Central Ethiopia Leadership Academy

Effectiveness of Community-Based Health Insurance in the Central Ethiopia Region: Emphasis on Healthcare Access, Financial Management Practices, and Enrollment Dynamics

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Problem-Solving Research Promote Sustainable Development!

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Acronyms and abbreviations:

Acronym	*Full Form*
CBHI	Community-Based Health Insurance
CERS	Central Ethiopia Regional State
CSA	Central Statistical Agency
EHIA	Ethiopian Health Insurance Agency
ETB	Ethiopian Birr
FGD	Focus Group Discussion
FMOH	Federal Ministry of Health
KII	Key Informant Interview
M&E	Monitoring and Evaluation
NGOs	Non-Governmental Organizations
OOP	Out-of-Pocket
PPS	Probability Proportional to Size
SNNP	Southern Nations, Nationalities, and Peoples
UHC	Universal Health Coverage
USAID	United States Agency for International Development
WHO	World Health Organization

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Abstract

Community-Based Health Insurance (CBHI) plays an important role in expanding access to healthcare and reducing financial hardship by limiting out-of-pocket health expenditures in Ethiopia, particularly in Central Ethiopia Region. This study assesses the effectiveness and financial management of the CBHI scheme in Central Ethiopia using data from 846 households, including enrolled members, non-enrolled individuals, and dropouts. An explanatory research design was employed, combining quantitative household surveys with qualitative key informant interviews and focus group discussions. The findings indicate that CBHI has improved healthcare utilization and financial protection for many households. However, persistent challenges remain, including drug stockouts, limited diagnostic services, referral barriers, and service inequities, particularly affecting rural residents. These issues have contributed to declining service quality and rising dropout rates. Financial management challenges were also identified, notably limited transparency, disparities across gender, age, and residence, and reliance on manual cash-based fund collection systems, which undermine trust in the scheme. Low awareness, unaffordable premiums, and high healthcare costs further constrain enrollment, especially among vulnerable populations. Overall, the study highlights the need to strengthen healthcare service delivery, improve financial governance, and enhance inclusive outreach strategies. Key recommendations include upgrading health facility capacity, digitizing fund collection to improve transparency, expanding targeted awareness campaigns, introducing flexible premium structures, and addressing structural inequities to ensure the sustainability and equity of CBHI in Central Ethiopia.

Chapter One

Introduction

1.1. Background of the Study

Access to equitable and affordable healthcare remains a major challenge in many low- and middle-income countries (LMICs). Community-Based Health Insurance has emerged as an effective mechanism for improving financial protection and healthcare access, particularly for poor and rural populations, by pooling resources to reduce out-of-pocket (OOP) spending and prevent catastrophic health expenditures (Tabor, 2005; WHO, 2020). Experiences from African countries such as Rwanda, Ghana, and Senegal demonstrate that well-governed CBHI schemes can significantly contribute to progress toward universal health coverage (UHC) (WHO, 2022; Tanzania Commission for Science and Technology, 2010).

In Ethiopia, the Federal Ministry of Health (FMOH) has implemented major health sector reforms since 1993 to improve equity, quality, and sustainability of healthcare services (Transitional Government of Ethiopia, 1993; FMOH, 1998; Zelelew, 2012). These reforms included expanding primary healthcare infrastructure, strengthening human resources, and introducing health financing reforms that allowed facilities to retain revenue, improved fee waiver systems, and promoted risk pooling through complementary health insurance initiatives (Ministry of Health Ethiopia, 2010; FMOH, 1998). Despite these efforts, healthcare utilization remained low and high OOP expenditures continued to limit access (FMOH, 2010a; USAID, 2011).

To address these challenges, Ethiopia introduced CBHI in 2011 to protect rural households and informal sector workers excluded from formal insurance schemes. CBHI operates as a prepayment and risk-sharing mechanism aimed at improving financial access, enhancing service quality, mobilizing resources, and strengthening community participation (FMOH, 2011; Derseh et al., 2013; Zelelew, 2012). The program was piloted in 13 districts across four regions and has since expanded nationwide (Ministry of Health Ethiopia, 2015).

Evidence indicates that CBHI has improved healthcare utilization and financial protection in Ethiopia, increasing service use and substantially reducing catastrophic health expenditures while improving household welfare and women's economic empowerment (Yilma et al., 2015; Kassahun Mulat et al., 2022; Bayked et al., 2023). Coverage expanded from 161 districts in 2014 to over 827 districts by 2020 (Namomsa Daraje, 2023).

However, CBHI faces persistent challenges, including low enrollment due to affordability constraints, limited awareness, perceived poor service quality, governance weaknesses, fragmented risk pools, and geographic barriers—especially in rural areas (Adebayo et al., 2015; Mebratie et al., 2019; Esayas, 2020). Addressing these issues requires strengthening service delivery, enhancing transparency and governance, expanding risk pooling across regions, improving affordability, and intensifying awareness campaigns to ensure the sustainability and equity of CBHI in Ethiopia (Bayked et al., 2023; Kassahun M. et al., 2022).

