, even though the CBHI scheme pilot lasts for more than 6 years, still its enrollment remained low which accounts around 21.5% according to administrative report of Jimma zone health department in July, 2017(27).

As the principal investigator's knowledge, in Ethiopia few studies were conducted on subjects related to community based health insurance, which mainly focused on dropping out from the scheme and willingness to join the CBHI scheme. There was no study that documented factors affecting membership of community based health insurance among members and non-members in Ethiopia in general and in Oromia Regional State in particular. Hence, this study was aimed to determine factors affecting membership of community based health insurance in Jimma Zone, Oromia Regional State, Ethiopia.

1.3 Significance of study

Achieving universal health coverage by expanding high quality health care services that are equitable and accessible to all is committed by Ethiopia. It has begun establishing a comprehensive and sustainable risk protection system because financial risk protection is a critical component of UHC and health care financing mechanisms adapted to our country's needs 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 community based health insurance. However, the objective is there, the membership of CBHI scheme is very low.

Therefore, the subject should be studied and it provides information on factors affecting membership of CBHI so as to design interventions to increase uptake.

This study aimed to determine factors affecting membership of the CBHI which is in turn very important for the implementing and the sustainability of the scheme in the study districts. It might offer decision makers at different level to determine the basic parameters of CBHI schemes in scale up districts such as amount of contribution and institutional arrangement based on the finding.

Moreover, this study will provide an information for identifying barriers to enrollment in CBHI and some scheme-specific information which will be used for health planners and insurance agency to scale up CBHI schemes; and even though a few studies were done on willingness to pay and join on the scheme, there was no similar study done in Ethiopia as far as investigators knowledge so that it will be used as an input for other researchers who have interest to conduct further studies in this area.

Finally, this study will serve as a way in and be helpful in investigating new researches and local development experts who will work on any issues related with CBHI scheme specially to scale up by identifying determinants of enrolment on such scheme in detail.

Chapter-2: Literature review

2.1 Enrolment to CBHI

Literatures define the term CBHIS-enrolment in different ways but the meaning is almost similar. The term enrolment can be explained in many ways. For instance, community health funds membership and uptake of CBHIS are some of the terms used alternatively. Uptake or enrolment or membership of community based health insurance describes the concept as an acceptance and use of community based health insurance scheme(6,15).

Different literatures show that health insurance has positive effects on access to and use of healthcare services, increases health seeking behaviour and it contributes to financial protection of the insured as well it minimizes catastrophic health expenditure. Insurance requires focus on increasing population coverage and retention of active membership in order to realize the full potential of health insurance; as well making Health insurance more attractive by new innovative approaches and by identifying major constraints of Health insurance to increase the uptake of CBHI(8).

Enrolment to CBHIS varies among different groups (poor and rich). Even though enrolment among poor rural households significantly increased after subsidy, they were still less likely to enroll compared with the rich. However, the poor who enrolled had higher utilization than those who did not as well women and children who were enrolled with CBHI had higher healthcare utilization compared to those who were not insured as literatures revealed (28). With the aim to expand (scale-up) the enrolment throughout the country, Ethiopia adapted health insurance strategy with the main objective of promoting equitable access to sustainable quality health care, increase financial protection, and enhance social inclusion for the majority of Ethiopian families via the health sector in 2008 and has been implementing Community-based Health Insurance schemes (CBHIS) as pilots with the household level membership by contributing 10.50-15.0 Ethiopian birr per household per month depending on their respective region and covering all CBHI benefit package (all outpatient and inpatient services at the health center and Nearby hospital by excluding false teeth, eye glasses, and

cosmetic procedures) in 13 districts from 2011 with overall enrollment rate of about 52.4% of the target population of which 15% have subsidized membership and remaining are paying members and decided to expand the pilot to 161 *Woredas* in 2013(21). Even if scaling-up the enrolment to CBHIS protects rural households from financial hardship, many literatures show that there are a number of barriers to enroll on such scheme in which majority of them being socio-demographic and socio-economic characteristics (4,8,16)

2.2 Factors affecting CBHI-membership

Socio-demographic & economic characteristics (age, gender, marital status, ethnicity, residence, wealth index, family size, educational status, health insurance status, involvement in other indigenous unions, Religion, household headship, household heads employment status) were factors which affect the enrolment to CBHI. Health care service related variables (Service quality like (waiting time, availability of drugs, satisfaction with health care giver), Distance from health facility, Health workers attitude) as well as both household level (HH-composition, Health status(self-reported), HH illness experience, Status of health scheme, Membership in indigenous insurance, and individual level variables (Perception, Awareness of CBHI, Attitude and Knowledge) (20,29–33) are all factors determining CBHIS-enrolment. Literatures relevant to CBHI-enrolment indicated a number of variables that determine CBHIS membership are stated in different sections specifically.

The reports of International Labour Organization (ILO) in the world health reports even shows that, there were very less common practice to transfer more formal finance to protect those too ill to work. From five people in the world only one has broad-based social security protection in which covering for lost wages in the event of illness was also included and more than 50% of the world's population lacks any type of formal social protection. In sub-Saharan Africa and southern Asia only 5–10% of people are covered while coverage rates range from 20% to 60% in middle-income countries. In order to ensure social protection in health, an important part of broader efforts is Health financing (34) which implies to dig out the constraints (factors) to enrol and to expand such scheme more and more.

Up take of community based health insurance in low and middle-income counties is generally low and it is also determined by various factors. A systematic review done in low and middle

income countries on the factors that affect voluntary uptake of CBHIS demonstrated that, low levels of income and lack of financial resources as major factors affecting enrolment. Poor healthcare quality (including stock-outs of drugs and medical supplies and long waiting times) were found to be associated with low CBHI coverage. Trust in management of CBHI scheme found to affect enrolment. Educational attainment (less educated were willing to pay less than highly educated), men were willing to pay more than women, younger were willing to pay more than older individuals and larger households were willing to pay more than households with fewer members also influenced CBHI enrolment (7).

Socio economic and health related factors play a significant role in membership of CBHIS. A systematic review done in low and middle-income countries on factors affecting the uptake of CBHI show that educated, mature and female household heads attach more value to CBHI membership; gender matters most, followed by education and age. Presence of elderly people negatively influences enrolment. Incidence of chronic illnesses in households, which are more likely to join the CBHI (6).

Health services related factors can also play paramount role to CBHIS-enrolment as study shows in one of the pilot district (Thehuldere, north east Ethiopia) on CBHI and communities scheme requirement compliance, as the majority of the household members recognized that health facilities (health centers (479, 93.8%) and hospitals (444, 86.9%)) entered into a contract to treat members within the acceptable distance range. About three quarters (391, 76.5%), about half (251, 49.1%) and majority of (480, 93.9%) of the household members agreed that the health care providers favored CBHI members in the course of treatments, CBHI members' cost of care was tolerable and being self-sponsored respectively(17).

2.2.1 Socio-demographic and socio-economic factors

A study conducted on Determinants of community health fund membership in Tanzania by utilizing mixed methods revealed that wealth, sex and size of family members in the households determines the community health fund enrolment. Three middle income quintiles were 1-12% more likely to enroll in the CHF than the poorest and the richest. CHF member

households were more likely to be large (7vs6 $p<0.001$) and headed by a male (89% versus 79%, $p<0.05$) than uninsured households from the same areas (15) and similar studies done in Bangladesh also shows that occupation, health status and household size were significant determinants of health scheme participation. Larger households (5 to 6 household members) were significantly more likely to be enrolled in the Co-BHS membership than household with less than three members; housewife, self-reported poor health status were also significantly associated to enrollment in the scheme (19).

Study done in Ethiopia on Willingness to join community-based health insurance among rural households of Debu Bench District revealed that, educational status, wealth index and annual incomes were significantly associated with the households' decision in willingness to join community based health insurance scheme. Respondents who had no education were about 3 times more likely to join the scheme than those who completed grade 1–8. Households who were in the highest wealth quintile were more than 4 times more likely to join the scheme than those who were in the second wealth quintile and households who got better annual income were more likely to join the scheme than those who got less (24).

The Study also illustrated that, age had negative associations with the probability of WTJ the CBHI scheme. The younger were 6% more likely to join the scheme than the older. In comparison with heads of the households; spouses were 59% less likely to join the scheme. In comparison to married, the single was 87.7% less likely to join the scheme. Occupationally, housewives were more likely to join the scheme than farmers. Size of the family was positively associated with WTJ decisions of the households. As the number of the household members increase, the probability of WTJ increased by 69% (24) .

Educational level of Households Head and SES (expressed in terms of income, expenditure or asset ownership) of household were factors affecting enrolment in CBHI. These were evidenced by systematic review of factors affecting uptake of CBHIS carried on LMIC. When individuals understand insurance principles in general as well how it functions, they are more likely to enroll and as SES was shown to be enabling factor, even though as

people's SES improves, they may consume more of everything and also health services, beyond what the CBHI covers (6).

2.2.2 Health and Health service related factors

In case of health related factors self-reported health status of the household, borrowing money for covering treatments, and distance of the house to nearby health care facility were found to be significantly associated with the households' WTJ decisions. Self-reported health status and Distance of the health facility to the home of the household, as measured by time taken to arrive at the nearby health facilities had negative association with the households' WTJ. Borrowing money for health care payment was positively associated with WTJ. Households which borrowed money were about 3 times more likely to join the scheme than those who did not borrow(24).

A cross-sectional survey conducted on patients attending the contracted health facilities in Kenya shows that, Health care service utilization was affected by being a member of a CBHI as well level of acceptance and satisfaction of the service is highly associated with increasing utilization of both out and in-patient services which implies that in the choice of healthcare provider, quality of care was a determining factor (35). Antenatal, delivery and postnatal care utilization was determined by health insurance as Ghana Demographic and Health Surveillance data evidence shows. Uninsured women more often indicated having difficulty in accessing the health facility.

Another study done in Tanzania on household's perceptions towards cross-subsidization of the poor to enable them to access health services revealed that trust in scheme management is the main factor associated with increased willingness among CHF household's acceptance of cross-subsidization of the poor (36).

As the study on feasibility of introducing compulsory community health fund in Liwale district of Tanzania reveals that inadequate knowledge of the scheme, poor quality of the health care, limited service package of the scheme results in low membership enrolment in the scheme (23). However, similar studies in Ghana and Uganda indicates that trusting relations with health care and insurance providers was positively associated with active membership of the NHIS; community trust, trust in healthcare providers and trust in the

NHIS with respective p-values of 0.009, 0.000 and 0.000 (37,38) as well the management system also affects the enrolment (39).

2.2.3 Household Level factors

A cross-sectional study conducted on determinants of enrollment of informal sector workers in cooperative based health scheme in Bangladesh revealed that self-assessed current health status of households was an important predictor of health insurance coverage. The household head that had relatively lower health status (EQ-5D weight below 0.5) were significantly more likely to join the health scheme than those in better health (0.5 to 1) this shows that the demand for health insurance was higher among individuals who have relatively poor health (19).

Studies shows that household members age, educational status, chronic diseases and poor understanding on risk pooling were factors affecting CHF membership. Insured household heads were more likely than the heads of uninsured households to be older, completed secondary education and above and also decision to join the CHF was typically based on a rational comparison of the premium and expected cost of care when paying out of pocket. Expected costs were higher for households with greater health risk (young children, elderly members, chronic conditions (15).

Number of illness episodes' family experienced and the use of traditional medicine is also plays a paramount role in uptake of CBHI scheme. Evidences from systematic review conducted in low and middle income countries reported that, households with more sick members were willing to pay more, which supports the notion that families with high illness rates or more prone to being ill, had a greater tendency to participate or to be members of the health prepayment scheme. Alternatively, lower number of illness episodes in a specified period of time led to higher drop-out from the scheme as seen in India. The use of modern medicine is also an important factor for enrolling into CBHI since the scheme requires the regular use of modern means of treatment; hence those who use modern medicine have been found to be willing to pay more than those who use other means of treatment (7).

2.2.4 Individual level factors

Study done in Ethiopia on dropping out of community-based health insurance in the case of Ethiopia's pilot CBHI scheme reported that, more than two-thirds of the respondents (69%) have awareness about health insurance but low contract renewal rates have been identified as one of the challenges facing the development of community-based health insurance schemes(13).

A study conducted on Building awareness to health insurance among the target Population of community-based health insurance schemes in rural India indicates that, understanding about the CBHI especially Risk pooling concept prior to membership serves an important purpose in increasing knowledge of HI to peoples as higher awareness of CBHI was associated with higher propensity to enrol in the scheme (40).