1.2. Statement of the Problem

Community-Based Health Insurance has been a central pillar of Ethiopia's health financing reforms and a key strategy toward achieving Universal Health Coverage (UHC). Introduced in 2011, the scheme aims to improve access to healthcare and provide financial protection for low-income and rural households. Over the past decade, CBHI has expanded to more than 600 woredas, benefiting millions of Ethiopians and reducing catastrophic health expenditures by up to 79.4% (Ethiopian Health Insurance Agency, 2021; Adebayo et al., 2015).

Despite these achievements, CBHI continues to face serious governance challenges that threaten its effectiveness, equity, and sustainability. Poor governance—manifested through weak fund management, lack of transparency, unequal beneficiary treatment, and inadequate service delivery—undermines community trust and limits participation (World Health Organization, 2022). In particular, deficiencies in fund collection and management systems remain a major concern. Many community members lack access to information on how premiums are collected, managed, and utilized, creating opportunities for misappropriation and inefficiencies. Reports of weak internal controls and limited independent audits in some regions further highlight accountability gaps (Mebratie et al., 2019).

In the Central Ethiopia Region, while progress has been made in implementing CBHI, transparency and accountability in fund management remain insufficient. Limited financial disclosure, weak oversight mechanisms, and minimal community involvement in decision-making processes contribute to mistrust and potential misuse of resources. These governance gaps can result in inefficient fund allocation, delayed reimbursements, and compromised service quality, ultimately undermining the scheme's objectives (World Health Organization, 2022).

Additionally, exclusion of community members from decisions related to premium setting, fund allocation, and policy changes weakens accountability and reduces scheme ownership (Esayas, 2020). Public awareness about CBHI benefits, rights, and grievance mechanisms also remains low, further limiting effective participation. In some settings, favoritism, inconsistent claim processing, and unequal treatment of beneficiaries have been reported, discouraging enrollment and disproportionately affecting marginalized groups (Yilma et al., 2015).

Although CBHI is widely recognized as an effective mechanism for improving financial protection and access to primary healthcare in resource-constrained settings (WHO, 2007; Alebachew et al., 2015), governance-related weaknesses—such as delayed reimbursements, substandard service delivery, and inadequate monitoring systems—continue to limit its performance. These challenges particularly affect vulnerable populations who rely heavily on CBHI for healthcare access (Derseh et al., 2013).

Addressing governance challenges—especially transparency, accountability, community participation, and financial oversight—is essential for strengthening CBHI's sustainability and impact. Improved governance can enhance trust, increase enrollment, and ensure efficient use of resources. Therefore, this study seeks to generate evidence to inform policy and improve CBHI implementation, with particular emphasis on fund collection and management practices in the Central Ethiopia Region.

1.3. Objective of the Study

1.3.1. General Objective

The general objective of this study was to assess the effectiveness of the Community-Based Health Insurance (CBHI) scheme in the Central Ethiopia Region, with particular emphasis on healthcare access, financial management practices, and enrollment dynamics.

1.3.2. Specific Objectives

The specific objectives of this research were as follows:

1. To examine the effectiveness of the CBHI scheme in improving healthcare access and the quality of service delivery in the Central Ethiopia Region.
2. To investigate the financial management practices of the CBHI scheme, with particular focus on fund collection and fund management in the Central Ethiopia Region.
3. To identify the key barriers to enrollment in, and dropout from, the CBHI scheme in the Central Ethiopia Region.

1.4. Research Questions

This study answers the following research questions:

1. How effective is the CBHI scheme in improving healthcare access and the quality of service delivery in the Central Ethiopia Region?
2. Which factors influence the financial management and sustainability of the CBHI program in Central Ethiopia, especially in terms of fund collection and management practices?
3. What are the key barriers to enrollment in, and dropout from, the CBHI scheme in the Central Ethiopia Region?

1.5. Significance of the Study

This study holds substantial significance in enhancing the overall performance and effectiveness of Community-Based Health Insurance in the Central Ethiopia Region. It is expected to contribute to the improvement of healthcare service delivery by systematically identifying and analyzing the challenges that limit access to and the quality of health services. Additionally, the study examines financial management practices within CBHI schemes, with the aim of minimizing fund mismanagement, enhancing transparency, and thereby strengthening trust among community members. By investigating the barriers to enrollment and the underlying causes of participant dropout, the study provides critical evidence to inform strategies that can increase coverage and sustain participation in CBHI programs. Furthermore, the findings are anticipated to offer valuable insights for researchers, policymakers, and organizations engaged in CBHI initiatives, serving as a foundational reference to guide policy formulation, program design, and the implementation of interventions that enhance sustainability, equity, and efficiency in community-based health financing systems.

1.6. Scope of the Research

This study is defined by its geographical, thematic, methodological, and temporal boundaries.

Geographical Scope: The research was conducted in the Central Ethiopia Region, covering all zones and special Woredas, specifically 7 zones and 3 special Woredas. The study population included CBHI-enrolled households, dropouts, non-enrolled households, regional health offices, relevant stakeholders, healthcare providers, and community members. **Thematic Scope:** The study focused on the effectiveness of Community-Based Health Insurance in the Central Ethiopia Region, with particular emphasis on healthcare access, financial management practices, and enrollment dynamics. **Methodological Scope:** The study employed an explanatory research design using a mixed-methods approach, integrating quantitative and qualitative data to enable triangulation and provide a comprehensive understanding of the research questions. **Temporal Scope:** The study examined CBHI performance from its formal establishment in 2011 until the completion of data collection for this research.

Chapter Three

Research Methodology

3.1. Description of the Study Area

Central Ethiopia Region (CER) is one of the twelve regional states and two city administrations of the Federal Democratic Republic of Ethiopia. CER was officially established on August 19, 2023, from the northern part of the Southern Nations, Nationalities, and Peoples' Region (SNNPR). Geographically, it is located between 7°04'–8°03' latitude and 37°20'–38°60' longitude. It borders Oromiya Regional State to the north, west, and east; Southern Ethiopia Regional State to the south; and Southwestern Ethiopia Peoples Regional State to the southwest. The region covers 1,515,600 hectares, representing 1.38% of the country's total area (CER Plan and Development Bureau, 2015).

Administratively, CER comprises 7 zones, 3 special Woredas, 50 Woredas, 29 city administrations, and 1,310 town and rural Kebeles. Its estimated population is 7,039,772, accounting for 6.47% of the national population, with 80.7% rural and 19.3% urban dwellers. The settlement density is 464 persons per square kilometer, and the annual population growth rate is 2.9%, with urban and rural growth rates of 4.8% and 2.8%, respectively (CSA, 2007; Plan Bureau, 2023).

The region has three climatic zones—Dega, Woyina Dega, and Kola—resulting in diverse ecology, natural resources, agricultural systems, lifestyles, and cultural practices. The highest points are the plateaus of Amebaricho, Shenqola, Zebidar, and Mugo, while the lowest point is 447 meters above sea level in Tembaro Special Woreda along the Omo River valley.

3.2. Research Design

The study employed an explanatory research design with a mixed-methods approach, combining both quantitative and qualitative methods to gather and analyze data from various sources, including CBHI-enrolled, dropout, and non-enrolled households, as well as CBHI coordinators from health offices and health workers. The quantitative approach was used to objectively assess the effectiveness of CBHI by analyzing responses from a representative sample. This method

was chosen as the primary approach because it allowed the researchers to systematically investigate and understand similar issues in the targeted areas.

In addition to the quantitative data, qualitative data were collected through key informant interviews with selected individuals and focus group discussions with community members. Data from these various sources were used for triangulation to strengthen the findings. By integrating both quantitative and qualitative data, the study aimed to provide a comprehensive understanding of the effectiveness of the CBHI program, its challenges, and potential areas for improvement.

3.3. Source of Data and Data Gathering Tools

To achieve the study's objectives, data were collected from both primary and secondary data sources. Primary data were gathered from CBHI-enrolled, non-enrolled, and dropout individuals through survey questionnaires, and from government officials and stakeholders via key informant interviews and focus group discussions with community members and stakeholders. Secondary data were obtained from documents review and reports relevant to this study.

Secondary sources comprised regional government reports and policy documents, academic research articles (both published and unpublished), CBHI program annual reports, demographic and socio-economic data (such as CSA and DHS).

In an effort to fulfill the objectives of the study, a mixed research-method was employed. Both quantitative and qualitative approach was used to collect primary and secondary data. The mixed-methods approach provided an opportunity to deeply explore the research problem while ensuring that the results were more valid and reliable. Consequently, the following research tools were designed and utilized:

Questionnaire: A questionnaire that included both close-ended and open-ended questions was developed. The participants had to provide their view and experience in terms of the effectiveness and cost control of CBHI programs in their respective areas. The open-ended questions gave the participants an opportunity to provide their experience and views, while the close-ended questions gave an opportunity to obtain measurable data for analysis.

Key informant Interviews (KI): Checklist, open-ended semi-structured interview were done for the purpose of getting firsthand data from an eclectically assorted group of applicable stakeholders involved in CBHI interventions. The stakeholders were selected in light of a variety of societal and geographical environments in an effort to provide comprehensive diversity of viewpoint. The semi-structured interview format was also able to be flexible because the interviewer was capable of asking in-depth questions with emphasis still being placed on essential issues of effectiveness and financial management of CBHI programs.

Focus Group Discussion (FGD): A semi-structured checklist was used to facilitate the focus group discussions. The discussions were conducted in purposively selected venues, which were identified based on relevance to CBHI programs' practices. Identification of these venues ensured representation of various social and geographic settings, allowing a complete understanding of the program's impact in various communities. The semi-structured design had provided scope for the respondents to provide their opinions without sacrificing coverage of key issues on the efficiency and financial management of CBHI programs.