2.3 Conceptual Framework

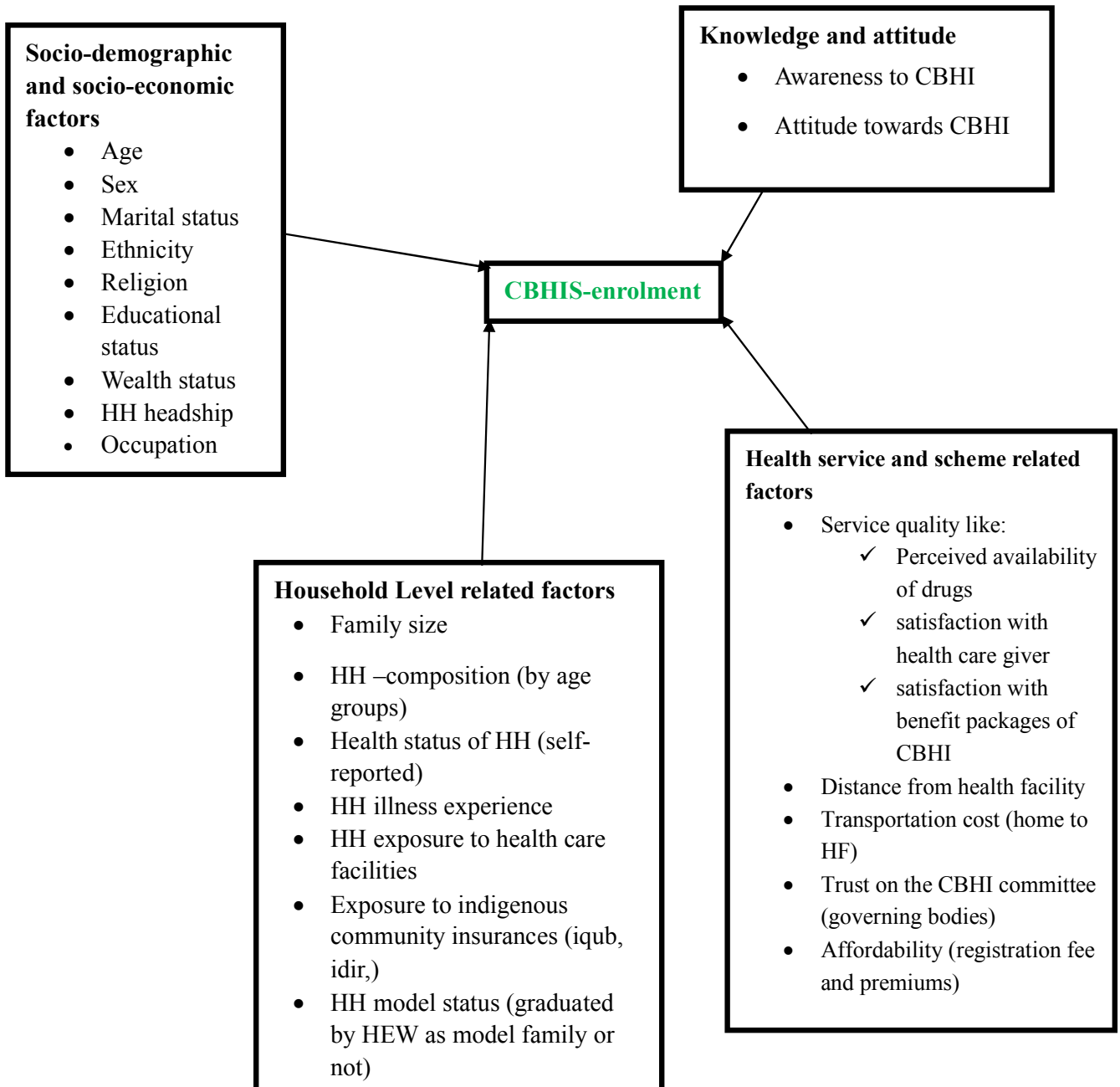


Figure 1 : Conceptual framework for determinants of community based health insurance enrollment, Jimma Zone,2018 (developed after reviewing relevant literatures (20,29–33))

Chapter-3: Objectives

3.1 General objective

- To identify factors that determine enrolment to community-based health insurance scheme among rural households in CBHI implementing districts of Jimma zone, southwest Ethiopia, from March 15-April 15/2018

3.2 Specific objectives

- To describe characteristics of CBHIS member and non-member households in CBHI implementing districts of Jimma zone.
- To determine factors associated with households' enrolment to CBHIS in rural households of CBHI implementing districts in Jimma zone.

Chapter-4: Methods and Materials

4.1 Study area and period

The study was conducted in Jimma zone, south west Ethiopia. Administratively, Jimma town is the capital city of the Zone which is 352km far from Addis Ababa. Based on the 2017 population projection, the total population of the zone was 3,209,127 (668,568HHs) of which 89.69% were rural inhabitants. The zone is divided in to 20 woredas (districts) with a total of 545 Kebeles (the smallest administrative unit) among which 505 were rural and the rest were urban(41).The zone had 5 primary hospitals, 114 health centers and 459 health posts. There is a zonal health department located in the capital of the zone, Jimma town, and there were 20 woreda health offices which were responsible for managing health activities.

Starting from 2010 (2003 E.C), CBHI program has been implemented actively till 2017 (2009 E.C) in 6 woredas (Gera, Mana, Gomma, Gumaya, Qarsa and Limu-Kossa) of the Zone. The total number of member households among these woredas to the scheme were 49,424 and its coverage was about 21.5% (42).

The study was conducted in two CBHI implementing woredas (districts) (i.e. Goma & Qersa) in Jimma Zone, Oromia Regional State, southwest Ethiopia from March 15-April15/2018. The total populations of the Goma woreda was 274,293. It had 57,144HHs (16,229 CBHI-enrolled, 40,915 non-enrolled) and total of 42 kebeles. The total populations of Qersa woreda was 215,957 and it had 44,991HHs (7,570 enrolled, 32,958 non-enrolled) with total of 31 kebeles.

4.2 Study design

A Population Based Case- control study design was conducted.

4.3 Population

4.3.1 Source population

All rural households in CBHI implementing districts of Jimma zone.

4.3.2 Study population

For cases- sampled CBHI-member households from source population.

For controls- sampled CBHI non-member households from source population

4.3.3 Study units

Household Heads of CBHI implementing districts of Jimma zone for both cases and controls.

4.4 Eligibility criteria

4.4.1 Inclusion criteria

For cases: - All selected CBHI enrolled household heads or spouses

For controls: - All selected CBHI non-enrolled household heads or spouses who have been living for more than 6 months in the district

4.4.2 Exclusion criteria

For both cases and controls: - All head or spouse of households who were seriously ill or unable to communicate at the time of data collection was excluded from the study.

4.5 Sample size and sampling procedure

4.5.1 Sample size determination

The required sample size was determined by two populations' proportion formula (considering CBHI-members as cases and CBHI non-members as control groups) and number of respondents in the study were determined by using Epi-info version 7 statistical software considering the assumptions as follows:

$$n_1 = n_2 = \frac{\left(Z_{\alpha/2} \sqrt{2\bar{p}\bar{q}} + Z_{\beta} \sqrt{p_1q_1 + p_2q_2} \right)^2}{\Delta^2}$$

Where: $\bar{p} = \frac{p_1 + p_2}{2}$

$\Delta =$ -

By using the assumptions from a study conducted in Tanzania(15).

- ❖ Sex of household head (as predictor/exposure variable for CBHI enrolment)
 - ✓ proportion of male headed households among cases = 89% and proportion of male headed households among controls = 79%
 - ✓ proportion among controls and AOR was used to calculate the sample size
 - ✓ proportion among controls and proportion among cases was also considered in the calculation
 - ✓ At 95% ($Z_{\alpha/2} = 1.96$) level of confidence, Power of study=80%

- ✓ Ratio of cases to controls = 1:1
- ❖ All above assumptions were considered in Epi-info version 7, the sample size was 460.
- ✓ By considering design effect=1.5 in order to minimize the sampling error of multi stages in sampling and a measure of the variance inflation of using other sampling method instead of simple random sampling method(43–45).
- ✓ And assuming 5% non-response rate (46), the required total sample size was 724 households (362 cases and 362 controls)
- ❖ Considering all objectives:

Taking households perception towards their health status, any chronic illnesses in households from study conducted in Ghana (20), and marital status of households as exposure variables/predictors of CBHI membership (15) and using similar assumptions, 95% CI, 80% power of the study and case to control ratio 1:1 the following sample size calculated using epi-info 7 software:

Table 1: Sample size determination for the research project on determinants of CBHI enrollment, Jimma zone, 2018

Exposure variables	Proportion among cases	Proportion among controls	OR	Sample size		Final Sample Size(1.5DE&+5 % nonresponse)
				Case	Control	
Male headed households	89	79	2.15	230	230	724
Perceived health status (good)	59.18	40.82	2.10	126	126	397
Presence of any chronic illness in the households	83	51	4.69	39	39	123
Marital status of HHH (married)	73	59	1.89	193	193	605

- ❖ From sample size determined for the objectives and the one which gave larger sample size was **724** households (**362** case and **362** controls)

4.5.2 Sampling technique and procedures

The study was conducted in CBHI implementing districts of Jimma zone, 30% of the districts (Gomma and Qarsa) were selected from 6 districts using lottery method. SRS (lottery method) have been done to get 2 districts (47). To get study subjects (HHH), the participants were selected using multi –stage sampling technique. From out of 73 kebeles of 2 districts 21 kebeles (12 of 41 from Gomma and 9 of 31 from Qarsa) were selected to cover at least 30% of the total kebeles randomly by simple random sampling. Then, the number of households that were included in the study was determined proportionally in accordance with the total number of households (both CBHI members(cases) and non-members (controls)) in the sampling frame of the selected kebeles. The sampling frame (list of all households) for cases was CBHI member household registration book of respective district CBHI offices and for controls was obtained from family folder of respective health posts. Finally, both cases and controls were selected by simple random sampling from the framed list (by using computer generated random number).

Sampling Technique

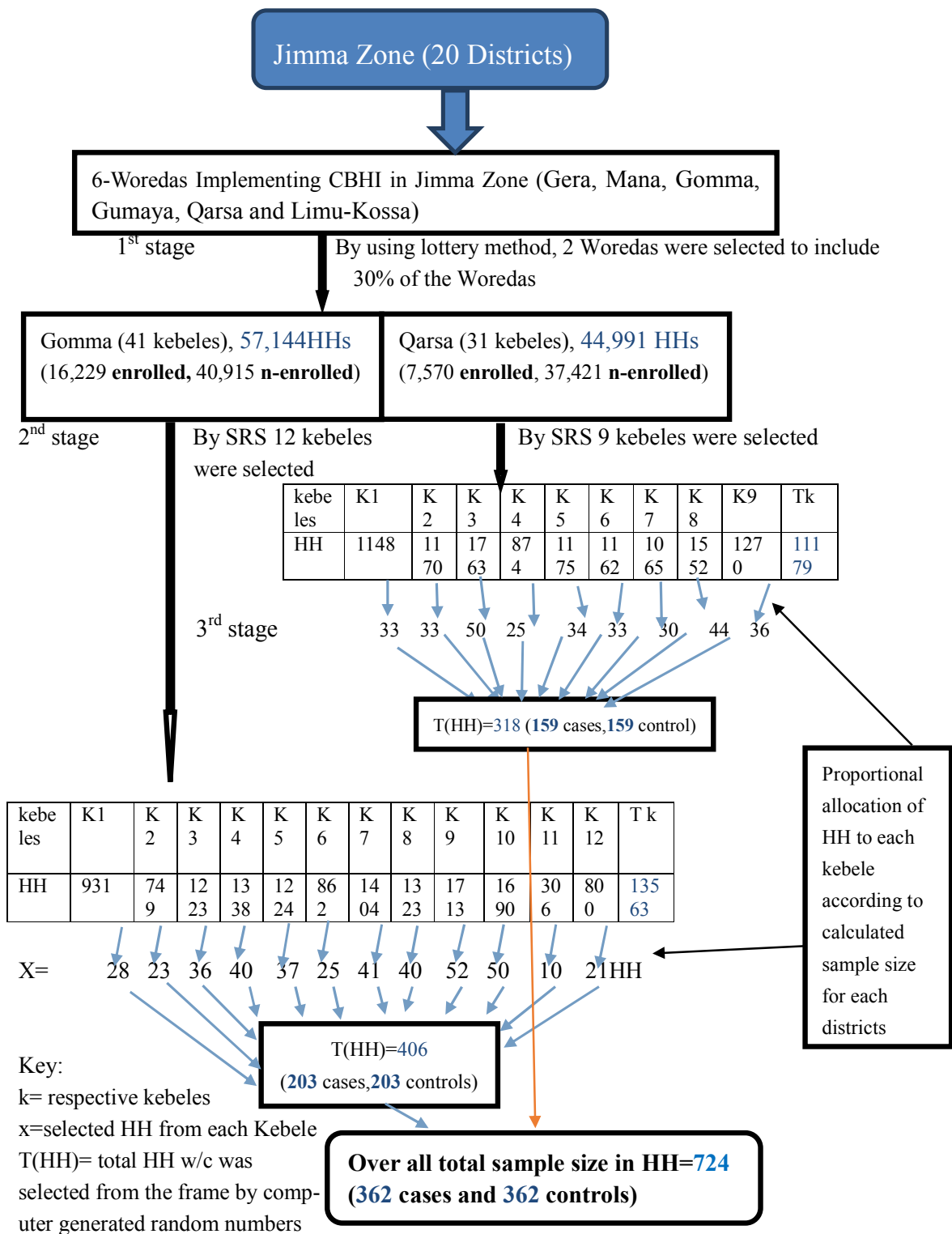


Figure 2: Schematic presentation of sampling procedure of the study on determinants of CBHI enrollment, Jimma Zone, 2018

4.6 Variable

4.6.1 Dependent variable

- Community based health insurance (CBHI) enrolment status

4.6.2 Independent variables

- **Socio-demographic and socio-economic variables such as:**
 - ✓ Age, Sex, Marital status, Ethnicity, Religion, Educational status, HH headship, Wealth index, Occupation (HHH/spouse employment).
- **Health service related variables**
 - ✓ Service quality such as: (waiting time, perceived availability of drugs, satisfaction with health care giver)
 - ✓ Service packages given for CBHI members, distance from health facility, trust on the CBHI governing bodies or committee, Affordability (registration fee and premiums)
- **Individual HHH level (knowledge and attitude) variables such as:**
 - ✓ Awareness of CBHI, Attitude towards CBHI
- **Households Level variables such as:**
 - ✓ Family size, HH-composition (by age), Health status (self-reported), HH illness experience, exposure in any micro groups (iqub, idir), prier exposure of HH to health facilities and HH model status (graduated by HEW as model family or not),

4.7 Data collection procedures

4.7.1 Data collection tool

A structured questionnaire was adapted and modified in local context based on reviewing relevant literatures (6,7,15,18,19,24). The questionnaire was prepared initially in English and then translated into local language (Afan Oromo) and back to English by 2-independent personals to keep consistency. Then data was collected by Afan Oromo version.