In-depth interview (IDI): "In-depth Interviews (IDIs)" were used in the research to extensively explore the experience of households under CBHI programs.

Semi-structured interviewing had been used to utilize a systematic but flexible approach in order to allow participants to tell in-depth stories while still being able to remain congruent with important themes, including enrollment experiences, contributions made, healthcare access, encountered challenges, and thoughts on whether or not the program is valuable.

By keeping open-ended conversation under maximum attention, the method aimed to produce thick understanding of non-enrolled and enrolled members' daily lives. Extra care was taken to capture systemic enrollment limitations, i.e., cost, awareness, and logistics, and dropout decision-making logic, i.e., disappointment with service quality or economic necessity. Interviewing in non-enrolled households produced CBHI knowledge, since distrust, accessibility barriers, or socio-economic incentives disqualified them.

Secondary Data: Different documents were utilized in collecting secondary data, including reports, surveys, magazines, and peer-reviewed research and articles. They provided valuable contextual information and helped in supplementing primary data collected from survey questionnaires, interviews, and focus group discussions. The chosen documents were relevant to the study goals, offering insights on the effectiveness and financial management of CBHI programs. By reading the secondary sources in this way, the research had hoped to triangular evidence and better knows the affairs at issue.

3.4. Sampling and Sample Size Determination

Based on the hierarchical administrative structure of the Central Ethiopia region, the sampling approach employed a multistage probability and non-probability sampling (random sampling and purposive sampling) method to ensure statistical representation across various administrative divisions. The multistage sampling strategy was designed ensure a comprehensive representation of the Central Ethiopia region's diverse social and geographical contexts. This included the regions' zones, special Woredas, Woredas, city administrations, and other local administrative units. The multistage design allowed for a systematic selection of participants from different levels of the administrative structure, ensuring that the sample was both diverse and representative of the population across the region.

The sample size for this study was calculated based on a binary outcome (CBHI enrollment status: enrolled vs. not enrolled) using a conservative prevalence estimate (p = 0.5) and the standard formula for proportions. The initial household sample was 385, adjusted for a design effect of 2 and a 10% non-response rate, resulting in a final sample size of 847 households. Sample sizes for each zone were proportionally allocated based on population distribution to ensure representativeness. Then the sample size for Household is

$$n = \frac{Z^2 p(1-p).K.[DEEF]}{d^2} \qquad (\quad) \quad [\quad]$$

Where:

- n = Required sample size
- Z = Z-score for 95% confidence level (1.96)
- p = Estimated prevalence (0.5)
- 1−p = Complement of prevalence (0.5)
- d = Margin of error (typically 5% or 0.05)
- K= Number of strata(use 1, unless stratified sampling)
- DEEF= Design effect(use 1 for simple random sampling)

Calculation

$$n = \frac{(1.96)^2 * 0.5(1-0.5)}{(0.05)^2} = \frac{3.8416 * 0.25}{0.0025} = \frac{0.9604}{0.0025} = 384.16$$

To ensure equitable representation of each zone in the study, the sample sizes for each zone were allocated proportionally based on their population size. The formula used to calculate the sample size for each zone is as follows:

$$\text{Sample size for each zone} = \left(\frac{\text{Population of the zone}}{\text{Total population of the region}}\right) \times \text{Total sample size in the region}$$

Given: Total sample size = 847, Total population = 7,039,772

This proportional allocation approach ensured that each zone is accurately represented in the sample, maintaining the integrity of the study by reflecting the population distribution across the region.

A total of 30 Woredas were selected from 80 in the region using a multistage sampling approach. The Cochran formula, adjusted for finite population, guided Woreda selection. Woredas were stratified by CBHI performance levels (high, medium, low) and residency (urban vs. rural) to ensure balanced representation: 11 high-performing, 11 medium-performing, 6 low-performing; 12 urban, 16 rural.

Cochran's Formula for an Infinite Population

$$n_0 = Z^2 . P\left(\frac{1-P}{E^2}\right)$$

$$n_{0=Z^2.\frac{P(1-p)}{E^2}}$$

Where:

- Z = 1.645 (for 90% confidence level)
- p = 0.5 (maximum variability)
- E = 0.15 (margin of error)
- n_0 = 30.07

Adjusting for Finite Population

Since the total numbers of **Woredas** were 80, we used the finite population correction (FPC)**:**

$$n = \frac{n_0}{1 + \frac{n_0 - 1}{N}}$$

Where:

- N= 80 (total number of Woredas)
- n_0 = 30.07
- N= 22.06

Final Sample Size: To ensure adequate representation, the final sample size included 28 Woredas. An additional 6 Woredas were included to account for residential variability, such as urban versus rural areas, and the performance levels of CBHI (high, medium, and low). This approach guaranteed a representative selection while preserving the desired confidence level and margin of error.