The questionnaire was gather data on the following areas: 1, Socio-demographic characteristics of households, 2, Socio-economic status of Households (HH characteristics for wealth estimation), 3, Individual HHH variables (awareness about CBHI, attitude towards CBHI) 4, HH level variables and health service related variables using structured and interviewer administered questionnaire.

4.7.2 Personnel (data collectors and supervisors) for data collection

Eight Public health and Nurses (BSc) who are fluent in Amharic, Oromiffa & English language with or without experience on data collections were recruited for quantitative data collection. Two supervisors (BSc, PH) were recruited to oversee the data collection process in each district. Over all supervision was conducted by principal investigator after giving the training for all data collection team on their specific responsibility, overviews regarding the study objectives/determinants of CBHI enrolment, on each part of the tool, ethical consideration and data integrity for two days.

4.7.3 Data collection method

A quantitative data collection method using face to face interviewer administered structured questionnaire was employed and house to house survey of randomly selected households was carried out by 8 trained data collectors 4 in each districts. Households (both member /cases and non-member/controls) were selected by SRS (computer generated random numbers) from family folder of health post of each kebele and registration book of CBHI members from each districts of CBHI office (for cases), finally respective village leader was used as guider for data collectors to each selected HH for both cases and controls.

4.8 Operational definitions

Attitude: Individuals attitude (HHH) of insured and non-insured members towards CBHIS was measured by 5-point Likert scale score having 10 items to assess CBHI benefit packages and its general information by using level of agreement from 1-5(1=strongly disagree 2=disagree 3=neutral 4=agree 5=strongly agree) and finally the individual and sample mean score was computed and those who score sample mean and above was judged as having favorable attitudes and those who got less than sample mean as having unfavorable attitude towards CBHI.

Illness experience: In this study it was assessed as household's head or any family member of house hold who get ill or sick or bad health state reported with at least one of the following conditions: having stayed in bed; having been restricted from normal activities (e.g. work, school); having been able to do normal activities but with reduced capacity as well chronic conditions of any (DM, HTN, HIV/AIDS, Epilepsy...) in the past 3 months preceding to the data collection date.

CBHI-enrollment - An acceptance and use of community based health insurance scheme voluntarily, who have a membership card on hand and who regularly renew his or her membership card which will be assessed by asking Yes or No to identify whether the HH is active member or not during data collection period.

Cases/members (enrolled) to CBHI: Members of community that have paid the premium and registered to CBHIS on the report folder (available on the lists of members) of health post or contractual health facility or district CBHI-office in which the PI had used to take a sample during data collection time.

Controls/non-members (non-enrolled) to CBHI: Members of community that have not paid the premium and not registered to CBHIS on the report folder (not available on the lists of members) of health post or contractual health facility but HHH listed in family folder in which the PI had used to take a sample during data collection time.

Perception of own (self) health: was interrogated by asking the respondents to grade their own and their household member's health in 5-point scale as being Excellent, very good, good, fair and poor and finally interpreted at each household level according to their response independently to see their perceived health status.

Household wealth status –It is households living status which was constructed using HH asset data composed of different indicators adapted from EDHS 2016 and modified to local and rural household context. It was measured by using the information of the ownership on the housing condition like; type of floor, type of roof, type of wall, water source, type of latrine, using ownership of radio, bicycle, motorcycle, amount of grain (collected in the last one production year), number of household's live stocks and ownership of farm land, and after conducting principal components analysis (PCA) by SPSS, the household's wealth was grouped in quintiles (from lowest to highest). The quintiles were Q1 (lowest), Q2 (2nd wealth quintile), Q3 (medium), Q4 (4th wealth quintile), and Q5 (highest).

Awareness- In this study, is an exposure to CBHI or having information about CBHI and it was measured by yes or no questions (2 items) regarding to the general information and its use; those who responds "Yes" for all items be considered as aware (informed) and "No" for any one of the item will be treated as not aware (uninformed) to CBHI.

Model households-households that fully implemented the health extension package who

were graduated by health extension worker and it was measured by asking the household head whether his/her household was selected as a model or not by “yes” or “No” question.

4.9 Data processing and analysis

After data collection, it was checked for completeness or for consistency and code was given for each before data entry. Data was entered and cleaned using Epi data version 3.1 and after data was entered in two computers by two independent data clerks, validation of duplicated data files had done in epi-data and exported to SPSS version 23 for analysis. Principal component analysis (PCA) was used to estimate wealth index of households. When using PCA, assumptions such as dichotomizing items, minimum sample size of 50, cases to items ratio of 5 to 1 or more, two or more variables correlation of 0.3 or more on correlation matrix, removing items with sampling adequacy less than 0.5 and significance of Bartlett test of sphericity was checked. Quartimax rotation was used to get better loading variables to the components or to identify which variables was loaded on which components. Additionally, variables with communality less than 0.5 was removed and then variables with complex structures (having loadings of 0.4 or more on more than one component) was removed. Components with only one variable loading on them was checked on rotated component matrix. After all, reliability of variables within each component was assessed and variables with Cronbach alpha of 0.6 and above was included in further analysis.

Descriptive statistics was computed to summarize the data in relation to different variables using frequency, percentage or proportions and descriptive summaries. Binary logistic regression was performed to identify associated variables to CBHI enrollment. Variables which are found to be candidates (significant) at p-values of 0.2 (<0.2) in bivariate logistic regression analysis were selected for multivariable logistic regression analysis. Finally adjusted odds ratios with 95% confidence intervals and p-values <0.05 was considered to declare significant independent predictors of CBHI-membership. The Goodness of fit of the model was assessed by Hosmer and Lemeshow statistic at p-value of 0.1 and over all prediction power was reported from classification table.

4.10 Data quality management

Data collectors and supervisors were trained for two days on the objective of the study, method of data collection, interview technique and content of questionnaire. The tool was

pretested in Seqa Cehekorsa district 1 week prior to the main data collection period on 5% (36 HH) of total sample size households to check for consistency, clarity and sequence of questions, and also to familiarize the data collectors with instruments and then all necessary corrections was made. Data collectors were trained to give sufficient time to interviewees to recall during interview since they were asked what happened in past. Data was checked for completeness, accuracy, and consistency by supervisors and principal investigator after the data collection on daily basis. Finally, data was entered in to Epi-data software by two data entry clerks (persons) by two computers independently and then validation of duplicated data files were made to ensure data quality.

4.11 Ethical consideration

Ethical approval or clearance letter was obtained from institutional review board (IRB) of Institute of Health, Jimma University. Permission letter (Formal letter of cooperation) was obtained from Jimma zone health department and respective woreda health offices. Anonymity of the participants was kept by informing them that their name and personal identifiers were not to be written on the questioner and verbal informed consent was obtained from each study subject. Participants was told that they had full right to participate or refuse participation in the study and the right to stop in the meantime while administering questioners if not feeling comfortable, keeping in mind the rationale of the study and benefit of his/her response.

4.12 Plan for dissemination of findings

The findings of this study will be submitted and presented to JU scientific community to defend. After its approval by the department, it will be presented to relevant national and international conferences, preserved at JU library and at the Department of Health Economics, Management, and Policy. It will be communicated to the local health planners and other relevant stakeholders such as Woreda Health offices of each district, Jimma Zone Health Department and Oromia Regional Health Bureau. In addition, it will be reported to the PI of mega-research project team when finalized. Lastly, efforts will be made to publish in peer reviewed national and international journals.

Chapter-5: Results


5.1. Socio Demographic and Economic Characteristics of cases and controls

From the total sample size of 724 (362 cases and 362controls) rural household heads, 710 (355 cases and 355 controls) were participated in the study yielding a response rate of nearly 98%. The mean age of the cases and controls was 46 (\pm SD 8.56) years (range 24-72), and 41(\pm SD 8.50) years (range 18-68) respectively. About 58% of cases and 50% of controls were within the age group of (41-50) years. Majority (87%) of the study cases and controls were Muslims in religion and Oromo (93%) by their ethnicity, and about 93% cases and 83% of controls were married. With regard to household head ship, nearly 89% cases and 78% controls household heads were husband and 84% cases and 73% controls were farmer in occupation. Regarding to wealth status of households, about (22%,18%), (22%,18%), (28%,12%), (19%,21%) and (10%,30%) of cases and controls were in lowest, second, middle, fourth and fifth wealth quintile respectively (**Table 2**).

Table 2: Socio demographic and economic characteristics of the cases and controls of determinants of enrollment to CBHI in Jimma zone, southwest Ethiopia,2018(n=710)

Characteristics	Category	Cases (n=355 ,n(%)	Controls (n=355 n(%)
Sex	Male	316(89%)	277(78%)
	Female	39(11%)	78(22%)
Age	18-30	23(6.5%)	53(14.9%)
	31-40	57(16.1%)	101(28.5%)
	41-50	205(57.7)%	175(49.3%)
	51-60	49(13.8%)	19(5.4%)
	>60	21(5.9%)	7(2%)
Religion	Orthodox	23(6.5%0	21(5.9%)
	Protestant	15(4.2%)	9(2.5%)
	Catholic	2(0.6%)	1(0.3%)
	Muslim	299(84.2%)	319(89.9%)
	Wakefata	16(4.5%)	5(1.4%)
Ethnicity	Oromo	333(93.8%)	326(91.8%)
	Amhara	8(2.3%)	4(1.1)
	Tigre	5(1.4%)	9(2.5%)
	Guragie	1(0.3)	3(0.8%)
	Other+	8(2.3%)	13(3.7%)
Marital status of respondent	Married	329(92.7%)	296(83.4%)
	Others++	26(7.3%)	59(16.6%)
Educational status	Can't read &write	65(18.3%)	118(33.2%)
	Read &write only	98(27.6%)	140(39.4)
	Grade 1-4	21(5.9%)	48(13.5%)

	Grade 5-8	141(39.7%)	34(9.6%)
	Grade 9-10	24(6.8%)	8(2.3%)
	Grade 11-12	5(1.4%)	4(1.1%)
	Diploma & Above	1(0.3%)	3(0.8%)
HH headship	Husband	317(89.3%)	269(75.8%)
	Spouse	38(10.7%)	67(18.9%)
	Others+++	-	19(5.4%)
Occupation (HH head)	Farmer	297(83.7%)	258(72.7%)
	Housewife	35(9.9%)	39(11%)
	Merchant	15(4.2%)	31(8.7%)
	Laborer	8(2.3%)	14(3.9%)
	Student	-	11(3.1%)
	Other	-	2(0.6%)
Wealth quintile	Lowest wealth quintile	78(22%)	64(18%)
	2 nd wealth quintile	77(21.7%)	65(18.3%)
	Middle wealth quintile	98(27.6%)	44(12.4%)
	4 th wealth quintile	66(18.6%)	76(21.4%)
	Highest wealth quintile	36(10.1%)	106(29.9%)
Mean Age of respondent	46.48 ±8.6SD(R, 24-72)		40.41±8.5SD (R, 18-68)

 **Key** =Others+=Dawuro, Kaffa, Yem Others++=Widowed, Divorced, Cohabit
 Others+++=Relatives, Child R=range

5.2 Households related characteristics of the cases and controls

Regarding households related characteristics, about 88% of the cases had more than 5 family members and 52% of the controls had 1 to 5 members in their households. About seventy-one percent of cases and forty-one percent of controls had under five year children in their households. About 39% of cases and more than half (53%) of controls household heads perceived their household's health status as poor and high respectively and 49% of cases and about 23% of controls households experienced illness in the last 3months. This study shows that about 66% of cases and 23% controls were exposed to different indigenous community insurances (iqub, idir,) previously as well nearly 15.5% and 4% of cases and control households were graduated by HEW as model family (**Table 3**).

Table 3 Households related characteristics of the cases and controls of determinants of enrollment to CBHI in Jimma zone, southwest Ethiopia,2018(n=710)

Characteristics	Category	Cases/N=355		Controls/N=355	
		N	%	N	%
Family size	1-5	42	11.8	184	51.8
	5<	313	88.2	171	48.2

HH –composition (by age groups)	Child<1yrs in the HH	No	275	77.5	304	85.6
		Yes	80	22.5	51	14.4
	Any<5year in HH	No	103	29	209	58.9
		Yes	252	71	146	41.1
	Any old aged (>60years) in HH	No	285	80.3	331	93.2
		Yes	70	19.7	24	6.8
Health status (HHH self-reported) of the HH by the	Very high		26	7.3	89	25.1
	High		54	15.2	189	53.2
	Medium		78	22.0	49	13.8
	Poor		137	38.6	24	6.8
	Very Poor		60	16.9	4	1.1
HH illness experience in the last 3months	Yes		174	49.0	80	22.5
	No		181	51.0	275	77.5
Any member in HH with chronic illness	Yes		77	21.7	28	7.9
	No		278	78.3	327	91.1
HH current status of health scheme	CBHIS -member		355	100	-	-
	CBHIS-non member		-	-	355	100.0
Exposure to indigenous community insurances (iqub, idir,)	Yes		235	66.2	82	23.1
	No		120	33.8	273	76.9
HH model status (graduated by HEW as model family or not)	Yes		55	15.5	14	3.9
	No		300	84.5	341	96.1

5.3 Knowledge and Attitude of the cases and controls on CBHI

As this study finding revealed, majority of household heads of cases about 64% and approximately one fourth household heads of controls about 24%) had favorable attitude towards CBHI (**Figure3**).

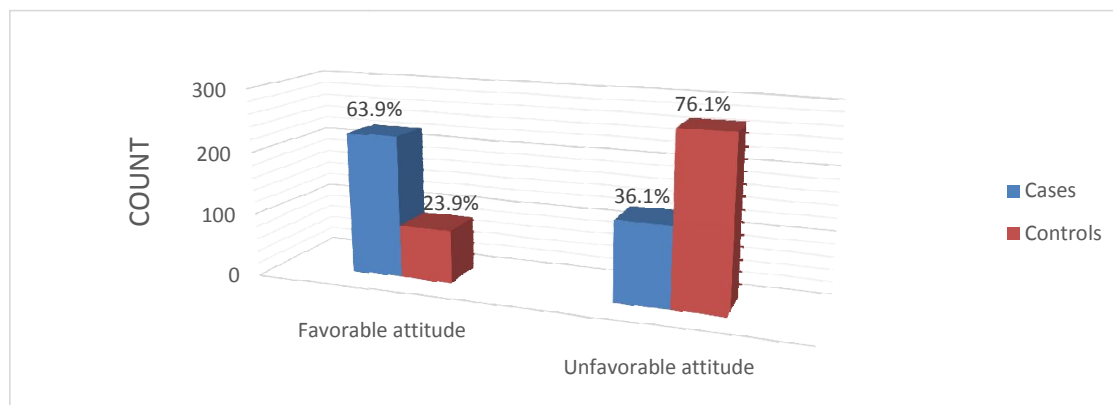


Figure 3:Attitudes of rural households' heads towards CBHI of determinants of enrollment to CBHI in Jimma zone, southwest Ethiopia,2018

Majority of household heads had information's about CBHI which accounts 95% for cases and 46% for controls. As the finding from the study shows, more than half (64%) of cases and a very few controls (22%) considered community based health insurance as prepayment for health care but, about 21% of cases and 49% of control household heads considered CBHI as paying tax for government and free health delivery by government. Regarding to the main source of information about CBHI, more than half of cases (68%) heard about CBHI during house to house awareness creation and about 52% of controls heard from neighbors followed by mass media (Tv, radio) (**Table 4**).

Table 4 Knowledge and Attitude of the cases and controls on CBHI of determinants of enrollment to CBHI in Jimma zone, southwest Ethiopia,2018(n=710)

Characteristics	Category	Cases/N=355		Controls/N=355	
		N	%	N	%
HH head Attitude status towards CBHI	Favorable attitude	227	63.9	85	23.9
	Unfavorable attitude	128	36.1	270	76.1
Knowledge about CBHI	Yes	338	95.2	161	46.4
	No	17	4.8	194	54.6
CBHI explanation(perception towards CBHI)	Prepayment for health care	217	64.2	36	22.4
	Paying tax for Gov't	70	20.7	79	49.1
	Free health delivery by Gov't	50	14.8	44	27.3
	Other	1	0.3	2	1.2
Main source of information about CBHI*	Neighbors	30	8.9	83	51.6
	CBHI officials	61	18.0	20	12.4
	CBHI house to house awareness	240	67.6	82	50.9
	Mass media/Tv, radio/	37	10.9	76	47.2
	Health professionals	88	26.0	26	16.1
	Others source	1	0.3	6	3.7

✚ **Key:** *The sum of percentage in some of variables category is >100% due to more than one responses (multiple response questions)

5.4 Health service related characteristics of the cases and controls

More than half of rural households access the health facility after walking more than an hour but only 54% cases and 38% control households access the contractual health facility by travelling less than an hour. An average walking time on foot for cases and for the controls is 54.66±29.28SD and 74.72±35.18 by minutes respectively. Majority of cases (66 %) and about 48 % controls perceived transportation cost from home to their nearby contractual HF as fair;

whereas, 30% cases and 45% controls reported as high. Regarding to the trust on CBHI committee (governing bodies), most of the cases (94.9%) and about two-fifth of controls (41%) reported that they trust on local CBHI committees and governing bodies. More than half of cases (54.4%) and about quarter (24.0%) of controls had visited the health care facilities in the last 1 year (**Table 5**).

Table 5:Health service related characteristics of the cases and controls of determinants of enrollment to CBHI in Jimma zone, southwest Ethiopia,2018(n=710)

Characteristics	Category	Cases/N=355		Controls/N=355	
		N	%	N	%
Distance from health facility/average travel time in minute to the nearest HF on foot.	Less than 60min/1hr	192	54.1	134	37.7
	>60min/1hr	163	45.9	221	62.3
Perceived transportation cost from home to contractual HF	High	107	30.1	161	45.4
	Fair	234	65.9	171	48.2
	Cheap	14	3.9	23	6.5
Trust on the CBHI committee (governing bodies)	Yes	337	94.9	146	41.1
	No	18	5.1	209	58.9
Exposure to HF in the last 1 year	Yes	193	54.4	83	23.4
	No	162	45.6	272	76.6
Perceived availability of drugs	Available	51	26.4	20	24.1
	Not available	142	73.6	63	75.9
Perceived satisfaction on health care services	Satisfied	165	85.5	38	45.8
	Not satisfied	28	14.5	45	54.2

Out of 193 cases who visited health facilities in the last year, more than half (62%) were satisfied by health care providers whereas, about half (49%) of control household were dissatisfied from out of 162 cases who visited health care facilities (**Figure 4**).

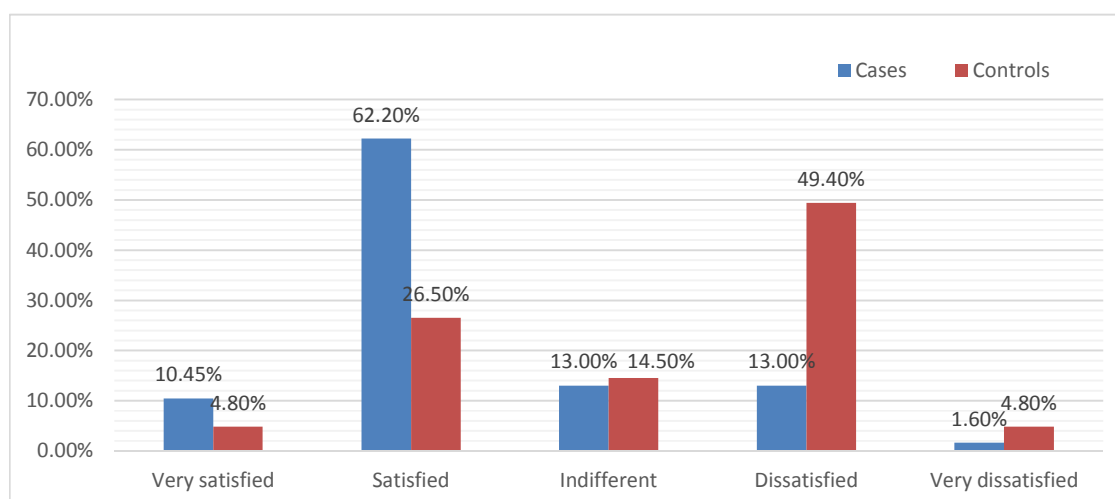


Figure 4: Perceived satisfaction on health care providers of rural HHH of determinants of enrollment to CBHI in Jimma zone, southwest Ethiopia, 2018

Out of 355 CBHI members (cases), about 66% rated the quality of existing CBHI services as satisfactory while about 20% rated as poor and 15% of them rated as excellent. Most of the rural CBHI member household heads nearly 95% responded to renew the CBHI membership but, about 5% reported not to renew, as limited availability and poor quality of health services were their main reasons followed by not occurring of illness frequently in their households which accounted about 78% and 57% respectively. From 355 controls (non-members of CBHIS), nearly half (47.6%) of household heads put the absence of frequent occurrence of illness and injury in their house holds as the main reason not to be member followed by unaffordability of registration fees and premiums (**Table 6**).

Table 6 Health service related characteristics of the CBHI-member and non-member HH of determinants of enrollment to CBHI in Jimma zone, southwest Ethiopia, 2018(n=710)

Variables	Category	Cases/CBHI-members/N=355	
		N	%
Rated quality of existing CBHI services	Excellent	55	15.5
	Satisfactory	233	65.6
	Poor	67	18.9
Renew CBHI membership for next year	Yes	337	94.9
	No	18	5.1
Reason for not to renew CBHI membership	Illness does not occur frequently in the HH	10	55.56
	Registration fees and premiums are not	8	44.45

	affordable		
	Limited availability and poor quality of health services	14	77.78
	Quality of CBHI members is not as good as non-members	6	33.35
Variables	Category	Controls/N=355	
Reason for not to be a CBHI member/for controls only	Registration fees and premiums are not affordable	168	46.5
	Illness and injury does not occur in the HH	169	47.6
	Benefit package of CBHI does not cover all service of health care	100	28.2
	Other	16	4.5

5.5 Socio-demographic & economic, health care service related, household level, and individual level factors associated with CBHIS-enrolment

A bivariate logistic regression analysis was done for a total of 26 variables ([Annex 4](#)), comprised from socio-demographic & economic, health care service related, household level, and individual level factors. Among twenty-six variables in bivariate logistic regression analysis 23 of them had a p-value of less than 0.2 and they were: Sex, age, religion, marital status, educational status, household headship, occupation, wealth index, family size, household-composition(age <5years in the HH, old age>60 years), perceived health status of household, illness experience in the house hold, chronic illness in the household, exposure to indigenous community insurance, household model status/graduated by HEW, household head attitude towards CBHI, awareness status of HHH/heard information about CBHI, distance from home to contractual health facility, perceived transportation cost from home to contractual health facility, trust on the CBHI committee/governing bodies, previous exposure to health care facilities and year of stay in the area. For multivariable logistic regression analysis, twenty-three were candidates ($p < 0.2$ was considered).

5.6. Determinants of enrollment to Community Based Health Insurance

Multivariable analysis was used to identify independent predictors of enrollment to CBHIS. All variables with p-value <0.2 in bivariate logistic regression analysis were entered and further examined in multivariable analysis to see their relative effects on enrollment to

CBHIS using backward stepwise LR logistic regression method. In multivariable logistic regression analysis, there were thirteen variables independently associated (significant at $p < 0.05$) with enrolment in CBHIS (Table 7).


Level of education has shown a significant association with enrollment to CBHI. Odds of being enrolled in community based health insurance among rural household heads who completed primary school/education were about 3.2 times more likely when compared with household heads with no formal education [AOR= 3.19; 95% C.I: 1.37-7.43]. Odds to be enrolled in CBHI among households who had more than 5 members (family size >5) were nearly three times more likely as when compared with those who had less than 5 members in their family. Households whose perceived health status was reported as poor were about 10 times more likely to be a case than controls compared with households who were perceived in good health status [AOR=10.32, 95% C. I; 3.84-27.75]. Additionally, the likelihood of enrolling in to CBHI among households who had under five children in the family were about 3.2 times more likely than households who had no under 5 children in the family (AOR,95% C. I=3.27(1.63-6.58). Households whose head was exposed for information (aware) about CBHI were nearly 8 times more likely to be enrolled to CBHIS compared with those who were not aware [AOR,95%C. I; 8.35(3.42-20.41)]. Likewise, households whose HHH had favorable attitude towards CBHIS were 6.8 times more likely to be enrolled than their counterparts [AOR;95% C. I; 6.82(3.38-13.76)]. Beside to this, households whose household head were previously exposed to different indigenous community insurances (Iqub, Idir), who visited health facilities in the last year, who trusts on the local CBHI committee (governing bodies) and whose household was graduated by HEW as a model family were about **2.9, 2.4, 23.2**, and **4.1** times more likely to be enrolled to CBHI than their counterparts [AOR,95%C. I; **2.95**(1.51-5.75), **2.39**(1.67-4.49), **23.2**(9.17-46.8), **4.10**(1.45-11.62)] respectively (Table 5). Households from middle wealth quintile were about 1.23 times more likely to be enrolled in CBHIS compared to household heads who were from lowest wealth quintile [AOR,95% C.I: **1.23**(1.08-2.97)]. Household heads from highest wealth quintile and 4th wealth quintile were nearly 80% and 60% less likely to be enrolled in CBHIS compared to household heads from lowest wealth quintile [AOR,95%C. I; **0.197**(0.07-0.52), **0.36**(0.14-0.96)] respectively (Table 5). Additionally, household whose

ages were between 18 and 31 years were about 70% less likely to be enrolled in CBHIS compared with household heads of age between 41 and 50 years [AOR,95%C. I: **0.30**(0.11-0.85)].