Within selected Woredas, Kebeles were randomly chosen, and households were sampled using systematic random sampling, ensuring diversity and minimizing bias. Key informants were purposively selected, including Woreda health office heads, CBHI coordinators, and health

officers. Focus group discussions involved purposively selected community members, health extension workers, Kebele administrators, managers, and community leaders, with 8–12 participants per group.

Stratified sampling was applied where socio-economic or geographic differences existed to capture diverse perspectives. This multistage probability and purposive sampling approach ensured a representative and comprehensive analysis of CBHI practices, reflecting the diversity of experiences across zones, Woredas, Kebeles, and households.

3.5. Method of Data Analysis

Both descriptive and inferential statistical methods were employed to analyze the data in this study. Quantitative data were processed using SPSS and STATA software to generate descriptive and inferential statistics. Descriptive statistics summarized key characteristics through tables, graphs, frequencies, percentages, means, and standard deviations. Chi-square tests and ANOVA were applied to check the association of the variables. For inferential analysis, binary logistic regression was used to identify factors influencing the effectiveness and financial management of CBHI.

Qualitative data were analyzed using thematic analysis in line with the study objectives and research questions. Transcripts from FGDs and KIIs were systematically coded and organized into themes, with particular emphasis on CBHI effectiveness and financial management practices.

Chapter Four

Results and Discussion

4.1. Introduction

This chapter presents the analysis, discussion, and interpretation of the collected data to address the research questions. Findings are organized into clear subsections, highlighting key insights and trends regarding the effectiveness and financial management of CBHI in the Central Ethiopia Region.

4.2. Descriptive results analysis: Demographic and socio-economic Factors analysis

This section examines the demographic and socio-economic characteristics of the heads of the sampled households, including sex, age, family size, education level, marital status, farmland holding, average annual household income, average household expenditure and awareness of CBHI. Descriptive statistics, such as mean, standard deviation, and percentage, as well as statistical tests including chi-square, and ANOVA, were conducted using STATA version 17 and SPSS version 27 computer software packages.

Before analyzing the demographic and socio-economic factors, the characteristics of the surveyed households were described. As presented in Table 4.1, the study involved a total of 846 sample households. Out of these, 530 (62.6%) households were enrolled in Community-Based Health Insurance (CBHI), 200 (23.6%) households were not enrolled in CBHI, while the remaining 116 (13.7%) households had dropped out of CBHI.

Table 4. 1: Sample enrolled, non-enrolled and dropout households' headed

Category	Frequency	Percent
Enrolled household	530	62.6
Non-enrolled household	200	23.6
Dropout household	116	13.7
Total	846	100.00

Source: Own survey result (2025)

Residency of the household: The residency of household heads in CBHI programs provides valuable insights into the demographic distribution of enrolled, non-enrolled, and dropout households. As seen in Table 4.2 below, among the 530 households enrolled in the program, a

notable distinction emerges between urban and rural residents. Specifically, 204 households (38.5%) were urban residents, while 326 households (61.5%) were from rural areas. In contrast, among the 200 non-enrolled households, higher proportions were rural residents. Of these, 82 households (41%) were urban residents, while 118 households (59%) were from rural areas. Among the 116 households that dropped out, only 24 (20.7%) were urban residents, while a substantial 92 households (79.3%) were from rural areas. This indicates that CBHI programs are more prevalent or appealing to rural populations, possibly due to limited access to other health insurance options in the study area. The higher enrollment rate among rural households suggests a greater need for health insurance in these areas, where healthcare facilities and services are often scarce.

The dropout rate from CBHI programs reveals another significant trend closely linked to the challenges faced by rural households. This high dropout rate among rural households suggests that maintaining enrollment is particularly challenging in the study area.

The Chi-Square Test for association between residences and CBHI enrollment of sampled was conducted. As the result the Test retail that there are significant association between residence (urban vs. Rural) of sampled households and CBHI with p-value = 0.001at at the 0.05 significance level. It means that the pattern of CBHI enrollment is not the same for urban and rural households; residence plays a significant role in whether households enroll, do not enroll, or drop out of CBH.

Table 4. 2: Residency of the household headed

	Category	Frequency	Percent	Chi-Square Tests
Enrolled household	Urban	204	24.1	.001
	Rural	326	38.5	
Non-enrolled household	Urban	82	9.7	
	Rural	118	13.9	
Dropout household	Urban	24	2.8	
	Rural	92	10.9	
Total		846	100.00	

Source: Own survey result (2025)

Sex of the household headed: The sex of the household head provides another important demographic perspective on enrolled, non-enrolled, and dropout households within the CBHI

program. As detailed in Table 4.3 below, the distribution of household heads by sex offers insights into gender dynamics and participation trends in health insurance programs. Among the 530 enrolled households, a significant majority (398 or 75.1%) were headed by males, while 132 (24.9%) were headed by females. In contrast, among the 200 non-enrolled households, 147 (73.5%) were male-headed, and 53 (26.5%) were female-headed. The dropout category showed an even more pronounced gender imbalance, with 96 (82.8%) male-headed households and 20 (17.2%) female-headed households.