Table 7:Multivariable logistic regression of factors associated with enrolment in CBHIS in rural districts of Jimma zone, southwest Ethiopia,2018(n=710)

Variables		CBHI enrollment status		COR (95% C.I)	AOR (95% C.I)
		Case(N=355) Number %)	Control(N=355)) Number %)		
Educational status of HHH	No formal education	163(45.9%)	258(72.7)%	1.0	1.0
	Primary education	162(45.6%)	82(23%)	3.13(2.25 -4.35)	3.19 (1.37-7.43)**
	Secondary education and above	30(8.5%)	15(4.2%)	3.17(1.65-6.06)	1.74(0.55-5.53)
Family size	1-5 members	42(11.8%)	184(51.8%)	1.0	1.0
	>5 members	313(88.2%)	171(48.2%)	8.02(5.47-11.77)	3.00 (1.34-6.75)*
Perceived Health status of HH (HHH self-reported)	Good	26(7.3%)	89(25.1%)	1.0	1.0
	Medium	132(37.2%)	238(67.0%)	1.90(1.17-3.08)	1.45(0.61-3.43)
	Poor	197(55.5%)	28(7.0%)	24.08(13.37-43.4)	10.32 (3.8-27.7)***
Children's (<5years)in the HH	Yes	252(71.0%)	146(41.1%)	3.50(2.56-11.78)	3.27 (1.6-6.5)**
	No	103(29.0%)	209(58.9%)	1.0	1.0
Awareness status of HHH/heard information about CBHI	Yes	338(95.2%)	161(46.4%)	23.96(14.10-40.7)	8.35 (3.4-20.4)***
	No	17(4.8%)	194(54.6%)	1.0	1.0
HH head Attitude status towards CBHI	Favorable attitude	227(63.9)	85(23.9%)	5.60(4.0-7.80)	6.82 (3.4-13.8)***
	Unfavorable attitude	128(36.1%)	270(76.1%)	1.0	1.0
Experience in indigenous community insurances(iqub, idir)	Yes	235(66.2%)	82(23.1%)	6.52(4.68-9.08)	2.95 (1.51-5.75)**
	No	120(33.8%)	273(76.9%)	1.0	1.0

Distance /travel time on foot	< 60min/1hr	192(54.1%)	134(37.7%)	1.94(1.44-2.62)	3.69(1.94-7.03)***
	>60min/1hr	163(45.9%)	221(62.3%)	1.0	1.0
History of repeated visits to the HF in the last 1 year	Yes	193(54.4%)	83(23.4%)	3.9(2.83-5.39)	2.39(1.67-4.49)**
	No	162(45.6%)	272(76.6%)	1.0	1.0
Trust on the CBHI committee (governing bodies)	Yes	337(94.9%)	146(41.1%)	26.80(15.95-45.0)	23.2(9.17-46.8)***
	No	18(5.1%)	209(58.9%)	1.0	1.0
Wealth quintile	Lowest wealth quintile	78(22%)	64(18%)	1.0	1.0
	2 nd wealth quintile	77(21.7%)	65(18.3%)	0.97(0.61-1.55)	0.55(0.22-1.37)
	Middle wealth quintile	98(27.6%)	44(12.4%)	1.83(1.16-2.97)	1.23(1.08-2.97)*
	4 th wealth quintile	66(18.6%)	76(21.4%)	0.71(0.45-1.14)	0.36(0.14-0.96)*
	Highest wealth quintile	36(10.1%)	106(29.9%)	0.28(0.17-0.46)	0.19(0.07-0.52)**
HH model status (graduated as a model)	Yes	55(15.5%)	14(3.9%)	4.46(2.44-8.19)	4.10(1.45-11.62)**
	No	300(84.5%)	341(96.1%)	1.0	1.0
Age	18-30	23(11%)	53(14.9%)	0.37(0.22-0.63)	0.30(0.109-0.85)*
	31-40	57(16.1%)	101(28.5%)	0.48(0.33-0.71)	0.55(0.24-1.27)
	41-50	205(57.7%)	175(49.3%)	1.0	1.0
	51-60	49(13.8%)	19(5.4%)	2.20(1.25-3.88)	2.16(0.76-6.14)
	>60	21(5.9%)	7(2%)	2.56(1.06-6.17)	4.55(0.79-26.14)

 **Key**-Reference category=1, Hosmer Lemshow test=0.433, Nagelkerke R square=82%
 Model prediction=91%, P-value<0.05=*, P-value<0.01=**, P-value<0.001=***

Chapter 6: Discussion

This was unmatched population based case control study which was aimed to identify determinants of enrollment to Community Based Health Insurance in Jimma zone, southwest Ethiopia. It was found that socio-demographic & economic (educational status of household head, age of household head, wealth quintile of household), health care service related (Perceived health status of house hold, distance from home to contractual health facility, trust on the local CBHI governing bodies, previous exposure to health facilities), household level (family size of household, being a model household (i.e. graduated by HEW, experience in membership of different community insurances, having children in the households), household head attitude and awareness towards CBHI were found to be an important determinants of enrolment in to CBHIS.

This study highlights age of the household head as significant sociodemographic predictor of enrollment to CBHI but no more association was seen with sex, occupation and marital status with CBHI enrollment. Younger household heads are less likely to enroll in CBHI than those of older household heads [AOR,95%C. I: **0.30**(0.109-0.85)]. This finding was similar to study done in Tanzania that reported association between older age and CBHI enrolment(15) but study in rural communities of North-Central Nigeria found statistically significant relation with younger household head and CBHIS enrollment(29). The association might be older age group could be willing and able to pay the registration fee and their being senior and earn more in their age group and also in older age group their might be large number of children and large family members who needs a care and the difference might be due to variation in populations distribution by age groups varies from country to country. However study done in Tanzania shows the association between membership and the gender of the household head but study in Burkina Faso supports the finding of this study(15,28). This might be due to study setting difference in which males are dominant groups as house hold head in this study area.

The odds of enrollment to CBHIS in rural households that had more family members were about three times more likely than from those having less family size in their households

[AOR =3.0 C.I (1.34-6.75)]. This is in line with study conducted in Bangladesh which shows that the larger households (>6) increase the odds of scheme enrollment by about five times [AOR 4.7 C.I (1.62-13.86)] (19). This might be that those larger households were more conscious about the financial affordability during illness as affordability is one of the barrier to health care and the larger members in the households would still make cost for other day to day activities more than those who had fewer family members.

Having experiences of membership in local indigenous community insurance increases the likelihood of enrollment in CBHIS at about two and half times that of households who were not participated [AOR,95% C. I **2.65**(1.39-5.25)]. This finding corroborate with those of previous researches conducted in Dehub Bench District (Bench Maji Zone, Ethiopia) and systematic review of Developing countries, which found that not being a member in community-based saving (Iqub and Idir participation) provided household heads to not pay for health insurances [AOR=**0.43**,C.I:0.14-0.92] (24,32).This might be due to as households participate more and more on risk sharing's of other households and accustomed to it, they could know how it helps to share for their health too.

Awareness and attitude of household heads towards CBHI increased the odds of enrollment to CBHI about eight and seven times more likely than their counterparts with their respective AOR with 95% C.I[**7.93**(3.23-19.47), **6.82**(3.38-13.76)]. This is in line with multi-country studies which found awareness and perceptions towards community based health insurance as important factors for CBHI enrollment (7,20,36).The possible reason for this might be that people should understand CBHI, be aware and perceive it positively what is it all about to be enrolled and retained as enrolled.

With regard to wealth index, households from middle, fourth and highest wealth quintile were; about 1.23 times more likely, nearly about 60% and 80% less likely to be enrolled in CBHIS compared to household heads from lowest wealth quintile [AOR,95%C. I; **1.23**(1.08-2.97), **0.36**(0.14-0.96), **0.197**(0.07-0.52)]. Most of the cases were from middle and below wealth quintiles and most of the controls were from households above 4th wealth quintile. Similar study conducted in Tanzania supports the finding which shows three middle income

quintiles were 1-12% more likely to enroll in the CHF than the poorest and the richest(15) but study conducted in Ghana opposes the finding which shows households from top two quintiles were enrolling about 50% more likely than the poorest (20). This might be that as peoples' wealth status improves they might consume more of everything and also health services beyond what the CBHI covers as well the richest peoples might want to purchase freely as soon as possible from private health care service providers since they could be able to pay. But, contradiction with Ghana study could be that Government subsidization for insurance payment especially for the poorest might varies across the countries.

The presence of under five years old children in the household shows statistically significant association with enrolment in CBHI in which households that have <5 years' children enrolled nearly 3 times more compared to those households who do not have [AOR,95% C.I; **2.79**(1.3-5.8)]. Similar studies conducted in rural Burkina Faso supports the finding which shows higher proportion of children living within the house hold was positively associated with enrolment in CBHI(48).This might be due to the frequent occurrence of diseases in children, hence the households health seeking behavior might be increased.

Those households who accessed the contractual health facilities by walking less than an hour increases the odds of enrolling in to CBHI about four times more compared with those who accessed by walking more than an hour [AOR,95% C.I **3.83**(1.96-7.47)]. The finding was not different from other similar studies conducted in different countries like rural Burkina Faso and Tanzania which identifies distance as statistically significant factor associated with CBHI enrollment that reported as enrollment to CBHI was about four and half times more likely in those households who were far (>5km) from health facilities than who were near [AOR,95%C.I;**4.51**(2.04-9.97)](48); however the study of Edo State of Nigeria opposes the finding in which it shows no longer association was found between distance and CBHI enrollment(49). This effect might partly have explained by accessibility variation of health facilities in different countries but distance is crucial because many poorer households are clustered in remote areas that lacks adequate health infrastructure and even individuals living far from health facilities were less likely to utilize health care, therefore household heads might not be volunteer to enroll in CBHIS.

One interesting finding in this study is that being a model household is positively correlated with CBHIS enrollment. Enrolment in to CBHI by being a model household is about four times more likely than being non-model households [AOR,95% C. I: **4.15**(1.45-11.89)]. The potential explanation for the association might be the fact that model households have better opportunity for exposure to different local meeting and better proximity to chain with government structure than non-models, hence they will have better information about CBHI and what it is all about.

The household heads who completed primary level education are about three times more likely to be enrolled in CBHIS than those who have not attended any formal education [AOR,95%C. I: **3.19**(1.37-7.43)]. The finding is concurrent with multi-country study findings which shows the association that literates are more likely to enroll in the scheme than illiterates(48–50).The potential explanation for such association might be that as peoples become educated the understanding towards the insurance programe is better compared to those who don't have education due to the fact that literates might analyze the risk and benefit of the insurance in a little bit better way than their counterparts.

Trusting the governing bodies and CBHI committee's increases enrollment in to CBHI among rural households about twenty times more compared to households who do not trust the committee and governing bodies [AOR,95%C. I: **20.77**(9.17-46.8)]. The finding is not different from similar study done in Ghana which indicated that higher level of trust towards community and formal institutions governing bodies trust result in higher rates of active membership rates in the scheme. These findings are similar with that of Dehub Bench District, Bench Maji Zone even though the methodology differs a little bit that the later was willingness to join in to CBHI study (14,24,37).This association might be due the fact that peoples stay in the group when they trust the group members likewise as household trusts the local committee they might be enrolled in to CBHI.

Those rural household heads who have experience of visiting the health facilities were about two times more likely to be enrolled in to CBHIS than those who have not visited [AOR,95%C. I;**2.32**(1.23-4.47)]. No any more study came across similar statistically

significant finding rather than showing that CBHI increases the utilization of health care as evidenced from Ghana DHS data (21). The possible explanation for this could be the fact that as people visited any health facilities, they might understand that how difficult the out-of-pocket payment would be for health care during the illness.

The likelihood of being enrolled in community based health insurance among rural household heads who perceived poor health for their households' were about ten times more likely than those who perceived their household's health as good [**AOR**,95% C. I; **10.32**(3.8-27.7)]. The finding is more or less comparable with study conducted in Bangladesh(19). The possible explanation for this finding may be the fact that the demand for health insurance increases among individuals who have relatively poor health. Even though rural households' heads from poor health status was a predictor to be enrolled in the scheme in this study, illness experience in the household was not found to have any more statistically significant association with enrollment to CBHIS but systematic review on factors affecting enrolment to the scheme in LMIC shows association (7). The possible explanation for this could be because this study was assessed the illness experience in the households for only 3 months back from data collection period to decrease potential recall bias, and within three months' period there could not be a decision by rural households' head to be enrolled in to CBHIS since the scheme has waiting period after registration.

Strength of the study

As far as investigators knowledge, there was no similar study done in Ethiopia that determines associated factors of enrollment to CBHI so that it will be used as an input and baseline as the first study for other researchers who have interest to conduct further studies in this area.

It was conducted using probability sampling technique. Hence, it allows generalization for the Community based health insurance scheme member and non-member rural households.

Confounders were controlled by the use of multivariate analysis.

Cases and control households were from the same source population

Limitation of the study

Since this study assesses history of exposure retrospectively, it may be prone to recall bias during data collection time as some of the variables need a recall to situations happened before the actual data collection time but it was minimized by shortening the time to less than 3 months and providing common references to recall.

Due attention was given to the study procedures, including the process of training the research team, standardization of measurement tools, and a close supervision throughout the field activities were also considered to minimize the expected biases (selection bias, social desirability bias, central tendency bias, acquiescence bias).

Chapter 7: Conclusion and recommendations

7.1. Conclusion

The findings of the study revealed that household head who completed primary level education, households from middle wealth quintile, perceived poor health status of household, distance (<60min on foot) to health facilities, trust on the local CBHI governing bodies, previous exposure to health facilities, large family size, being a model household, being exposed to different community insurances, having under five years children in the households, favorable attitude and awareness towards CBHI were found to be in favor of enrolment in to CBHIS and being a younger household head and being in higher wealth group were found to be in against of enrolment to CBHIS.

7.2. Recommendations

This study demonstrates determinants of enrollment to community based health insurance scheme, hence based on the findings, the following recommendations have been forwarded:

1. For kebele HEW/kebele leaders

- ✚ They should be actively involved in house to house awareness creation and should make frequent campaign to make households to be involved as well they should encourage rural households to participate in different community indigenous insurances like idir, iqub and in different kebele meetings and utilize local market places, religious meetings for massive dissemination of information about CBHI.
- ✚ They should strongly work on households to increase model households in the kebele by implementing all health extension packages and disseminating these packages by leaflets for each household to understand what they are.
- ✚ Should Strengthen behavioral change communication activities in continuous manner by utilizing health development army to clearly understand features of CBHI to change the attitude of households, hence enables the local community to be member of CBHI and benefitted from the scheme regardless of number of family size, age of household, annual income, education level and household health status.

2. For woreda health office/CBHI coordinators;

- ✚ Should work with HEW and community leaders by giving different refreshment trainings in continuous manner to equip them with a good understanding about CBHI and its purposes hence they work with local community on daily basis.
- ✚ Intersectoral collaboration with district education and administration office to facilitate at least informal education for rural households to enhance the CBHI scheme membership.

3. For Jimma zonal health department

- ✚ Should work with woreda health office/ CBHI administrators in which they should make timely assessment to monitor and evaluate overall functionality of Woreda CBHI schemes to pinpoint and to solve problems before they become major issues so as to attract new and more members in community based health insurance scheme.

4. For FMOH, EHIA and Oromia Regional Health Bureau

- ✚ Should work in collaboration with other stakeholders and donors so that to introduce strategies to collect registration fees and premium from rural households since peoples are not trusting local level CBHI managers and local committees on existing collection mechanisms by facilitating public information schemes in relation to a health insurance system and creating common bank account for the members in which they themselves deposit in it and this might minimize the problems.
- ✚ Should support in terms of finance and materials needed to pool more funds especially for community mobilization and capacity building of the scheme management to attract richest peoples too to the scheme since they are not enrolling in to CBHI because the scheme is not especial for only poor peoples.
- ✚ Should avail new CBHI contractual health facilities at reasonable distance and quality service as much as possible to facilitate more members to enroll in the scheme since the distance (distant HF) was one of the barriers to enroll in CBHI.

5. For researchers

- ✚ Since more information is needed to explore the reason for low enrollment in community based health insurance, further study is recommended especially on supplier side factors like quality of existing CBHI services, quality of contractual health care facilities and interaction with health care providers and health care service consumers by integrating qualitative methods can be helpful.

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Annex1- English Versions Questionnaire

Questionnaire to assess determinants of enrolment to Community Based Health Insurance among Rural Households in Community Based Health Insurance Implementing Districts of Jimma zone, southwest Ethiopia, 2018.

Introduction

Greeting: Good morning/Good afternoon. Thank you for taking the time to provide answers to this questionnaire.

My name is _____ I am here today as a data collector of a study conducted by Institute of Public health and medical Sciences, Jimma University. We are asking some questions on determinants (factors affecting) of CBHI enrolment. If you are willing yours is one of the households we are asking randomly.

Whatever we ask you and get as a response will be confidential. Please remember there is no right and wrong answers to the questions only correct information is needed. Your name will not be written on this paper. Information about your family and yours will be told to nobody. It will be used only for the study purpose. So would you participate in our study?

If “Yes” you can proceed to the next page.

If “No” go to the next house.

A Questionnaire for household survey

Enumerator: please fill the number or the answer inside boxes or prepared spaces.

Remember to use numbers if the answer is yes=1 and no=0

1. Identification code _____
2. Name of Districts (1=Gomma 2=Qarsa)
3. Membership status (1=case/member of CBHI, 0=control/nonmembers of CBHI)
4. Kebele _____

No	Questions/variable	Alternative responses(circle the response)	Skip to....
Section 1: Socio-demographic characteristics of Households			
<i>Enumerator: Only the head of the household should be interviewed or in his/her absence the spouse should be interviewed.</i>			
101	What is the sex of respondent?	1. Male 2. Female	
102	What is your status in the household?	1. Husband 2. Wife	

		3. Child 4. Relatives 5. Others(specify)___	
103	How old are you?	_____years	
104	What is your religion?	1. Orthodox 2. Protestant 3. Catholic 4. Muslim 5. Wakefata 6. Others(specify)___	
105	To which ethnic group do you belong?	1. Oromo 2. Amhara 3. Tigre 4. Guragie 5. Other (specify)_____	
106	What is your Current marital status?	1. single 2. Married 3. Divorced 4. widowed 5. Cohabit	
107	What is your occupation?	1. Farmer 2. Housewife 3. Merchant 4. Laborer 5. Student 6 Other(Specify)_____	
108	What is the highest level of school you have completed?	1. Can't read and write (illiterate) 2. Can read and write 3. Grade 1-4 4. Grade 5-8 5. Grade 9-10 6. Grade 11-12 7. Diploma and Above	
109	How many members are there in your families (HH Size), including you?	_____ in number	
110	How many children do you have?	_____ in number	
111	How many members are there in your family in each age group stated in the bracket including you?	1__ (0-1 year), 2__(1-5year), 3__(5-18year) 4__(18-63year), 5__(64 and older)	
112	Residence of respondent	1 Urban 2 Rural	
113	How long have you been living here?	_____years	

Section 2: Household characteristics for wealth estimation

S/N	Questions and Filters	Response categories	Skip to....
201	Does your household have the following	Functioning radio/tape	0. No 1. Yes
		Functioning television	0. No 1. Yes

	properties?	If you have TV, what is its size in inches? _____		
		Stove (kerosene/electric)	0. No 1. Yes	
		Refrigerator	0. No 1. Yes	
		If you have refrigerator, what is its size in milliliters? _____		
		Bicycle	0. No 1. Yes	
		Motorcycle	0. No 1. Yes	
		Watch (hand /wall)	0. No 1. Yes	
		Mobile phone	0. No 1. Yes	
		If you have mobile phone, is it smart phone?	0. No 1. Yes	
		Sleeping bed	0. No 1. Yes	
		Mattress	0. No 1. Yes	
202	What is the main source of drinking water for members of your household?		1. Surface 2. Well 3. Pipe 4. Other specify _____	
203	What is the main source of water used in your household for other purposes such as cooking and hand washing?		1 Surface 2. Well 3. Pipe 4. Other specify _____	
204	Do you have toilet facility that you and your HH members usually use?		0. No 1. Yes	If 0→Q206
205	If yes to Q4, what kind of toilet facility do you and your members of household usually use?		1. Bush/field 2 Pit latrine 2. VIP 4. Other specify _____	
206	What type of fuel does your household mainly use for cooking?		1. Wood 2. Charcoal 3. Electricity 4. Other specify _____	
207	Do you have separate kitchen for cooking?		0. No 1. Yes	
208	To whom the house you are living in belongs to?		1. Rented from gov't 2. Rented from private 3. Gift from parents 4. Own property 5. Other -----	

209	What is the main material of the floor in your house?		1. Earth 2. Cement 3. Other specify	
210	What is the main material of the wall in your house?		1. Mud 2. Mud and Cement 4. Bricks 3. Other specify	
211	What is the main material of the roof in your house?		1. Thatched 2. Corrugated iron 3. Other specify _____	
212	How many rooms in this household are used for sleeping?		_____	
213	Does your household own agricultural land?		0. No 1. Yes	If 0→Q216
214	If yes to Q13, how many hectares?		_____	
215	If yes to Q13, by what are you cultivating?		1. Hand 2. Oxen 3. Tractor 4. Other _____	
216	Average amount of agricultural products collected in one production year in quintal (100kg)		1. Teff _____ 2. Corn _____ 3. Coffee _____ 4. Chat (in birr) 5. Other specify _____	
217	How many of the following domestic animals does your household have in number?	Cows and oxen together	_____	
		Horses, donkeys and mules together	_____	
		Goats and sheep together	_____	
		Chickens	_____	
218	How much money in Birr from these sources of income does your HH earned in the past 12 months?	Gov't monthly salary	_____	
		Sale of agricultural products	_____	
		Sale of livestock	_____	
		Provision of any services including house rent, land rent, traditional healing, etc.	_____	
		Money received from gov't/ aid	_____	
		Money		

		received from somebody working/living outside Ethiopia	_____	
219	Does any member of your HH have a bank or microfinance saving account?		0. No 1. Yes	

Section 3: Individual HHH level variables (awareness and attitude towards CBHI)

3: Awareness about CBHI

301	Do you know about CBHI?	1.Yes 0.No	
302	If yes to “Q301, which one explains it best?	1.prepayment for health care, 2. paying tax for Gov’t, 3.free health delivery by Gov’t 4.Other, specify____	
303	From which one of the following you got about it?	1 Neighbors/friends 2. CBHI officials in public meeting 3. CBHI house to house awareness creation campaigns 4. Mass media: radio/Tv 5. Health professionals 6. others_____	

4: Attitude towards CBHI

No	Items	Level of agreement				
		Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)
401	Community based health insurance has the potential on promoting health care seeking behavior from modern health care institutions.					
402	CBHI protects households from unaffordable healthcare expenditures					
403	Premium payment for CBHI scheme is expensive.					
404	CBHI is means of collecting revenue (profit) to the government.					
405	CBHI scheme members receive low quality of services than non members					
406	Mistreatment of patients by the professionals is common for members than non- members.					
407	I did not have trust in management and administration of CBHI scheme.					
408	CBHI is relevant only to promote health condition of the poor.					
409	Health insurance is good to pool the risk of health expenditures within the sick and the healthy.					
500	Health insurance should be advocated and scaled up to improve health condition of rural community					

Section 5: Households health and Health service related variables			Skip to...
501	How do you rate the health status of you and your family?	1.Excellent 2. Very good 3. good 4.Faire 5.poor	
502	Have you and your family fallen ill in the last 3 months?	1.Yes 0.No	
503	Do you or other member of the household have chronic illness or who have been on	1.Yes 0. No	

	follow up treatment?		
504	Have you ever been member of micro group/saving used for health care cost or for any other else?	1.Yes 0.No	
505	Is your HH graduated by HEW as model family?	1.Yes 0.No	
506	Is your HH currently member of CBHI scheme?	1.Yes 0.No	If 0→Q512
507	If yes, how can you rate the quality of using existing CBHI benefits packages?	1.Excellent, 2. Satisfactory 3.Poor	
508	Have you made use of your CBHI membership to cover health care costs till now? (For CBHI members only)	1. Yes 0. No	If 1→Q510
509	If no, why did not you/your family benefit from CBHI?	1. No one in my HH has visited health facilities 2. We still pay other additional costs for treatment (specify) 3. The quality of service (waiting time, staff attitude, medicine, diagnostics) for CBHI members is not as good as for out of pocket paying patients (non-CBHI members) 4. Delays in issuance and distribution of CBHI ID cards 5. others, specify_____	
510	When your current membership expires, would you renew your CBHI membership for the following year? (for members only)	1.Yes 0.No	If 1→Q513
511	If not, why do not you plan to renew your CBHI membership (multiple responses allowed)?	1. Illness and injury does not occur frequently in our HH 2. the registration fee and premiums are not affordable 3. there is limited availability and poor quality of health services	

		4. The quality of service (waiting time, staff attitude, medicine, diagnostics) for CBHI members is not as good as for out of pocket paying patients (non-CBHI members) 5. other, specify _____	
512	Why do you think that your HH have not been a member yet? (multiple responses allowed) For non-members only	1. Illness and injury does not occur frequently in our HH 2. the registration fee and premiums are not affordable 3. there is limited availability and poor quality of health services 4. The quality of service (waiting time, staff attitude, medicine, diagnostics) for CBHI members is not as good as for out of pocket paying patients (non-CBHI members) 5. benefit packages of CBHI does not cover all services of health care (referral, transportation etc.) 6. other, specify	
513	Have you ever faced problem that hindered you not to visit health facility?	1. Yes 0. No	If 0→Q515
514	If yes, what was the major reason for not visiting the health facility?	1. did not feel it was necessary 2. facility too far 3. lack of money for transportation 4. did not feel that I would get quality care 5. other, specify	
515	Do you trust the CBHI committee?	1. Yes 0. No	
516	Have you visited the contractual health facility for the illness felt in the last 3 month?	1. Yes 0. No	If 0→Q520
517	How was your satisfaction with the health care services given or on health care providers?	1. Very satisfied 2. Satisfied 3. Indifferent 4. Dissatisfied 5. very dissatisfied	
518	How long have you and/or your family Waited to get the	1. Less than 30 minutes 2. 30 to 60 minutes	

	services	3.1 to 3 hours 4.3 to 6 hours 5. 6 hours and more 6. More than a day	
519	What was the availability of drugs/supplies looks like?	1. Not available 2. Rarely available 3. Usually available 4. Always available	
520	What is the nearest HF to your home that is usually used for medical care?	1. HC 2. Clinic (private) 3. Hospital (Gov.) 4. Other specify ____	
521	How Long does it take to reach the nearby HF from your home?	Time in minutes ____	
522	How do you perceive the transportation cost from your home to your HF?	1. High 2. Fair 3. Cheap	
523	Do you believe that you can pay if you are referred from H/C to Hospital for transportation?	1. Yes 0. no	If 0 stop here
524	If yes, how do you perceive the transportation cost for referral?	1 high 2 fair 3 cheap	

Thank you very much for your cooperation!

Name of **interviewer/data collector** -----

Date----- Signature-----

Name of **supervisor**-----

Date-----

Signature-----

Annex 2: Afaan Oromo Version Questionnaire

Gaffiillee: Afaan Oromo version

Uunkaa 1: Waliigaltee

Yuuniivarsiitii Jimmaatti kutaa Eegumsaa Fayyaa Hawaasaa irraa sababoota itti fayyadama inshuransii Fayyaa hawasaa abbooti warra baadiyya keessa jiran irraatti dhibbaa fidan adda baasuuf gaaffii qophaa'ee dha.

Nagaa: Akkam bultan/akkam ooltan? Yeroo keessan naaf laattani gaaffilee naaf deebisuuf heyyamama ta'uu keessanif galatooma.

Maqaan kiyaa kan jedhama har'a asitti kanan argamee qoranno kollejjii saayinsii fayyaa Yuuniivarsiitii Jimmaa gaggessurratti akka raga funaanatti. Nutis gaaffilee muraasa sababoota itti fayyadama inshuraansii fayyaa hawaasa irratti dhiibba fidan isin gaafanna. Heyyamamoo yoo taatan abbooti warra filataman keessa isin isa tokkodha.