A chi-square test was conducted to assess whether there is a statistically significant association between the sex of the household head and enrollment status in the CBHI program. The test yielded a p-value of 0.151, in Table 4.3 indicating no statistically significant association between the sex of the household head and enrollment status. This suggests that the observed differences in enrollment rates between male-headed and female-headed households may be due to chance rather than a systematic relationship between gender and enrollment status. It's worth noting that some studies have found that female-headed households are more likely to enroll in community-based health insurance schemes, as seen in a study from Southwest Ethiopia where female-headed households had significantly higher odds of enrollment compared to male-headed households (Abebe et al., 2018). However, this specific study did not find a statistically significant association between the sex of the household head and enrollment status.

Table 4. 3: Sex of the household headed

	Category	Frequency	Percent	Chi-square Test
Enrolled household	Male	398	47.0	
	Female	132	15.6	
Non-enrolled household	Male	147	17.4	
	Female	53	6.3	.151
Dropout household	Male	96	10.9	
	Female	20	2.4	
Total		846	100.00	

Source: Own survey result (2025)

Education status of households: The education status of household heads is a crucial demographic factor in understanding the dynamics of the CBHI program. It is categorized into six groups: no formal education, can read and write, primary school completed, secondary school

completed, upper secondary school completed (preparatory school completed), and post-secondary school completed (college, TVET, and university completed). As seen in Table 4.4 below, the frequency distribution among enrolled, non-enrolled, and dropout households show significant variations.

For enrolled households, the largest proportions have either no formal education (21.5%) or primary education (21.6%), followed by smaller percentages for other categories. Non-enrolled households also show notable proportions with no formal education (6.1%) or primary education (8.0%). Dropout households follow a similar trend, with significant proportions having no formal education (4.1%) or primary education (4.0%).

A chi-square test was conducted to assess whether there is a statistically significant association between the education status of household heads and their enrollment status in the CBHI program. The test yielded a p-value of 0.000, indicating a statistically significant association between education status and enrollment status. This suggests that the education level of household heads significantly influences their decision to enroll in, remain enrolled in, or drop out of the CBHI program. This finding aligns with broader research indicating that higher education levels are often associated with greater awareness and understanding of health insurance benefits, which can increase the likelihood of enrollment and retention in such programs (Bhattacharya & Bundorf, 2009; Kim et al., 2015; Suresh et al., 2017).

Table 4. 4: Education status of the household headed

Category	Enrolled household		Non-enrolled household		Dropout household		Chi-Square Tests
	Frequency	Percent	Frequency	Percent	Frequency	Percent	
No formal education	182	21.5	52	6.1	35	4.1	
Can read and write	69	8.2	20	2.4	9	1.1	
Primary education	183	21.6	68	8.0	34	4.0	0.000
Secondary education	48	5.7	28	3.3	24	2.8	
Upper secondary (Preparatory school)	19	2.2	5	0.6	8	0.9	
Post-secondary (College, TVET, and Universities)	29	3.4	27	3.2	6	0.7	

Source: Own survey result (2025); Note: *** shows a level of significance.

Marital status of the sample households: The marital status of the sample households was a categorical variable, classified into four categories: unmarried, married, divorced, and widowed. As detailed in Table 4.5 below, the distribution of household heads by marital status varied among enrolled households. Among the 530 households enrolled in the CBHI program, 5 households (0.6%) were headed by individuals who were unmarried, 463 households (87.4%) were headed by individuals who were married, 3 households (0.4%) by those who were separated, 11 households (1.3%) by individuals who were divorced, and 48 households (5.7%) by those who were widowed.

A chi-square test was conducted to determine whether there was a statistically significant difference in the marital statuses of the sample households. The chi-square test of independence was performed to assess whether marital status (categorized as unmarried, married, separated, divorced, and widowed) is associated with household enrollment status (enrolled, non-enrolled, dropout). The test yielded a chi-square statistic of 0.392, which corresponds to a p-value greater than the common significance level of 0.05. This indicates that there is no statistically significant association between marital status and enrollment status in the sample households.