Iccitii deebii deebiistanii eegudhaaf jeecha maqaa keessan fuula kamirrattu hin barra'u. Wanti hubachuu qabdan deebiin sirri yookiin dogoggora jedhu waan hinjirref odeeffanno barbaachisa qofa akka laattan. Odeeffannoon waa'e maatii keessani fi moora keessanii nuuf kennitan tajaajila qo'annoo qofaaf waan ooluf eenyufiyyuu dabarfamee hinlaatamu. Gaaffilee kanneen keessaa gaafii deebii deebisu kan hin barbaadne ykn gaaffilee hundaa deebii

kennu yoo hin barbaadne mirgii keessan kan eegame dha. Gaffiilee deebiisuudhaan walta'iinsa

kessani yoo agarsiistan fixaan ba'iinsa qo'anno kanaatiif qoodaa keessan baataniirtu jechuu dha.

Gaaffilee deebiisuuf fedhii ni qabdu?

Eeyyee yoo jetan, _____ 1 itti yaa fuufnu, Lakkii _____ 2 yaa dhabnuu

Waanta qulquulefatanii fi rakkoo kamifuu bilbilaa fi tessoo qorata

Lak.bilb -0916348911

E-mails-teshalesmart@gmail.com.com

Gummachaa nuuf gootaaniif guddaa galatoomaa!

A Gaaffiillee Ragaa maatii

Hubbachissaa: Lakkofsa yookiin deebii bakka duwwa eeyyamamee irratti guuta. Yoo deebiin yoo eeyyeeta'ee = 1, yoo deebiinlakkii ta'ee = 0 fayyadamaa

1. Lakkoofsa Eenyumma _____
2. Maqaa Aanaa (1=Gomma2=Qarsa)
3. Sadarka miseensumma (1 = miseensaa Inshuransii Fayyaa hawasaa (IFH)
0= miti-miseensa Inshuransii Fayyaa hawasaa (IFH))
4. Maqaa gandaa _____

Lakk	Gaaffiilee	Filannoo Deebiiwwani (deebii itti mari)	Irraa darbii
Kutaa 1ffaa: Gaaffiilee haala Hawwaasumma fi dinagdee fi ummaata,			
101	Saalli hirmataa maali?	1. Dhiira 2. Dubara	
102	Maatii keessatti gaheen keessan maali?	1. Abbaa mana 2. Haadha mana 3. Ijoollee 4. Fira 5. Kan biraa (adda baasi) _____	
103	Umrii keessan meeqa?	_____ waggaa	
104	Amantii keessan maali?	1. Orthodox 2. Protestant 3. Catholic 4. Muslim 5. Waaqeeffaata 6. kan biraa (adda baasi) _____	
105	Saba kaam keessaati argamtaa?	1. Oromo 2. Amhara 3. Tigre 4. Guragie 5. kan biraa (adda baasi) _____	
106	Haala fuudhaa fi heerumaa kee	1. kophaa 2. Heerumtee/fuudhee 3. Wal hiiknee 4. Narra du'ee/tee 5. Dabbali	
107	Hojii kee malii?	1. Qotee bulaa 2. Haadha mana 3. Daldaala/tu 4. Dafqaan bulaa/tu 5. Baraata/tu 6 kana biraa	
108	Barumsaa hangaa sadarka kammii baraattee?	1. dubbisuu fi barressuu hin dandaa'uu {hooma barrannee} 2. dubbissu fi barreessuu nan danda'aa 3. kutaa 1-4 4. kutaa 5-8 5. kutaa 9-10 6. kutaa 11-12 7. dipiilomaa fi isaa olli	
109	Baay'ini matii keessani meeqaa (HH Size), sii dabaalattee	___ lakkoofsaan	
110	Daa'iimaan meeqaa qabda	___ lakkoofsaan	
111	Baay'iini garee matii keessaan keessaa jiruu meqaa tokkoon isaan umrii isaani guuti iddoo hamaatuu keessaatii	1 ___ (0-1 waggaa), 2 ___ (1-5waggaa), 3 ___ (5-18waggaa) 4 ___ (18-63waggaa), 5 ___ (64 fi gaa'eessaa)	
112	Iddoo jirreenyaa	1 magaalaa 2 baadiyyaa	
113	Yeeroo hangaamif as jiraatee?	_____ waggaa	

kutaa2: Gafiillee hallaa qabeenyaa mattii tilmmamanii

S/N	Gaffillee	Qoqoddammaa Gaffii	Irraa darbii	
201	Matinii kessaan kessaa qabeyyaa kanneen qabuu?	Radiyyoo /teppii hojetuu ?	2. Lakkii 3. Eyyeen	
		TV hojetuu ?	0. Lakkii 1. Eyyeen	
		Yoo TV qabatani bal'iniii fi dherinnii issaa hangamii		
		Stove (kiroosini/ ibsaa)	1. Lakkii 2. Eyyeen	
		Qorristtuu (Refrigerator)	0. Lakkii 1 Eyyeen	
		Yoo Qorristtuu (Refrigerator) qabatee guddinii issaa hangamii militiriin	_____	
		Saayikilii	0. Lakkii 1 Eyyeen	
		Motorsaayikilii	0. Lakkii 1 Eyyeen	
		Sa'aati (harka/dhaabbi mana)	0. Lakkii 1. Eyyeen	
		Bilbillaa moobayilii	0. Lakkii 1 Eyyeen	
		Qaffoo bilbillaa smart qabdaa?	0. Lakkii 1 Eyyeen	
		Alгаа cisichaa	0. Lakkii 1 Eyyeen	
Firrashii	0. Lakkii 1 Eyyeen			
202	Maddi bishaan dhugaatii maatii keessanii maalii?	1. Maddaa burqaa 2. Burqaa gabbisaa 3. Bishaan boombaa 4. Kan biro		
203	Maddi bishaan dhugaatii maatii keessanii nyataa bilchessuuufu fi harkaa dhiqannadhaa fayyadamtuu maalii	1. Maddaa burqaa 2. Burqaa gabbisaa 3. Bishaan boombaa 4. Kan biro		
204	Mana fincaanii ni qabduu ?	0. Lakkii 1. Eyyeen	Yoo '0' tahe →Q206	
205	Yoo G 204 eyyeeni tahee mana fincaanii akkamii fayyadamtuu	1. Badheetii 2. Mana fincaanii boolla 3. Mana fincaanii ventelatarii qabu 4. Kan biro		

206	Nyaataa bilcheessuuf madda humna boba'aa kamitti fayyadamtuu	1. muka 2. Kasalaa 3. Humna ibsaa 4.kan bira (ibsi) _____	
207	Mana nyataa ittii bilcheesitaan qabduu ?	0.Lakkii 1.Eyyeen	
208	Manni keessa jiraattan kan eenyuuti?	1. Mootummaa irraa kireefaatanii 2. Nama dhunfaa irraa kireefaatanii 3. Keennaa maatii keesaanitti 4. Qabeenyaa mataa keessanitti 5. Kan biroo	
209	Lafti keessa mana jirenyaa kessanii akkamii?	1. biyyoo 2. siminttoo 3. kan bira(ibsi)_____	
210	Girgiddaa (dhaabbi) mana jirenyaa kessanii akkamii?	1. Dhoqqee 2. dhokkee fi simintoo 3. supheee(xuuphii) 4 .kan bira (ibsi)_____	
211	Gubban mana jirenyaa kessanii maal irra ijaarame?	1. Marga 2. Qorqorroo 3. kan biroo	
212	Mana keessa kutaa meeqatu tajaajila ciisichaf oola?	_____	
213	Maatiin kessan lafa qonnaa qabuu?	0. Lakkii 1. Eyyeen	Yoo '0' tahe→Q216
214	Yoo G 213 eyyen ta'ee heektaraa meeqa?	_____	
215	Yoo G 213 eyyen ta'ee maaliin qottu?	1 Harka 2 Qotiyyoo 3 Tiraaktara 4 kan bira _____	
216	Bara oomisha wagga tokkotti giddu galeessan omishaa midhanii argattan kuntaan (100Kg) hangam ta'a ?	1 Xaafii _____ 2 Boqolloo ____ 3 Buna _____ 4 Caatii (birridhan)_____ 5 Kan bira _____	
217	Maatiin kessaan beeyladoo mana kanneen armaan gadi lakkofsan meqaa qabu?	Sa'a fi qotiyyoo	_____
		Farda, harree fi gaangee	_____
		Hoolaa fi re'ee	_____
		Lukkuu	_____
218	Madda galiwwan kanneen keessaa kessaa ji'otaa 12'n	Minda mootummaa	_____
		Gurgurtaa omishaa qonna	_____

	darban maatiin keessan birri meeqa argate?	Gurgurtaa horsisaa beeylada	_____	
		Tajaajilaa kannen akka kiraa mana, kiraa lafaa fi qorsa aadaa	_____	
		Qarshii dhaabbile gargarsaa/ mootummaa irra argamu	_____	
		Qarshii nama biyya alaa jiratuu/hojjatu irra argamu	_____	
219	Maatii keessan keessaa namni lakkoofsa qusanna herrega baankii yookiin maayikiroofaayinaansi qabu jira?		0.Lakkii 1.Eyyee	

Section 3: Hubannoo fi ilaalchaa Inshuraansi Fayyaa Hawaasa (IFH) abbooti warra3:
Hubannoo Inshuraansi Fayyaa Hawaasa (IFH)

301	Waa'ee IFH ni beektaa ?	1.Eyye 0.Lakkii	
302	Yoo gG 301 eyye jette kamtu IFH ibsa?	1.kaffaltii dursa eegumssaa fayyaati 2. Kaffaltii gibira motummaaati 3. Tajajila yaala bilisa motumman kennamu dha. 4.kan bira (ibsii)	
303	Odeffanoo waa'ee IFH kana eessaa argattee?	2 Ollaaa/Hiriyyaa 3 Hoggantoota IFH sirna walgahii ummata irratti 4 Duula IFH mana manatti kenname irratti 5 Miidiya: radio/Tv 6 Ogessaa Fayyaa 7 Kan bira	

4: Ilaalchaa Inshuraansi Fayyaa Hawaasa (IFH)

Lakk.	Gaaffilee	Sadarkaa waliigaltee				
		Baay'ee itti wali gala(5)	Itti walii gala (4)	Bilisa (3)	Itti walii hin galu (2)	Baay'ee itti walii hin galu (1)
401	IFH amala mana yaalaa deemanii yeroodhani yaalamuu ni dabala.					
402	IFH baasii humna ol yaalaa fayyaaf bahu irra nama ittisa					
403	Buusiin Kaffaltii IFH kaffalamu mi'a dha.					
404	IFH toofta mootummaadhaaf bu'a/galii walitti itti qabani dha.					
405	Miseensi IFH maatii miseensa IFH hin tanee gadi tajajilaa yaalaa gadaana argatuu					

406	Kunuunsa kennu dhabuun ogeeyyi fayyaa warra Miseensa IFH hintaane irra caala warra miseensa ta'an irratti mul'ata.					
407	Ani bulchinsaa fi hoggansaa IFH irratti amantii hin qabu.					
408	IFH yaalaa fayyaa warra harqa-qalleeyyi ta'ani qofa fooyyessa.					
409	IFH baasii yaalaa fayyaa warraa dhukkubsatanii fi fayyaa ta'an walitti fiduuf ni fayyada.					
500	Haala fayyaa ummata baadiyya fooyyessuf IFH beeksifamuu fi olguddisuu barbaachisa.					

Kutaa 5: Haala fayyaa maatii fi itti fayadamaa tajaajila fayyaa			Irraaa darbii
501	Akkamin haala fayyaa keeti fi fi maatii keetif sadarka kennita?	1.Baay'ee baay'ee gaarii 2. Baay'ee gaarii 3. gaarii 4.homa hin jedhu 5.bada	
502	Maatiin kee ykn atii ji'a 3'n darban kessaa dhukubastani beektu ?	1.Eyye 0.miti	
503	Maatiin kee ykn atii dhukkubaa yeroo dheeraaf dhukkubsattani ykn hordoffii irra jirtan jiraa?	1.Eyye 0.miti	
504	Kanan dura miseensa Waldaa qusannaa tajaajilaa fayyaaf/tajaajila biraaf oluu taatanii beektu?	1 Eyye 0.miti	
505	Maatiin kee maatii adda duree jedhamuun ogeetti eksiteeshinii fayyaan eebbifamanii beeku?	1 Eyye 0.miti	
506	Maatiin kee ammaa miseensa IFH tii?	1 Eyye 0.miti	Yoo '0' ta'e gara 512
507	Eyye yoo ta'e, qulqullina tajaajila IFH akkamitti sadarkaa kennituufi?	1. baay'ee gaarii 2. gahaa 3 gadi aanaa	
508	Miseensonni maatii IFH baasii yaalaa fayyaatif olluu hanga amma irra fayyadamtani? (misensaa IFH qofaaf)	1 Eyye 0.miti	Yoo '1' ta'e gara 510
509	Yoo mitii ta'e, maalif maatiin kessan IFH irra hin fayyadamne?	1. namni tokkoyyu maatii kiyyaa mana yaalaa hin deemne 2. baasii dabalataa yaalaf ammalee kaffala jira 3. Qulqullinii tajaajilaa yaalaa fayyaa (ilaalchi ogeeyyi, turtii tajaajila fi dhiyyeesin meeshalee	

		yaala fi qoricha) kanii warra IFH fayadamani irra warra qarshii baasanii /kafallanii gadii 4. rakkoo dhaqabii fi walgahinsaa waraqaa eenyumessaa IFH 5. Kan bira ibsii _____	
510	Yeroo miseensuman IFH amma keessan dhumme/irra darbe bara dhufu miseensumma ni haaromsitu? (miseensa IFH qofa)	1 Eyye 0.miti	Yoo '1' gara 513
511	Yoo mitii ta'e, maalif miseensummaa IFH keessan hin haaromsine?	1.maatii keenya keessatti dhukubba fi miidhamni qaama hin jiru 2. kaffaltii galmee fi buusii ishuuransii kaffalu humna ol 3. tajajilaa yaala fayyaa quluqullinnaa hin qabneefi fi hin amijaneetuu jirra 4. Qulqullinii tajajillaa yaalaa fayyaa kanii warra IFH fayadamani warraa qarshii baasanii /kafallanii gadii (miseensaa IFH warra hin taanef) 5.kan bira ibsi _____	
512	Maatin keessan hanga amma maliifii misensaa IFH hin taane sittii fakkaata? (debii lammaaa olii ni danda'maa)	1. maatii keenya keessatii dhukubba fi midhamaa qaama hin jirruu 2. kaffaltii galmee fi buusi inshuuransii kaffaluu hin dadenyee 3. tajajillaa yaala fayyaa qulqullinna hin qabneefi fi hin argameen jirra 4.Qulqullinii tajajiillaa yaalaa fayyaa kanii warra IFH fayyadamani warraa qarshii baasanii /kafallanii gadii (misensaa IFH warra hin taanefi 5.IHF yaala fayyaa hundaaf hin gargarruu (referral, geejibbaa etc.) 6. kan bira ibsii _____	
513	Rakkoon akka mana yaalaa deemte hinfayyadamne si ittisu jira?	1 Eyye 0.miti	Yoo '0' gara 515
514	Yoo eyyen ta'e, sababni mana yaalaa hin deemnef maali?	1.barbachisaa jedhe hin yaaduu 2.manni yaalaa baay'ee fagataa 3. qarshii geejibaaf ta'u hin qabu 4.yaalaa gaarii nan argadha jedhe	

		hinyaaduu 5.kan bira ibsii-----	
515	komiitee IFH ni amantaa?	1 Eyyeen 0.mitii	
516	Ji'a 3'n darban keessa dhukkuban qabamtanii dhaabbilee fayyaa ilaalamuuf deemtanii jirtu?	1 Eyye 0.miti	Yoo '0' gara 520
517	Itti quufinsi keessan tajajilaa fayyaa irratti yookiin ogeeyyi fayya irratti qabdan maal fakkata?	1.baay'ee itti quufe 2.itti quufe 3.homa miti 4.itti hinguufne 5.baay'ee itti hinguufne	
518	Tajajilaa argachuuf maatiin kee ykn atii hangam teessan?	1.Daqqiqa 30 gadii 2. Daqqiqa 30 - 60 3.sa'aati 1- 3 4. sa'aati 3 -6 5. sa'aati 6 oli 6.Guyyaa tokkoo oli	
519	Haalli argama qoricha/dhiyyeessi maal fakkataa?	1 hin argamuu 2.darbe darbe ni argama 3.yeroo baay'ee ni argama 4. yeroo hundaa ni argama	
520	Manni yaalaa maatii keesanifi dhihoo jiruu yeroo baayee fayadamtanii kamii?	1. buufataa fayya2. Kilinikaa dhunfaa 3. Hospital motummaa.) 4. Kan bira ibsi	
521	Manni yaala maatii keessanifi dhihoo jiru mana keessanirra hangam deemsisaa	Daqqiqa_____	
522	Gatii geejjibaa mana yaala deemuuf baastuu akkamitti ilaaltaa?	1. guddaa 2. giddu gallessaa 3. xiqqa	
523	Yeroo rifarii buufata fayyaa irra gara hospitala deemtan gatii geejjiba isin kaffalchisuu jettani ni amantuu?	1.Eyye 0.miti	Yoo '0' Stop here
524	Kaffaltii geejjibaaa rifarii akkamitti ilaalta?	1. guddaa 2. giddu gallessaa 3. xiqqa	

Gummachaa nuuf gootaaniif guddaa galatoomaa

- 1 Maqaa Af- gafatta-----
Guyyaa-----
Malattoo-----
- 2 Maqaa supperrivazeerri-----
Guyyaaa-----
Malattoo-----

Annex3: Selected kebeles from each Districts(highlighted)

A Kersa Woreda

No	kebeles	Total HH	No	Kebeles	Total HH
K3	A/Asebu	1763	17	K/Beru	2004
2	Babo	1553	18	B/Bechane	1398
3	Girma	1346	19	K/Sume	1398
K8	Serbo	1552	20	A/Dika	2234
5	T/Abulo	1298	K5	F/Gubeta	1175
6	T/Balto	1990	22	M/Keberich	1100
7	T/Kersu	1928	23	K/Kora	1695
8	Bulbul	1147	24	G/Sariti	1320
K4	Gelo	874	25	Sh/Totobi	980
K1	Kitimbile	1148	26	Ankeso	1682
11	Wadiko	1203	27	Gunju	1399
12	B/Wajo	624	28	Kelecha	1920
K7	Dogoso	1065	k9	Kombolcha	1270
14	Oso	1607	K2	Merewa	1170
15	Siba	1220	31	Q/Muja	1726
K6	Sinkule	1162		Total	44991HH

B Goma Woreda

No	Kebele	Total HHs	No	Kebeles	No
1	Beshesha	824	22	G/Bore	1548
K3	B/Town	1223	23	K/Messa	2800
3	B/Dinsera	1814	k4	A/Afeta	1338
K12	K/Maye	800	25	K/Beroo	546
K9	Kotta	1713	26	L/Sapa	1806
6	O/Funtule	1638	27	L/Shaye	967
7	Ch/Chego	1638	28	T/Sadacha	1843
8	J/Daru	1480	K11	Kil.G-1	306
9	O/Adami	1455	30	Dedessa	185
10	Ch/Lami	1950	K5	M/Koticha	1224
K2	Choche	748	32	Bulbuloo	920
12	G/Abbo	1665	K10	O/Gurude	1690
13	Kil.G2	7214	34	B/Choche	912
K6	Dinu	862	35	Ch/Suse	1294
15	Dh/Kechene	1285	36	G/Dalcho	2650
16	Goggaa	1349	37	G/Elbu	2400
K8	B/Konche	1323	38	O/Bakko	1249
18	Gemebe	1545	K7	K/Seja	1404
K1	Kaso	931	40	Yachi	2154
20	Omo Gobu	1247	41	Kiloolee	1680
21	Barsoma	840	42	D/Urache	1371
				Total	57,144HHs

Annex 4: Bivariate analysis result of cases and controls for determinants of enrollment to CBHI in Jimma zone, southwest Ethiopia,2018(n=710)

A. Bivariate analysis of socio demographic and economic characteristics

Characteristics	Category	Cases (N=355 ,N(%)	Controls (N=355 N(%)	COR/95%C.I	P-value
Sex	Male	316(89%)	277(78%)	1.0	0.000*
	Female	39(11%)	78(22%)	0.438(0.29-0.66)	
Age	18-30	23(6.5%)	53(14.9%)	0.37(0.22-0.63)	
	31-40	57(16.1%)	101(28.5%)	0.48(0.33-0.71)	
	41-50	205(57.7)%	175(49.3%)	1.0	0.000*
	51-60	49(13.8%)	19(5.4%)	2.20(1.25-3.88)	
	>60	21(5.9%)	7(2%)	2.56(1.06-6.17)	
Religion	Orthodox	23(6.5%)0	21(5.9%)	1.0	0.000*
	Protestant	15(4.2%)	9(2.5%)	1.52(0.55-4.20)	
	Catholic	2(0.6%)	1(0.3%)	1.83(0.15-21.64)	
	Muslim	299(84.2%)	319(89.9%)	0.86(0.46-1.58)	
	Wakefata	16(4.5%)	5(1.4%)	2.92(0.91-9.37)	
Ethnicity	Oromo	333(93.8%)	326(91.8%)	1.0	0.34
	Amhara	8(2.3%)	4(1.1)	1.96(0.58-6.56)	
	Tigre	5(1.4%)	9(2.5%)	0.54(0.18-1.64)	
	Guragie	1(0.3)	3(0.8%)	0.33(0.03-3.15)	
	Other+	8(2.3%)	13(3.7%)	0.60(0.25-1.47)	
Marital status of respondent	Married	329(92.7%)	296(83.4%)	2.52(1.55-4.10)	
	Not married	26(7.3%)	59(16.6%)	1.0	0.000*
Educational status	No formal education	163(45.9%)	258(72.7)%	1.0	0.000*
	Primary education	162(45.6%)	82(23%)	3.13(2.25 -4.35)	
	Secondary education and above	30(8.5%)	15(4.2%)	3.17(1.65-6.06)	
HH headship	Husband	317(89.3%)	269(75.8%)	1.0	0.004*
	Spouse	30(10.7%)	67(18.9%)	0.38(0.31-0.74)	
	Others++	8	19(5.4%)	0.10(0.05-0.20)	
Occupation (HH head)	Farmer	297(83.7%)	258(72.7%)	1.0	0.001*
	Housewife	35(9.9%)	39(11%)	0.78(0.48-1.27)	
	Merchant	15(4.2%)	42(11.8%)	0.31(0.17-0.57)	
	Laborer	8(2.3%)	16(4.5%)	0.43(0.18-1.03)	
Wealth quintile	Lowest wealth quintile	78(22%)	64(18%)	1	0.000*
	2 nd wealth quintile	77(21.7%)	65(18.3%)	0.97(0.61-1.55)	
	Middle wealth	98(27.6%)	44(12.4%)	1.83(1.16-2.97)	

	quintile				
	4 th wealth quintile	66(18.6%)	76(21.4%)	0.71(0.45-1.14)	
	Highest wealth quintile	36(10.1%)	106(29.9%)	0.28(0.17-0.46)	

✚ **Key** Others+=Widowed, Divorced, Cohabit and Others+=Kaffa, Yem, Dawuro

B. Bivariate analysis of household related characteristics

Characteristics	Category		Cases/N=355		Controls/N=355		COR with 95%CI	p-value
			N	%	N	%		
Family size	1-5 members		42	11.8	184	51.8	1.0	0.000*
	>5 members		313	88.2	171	48.2	8.02(5.47-11.77)	
HH – composition (by age groups)	Child<1yrs in the HH	No	275	77.5	304	85.6	1.0	0.005*
		Yes	80	22.5	51	14.4	1.73(1.18-2.5)	
	Any<5year in HH	No	103	29	209	58.9	1.0	0.000*
		Yes	252	71	146	41.1	3.50(2.56-11.78)	
	Any old age (>60years) in HH	No	285	80.3	331	93.2	1.0	0.000*
		Yes	70	19.7	24	6.8	3.39(2.07-5.53)	
Perceived health status of the HH	Good		26	7.3	89	25.1	1.0	0.000*
	Medium		132	37.2	238	67.0	1.90(1.17-3.08)	
	Poor		197	55.5	28	7.0	24.0(13.37-43.4)	
HH illness experience in the last 3months	Yes		174	49.0	80	22.5	3.30(2.39-4.57)	0.000*
	No		181	51.0	275	77.5	1.0	
Any member in HH with chronic illness	Yes		77	21.7	28	7.9	3.23(2.04-5.13)	0.000*
	No		278	78.3	327	91.1	1.0	
Exposure to d/t community insurances (iqub, idir)	Yes		235	66.2	82	23.1	3.9(2.83-5.39)	0.000*
	No		120	33.8	273	76.9	1.0	
HH model status	Yes		55	15.5	14	3.9	4.46(2.44-8.19)	0.000*
	No		300	84.5	341	96.1	1.0	

C. Bivariate analysis of HH heads knowledge and attitudes towards CBHI

Characteristics	Category	Cases/N=355		Controls/N=355		COR-95%C.I	P-value
		N	%	N	%		
HH head Attitude towards CBHI	Favorable attitude	227	63.9	85	23.9	5.60(4.0-7.80)	
	Unfavorable attitude	128	36.1	270	76.1	1.0	0.000*
Awareness to CBHI	Aware	338	95.2	161	46.4	23.96(14.10-40.7)	
	Not aware	17	4.8	194	54.6	1.0	0.000*

D. Bivariate analysis of health service related characteristics

Characteristics	Category	Cases/N=355		Controls/N=355		COR-95%C.I	P-value
		N	%	N	%		
Distance from health facility	Less than 60min/1hr	192	54.1	134	37.7	1.94(1.44-2.62)	
	>60min/1hr	163	45.9	221	62.3	1.0	0.000*
Perceived transportation cost from home to HF	High	107	30.1	161	45.4	1.0	0.000*
	Faire	234	65.9	171	48.2	2.06(1.50-2.82)	
	Cheap	14	3.9	23	6.5	0.92(0.45-1.86)	
Trust on the CBHI committee	Yes	337	94.9	146	41.1	26.80(15.95-45.0)	
	No	18	5.1	209	58.9	1.0	0.000*
Exposure to HF in the last 1 year	Yes	193	54.4	83	23.4	3.9(2.83-5.39)	
	No	162	45.6	272	76.6	1.0	0.000*
Perceived availability of drugs	Available	51	26.4	20	24.1	1.0	0.68
	Not available	142	73.6	63	75.9	0.88(0.48-1.60)	
Perceived satisfaction on health care providers	Satisfied	165	85.5	38	45.8	1.0	0.001*
	Not satisfied	28	14.5	45	54.2	0.143(0.08-0.25)	

 **Key**

P*=Variables that were candidates for multivariable analysis at **p=0.2**