Table 4. 5: Marital status of the sample households

Category	Enrolled household		Non-enrolled household		Dropout household		Chi-Square Tests
	Frequency	Percent	Frequency	Percent	Frequency	Percent	
Unmarried	5	0.6	4	0.4	1	0.1	0.392
Married	463	54.7	163	19.3	104	12.3	
Separated	3	0.4	3	0.4	0	0	
Divorced	11	1.3	8	0.9	3	0.4	
Widowed	48	5.7	22	2.6	8	0.9	

Source: Own survey result (2025)

Age of the Household: The mean age of the household differs across the three CBHI status groups. Households enrolled in CBHI have an average age of 45.16 years, with a standard deviation of 12.195, indicating a moderate level of variability in age within this group. Non-enrolled households have a lower average age of 41.81 years, with a standard deviation of 12.042, suggesting that while the age distribution is slightly younger than that of the enrolled group, the variability is similar. On the other hand, dropout households have the highest mean age at 47.94 years, with a standard deviation of 11.743, indicating that they are the oldest on average and have a relatively similar level of age variability compared to the other groups. These observations suggest that, in general, dropouts tend to be older than the other two groups, while non-enrolled households are the youngest on average. As seen in Table 4.6 below, the ANOVA results show a significant difference in age across these groups, with an F-statistic of 10.262 and a p-value of 0.000.

Yearly Average Income of Household: There are noticeable differences in yearly average income across the groups. As seen in Table 4.6 below, households enrolled in CBHI have the highest mean income at birr 3,769.36, with a standard deviation of birr 4,332.01, indicating a wide range of income levels within this group. The non-enrolled group has a slightly lower mean income of birr 3,505.30, with a standard deviation of birr 4,475.62, suggesting that while their average income is lower than that of the enrolled households, the income distribution is similarly broad. Lastly, the dropout group has the lowest mean income at birr 3,485.95, with a standard deviation of birr 3,262.91, indicating less variation in income compared to the other two groups. This suggests that while dropouts have the lowest average income, their income levels are more concentrated than those of the other groups. However, the ANOVA results indicate no

significant difference in income across these groups, with an F-statistic of 0.406 and a p-value of 0.666.

Average Yearly Expenditure: The average yearly expenditure on healthcare varies significantly across enrolled, non-enrolled, and dropout households. As seen in Table 4.6 below, enrolled households have a mean expenditure of 6,032.30, with a substantial standard deviation of 22,259.007, indicating a wide range of spending within this group. In contrast, non-enrolled households have a lower mean expenditure of 4,457.60, accompanied by a smaller standard deviation of 6,178.038, suggesting more consistent spending patterns. Dropout households exhibit the highest mean expenditure at 6,469.71, with a standard deviation of 11,005.032, indicating considerable variability in healthcare spending. Despite these differences, the ANOVA results show no statistically significant variation in healthcare expenditure across the groups, with an F-statistic of 0.647 and a p-value of 0.524. Overall, while age varies significantly across these groups, income and healthcare expenditure do not.

Table 4. 6: Characteristics of sample households for continuous variables

	Enrolled (N=530)		Non-enrolled (N=200)		Dropout(N=116)		ANOVA	
Variable	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation	F	Sig.
Age of the household	45.16	12.195	41.81	12.042	47.94	11.743	10.262	.000***
Yearly average income of household	3769.36	4332.01	3505.3	4475.619	3485.95	3262.907	.406	.666
Average yearly expenditure on healthcare	6032.30	22259.007	4457.60	6178.038	6469.71	11005.032	.647	.524

Source: Own survey result (2025) Note: *** shows a level of significance.

CBHI Enrollment Awareness: This data provides valuable insights into the awareness levels of the CBHI scheme among enrolled, non-enrolled, and dropout households. As seen in Table 4.7 below, a significant majority of enrolled households, totaling 520 (61.5%), are aware of the CBHI scheme, while only a small fraction, 10 households (1.2%), reports no awareness. In contrast, non-enrolled households show a lower level of awareness, with 148 households

(17.5%) aware and 52 households (6.1%) unaware. Dropout households have a moderate level of awareness, with 97 households (11.5%) aware and 19 households (2.2%) unaware.

Overall, the data indicate that the majority of households (90.4%) are aware of the CBHI scheme, with only 9.6% reporting no awareness. Awareness is notably higher among enrolled households, suggesting that awareness may play a significant role in enrollment decisions. Non-enrolled households have a higher percentage of unawareness, which could potentially act as a barrier to enrollment. The moderate level of awareness among dropout households suggests that their reasons for dropping out may not be directly related to awareness of the scheme.

Table 4. 7: CBHI enrolled household Awareness

Question	category		Enrolled	Non- enrolled	Dropped out	Total
Are you aware of the CBHI scheme in your area?	No	Frequency	10	52	19	81
		percent	1.2	6.1	2.2	9.6
	Yes	Frequency	520	148	97	765
		percent	61.5	17.5	11.5	90.4

Source: Own survey result (2025)

CBHI enrollment information: The sources of information about CBHI enrollment varies significantly across the three groups—enrolled, non-enrolled, and dropouts. As seen in Table 4.8 below, among the enrolled households, a large majority (71.49%) received information from governmental bodies, while a smaller proportion (25.31%) turned to other sources for information. This indicates that the enrolled group largely relies on governmental sources to learn about CBHI. In contrast, non-enrolled households obtained their information from governmental bodies only 18.86% of the time, with a much larger proportion (43.83%) relying on other sources. This suggests that non-enrolled individuals primarily gather information from alternative channels. Similarly, the dropout group gets information from other sources, with 30.86% relying on them, compared to 9.65% who turned to governmental bodies for information.

Across all groups, governmental bodies were the primary source for the enrolled group, while both the non-enrolled and dropouts showed a stronger reliance on other sources. Overall, 684 individuals (or 80.94%) across all groups received information from governmental bodies, while 162 individuals (or 19.06%) used other sources.

Table 4. 8: Source of information about CBHI enrollment

Sources of information about CBHI	Enrolled		Non-Enrolled		Dropouts		Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Governmental bodies	489	71.49	129	18.86	66	9.65	684	100.00
Other sources	41	25.31	71	43.83	50	30.86	162	100.00

Source: Own survey result (2025)

Livestock Ownership: The livestock ownership across the three CBHI enrollment statuses—Enrolled, Non-Enrolled, and Dropouts—is shown below. As seen in the table 4.9 below, among the enrolled households, a significant majority (392 or 64.6%) own livestock, while 138 (or 57.7%) do not. This indicates that households currently enrolled in the CBHI program are more likely to own livestock than those without livestock. For non-enrolled households, only 82 (or 13.5%) own livestock, while 34 (or 14.2%) do not, suggesting lower livestock ownership in this group compared to the enrolled households. In dropout households, 133 (or 21.9%) own livestock, while 67 (or 28.0%) do not. This indicates that livestock ownership among dropouts is slightly higher than in the non-enrolled group but still lower than in the enrolled group.

The Chi-Square test results show a statistic of 4.064 and a p-value of 0.131. Since the p-value is greater than the conventional significance level of 0.05, we fail to reject the null hypothesis, meaning there is no statistically significant relationship between livestock ownership and CBHI enrollment status. While there are differences in the proportions of livestock ownership across the groups, the Chi-Square test indicates that these differences are not statistically significant. This suggests that livestock ownership is not a key factor in determining whether a household is enrolled in, has dropped out of, or is not enrolled in the CBHI program.

Table 4. 9: Livelihood Ownership association between CBHI Enrollment

Variable	CBHI Enrollment Status	Enrolled	Non-Enrolled	dropouts	Chi-Square	p-value
Livestock Ownership	Non-Owned	138 (57.7%)	34 (14.2%)	67 (28.0%)	4.064	0.131
	Owned	392 (64.6%)	82 (13.5%)	133 (21.9%)		

Source: Own survey result (2025)

Family Size: For the variable family size, the ANOVA results also indicate a significant difference across the groups. The F-statistic is 3.923, with a p-value of 0.020, which is less than 0.05, indicating that there is a statistically significant difference in family size between the groups. The between-group variance (37.856) is larger than the within-group variance (4067.884), suggesting that the differences in family size are more pronounced between groups than within them. The significant p-value suggests that the number of people in the household varies significantly across the groups, and we can reject the null hypothesis, which would suggest no difference in family size across the groups (see in Table 4.10).

Farmland Size: The ANOVA results for farmland size show a significant difference across the groups. As seen in Table 10 below, the F-statistic is 12.710, with a p-value of 0.000, which is well below the commonly used significance level of 0.05. This indicates that there are statistically significant differences in the number of hectares of farmland owned by the different groups. Specifically, the between-group variance (10.224) is much larger than the within-group variance (250.582), suggesting that the variability in farmland size is significantly greater between groups than within each group. Therefore, we can reject the null hypothesis, which would imply no difference in farmland ownership between groups. The low p-value further supports the conclusion that the differences in farmland size across the groups are not due to random chance. This result suggests that the groups differ in terms of the number of hectares of farmland they own, and this factor could be important for understanding group differences in land use, agricultural practices, or economic factors associated with farm ownership.

Table 4. 10: Family size and farmland size

Questions	ANOVA					
	Category	Sum of Squares	Df	Mean Square	F	Sig.
How many people are in your family?	Between Groups	37.856	2	18.928	3.923	.020
	Within Groups	4067.884	843	4.825		
How many hectares of farmland size do you have?	Between Groups	10.224	2	5.112	12.71	.000***
	Within Groups	250.582	623	.402		

Source: Own survey result (2025) Note: *** shows a level of significance.

4.3. Econometrics model results by objective

This section presents the econometric results corresponding to three specific objectives. The first part explores the challenges faced by CBHI members in accessing healthcare and the quality of services in Central Ethiopia. The second part analyzes financial management practices, with particular attention to fund collection and misuse. Finally, the third part identifies the key barriers to enrollment in the Community-Based Health Insurance program across the study area.

4.3.1. Examine the challenges faced by CBHI members in service quality and satisfaction with CBHI

The quantitative data, as clearly shown in Figure 4.1, indicate that while a significant majority of CBHI members (81.5%) report satisfaction with the services, a substantial minority (18.5%) remain dissatisfied. The qualitative data provide crucial insights into the sources of this dissatisfaction, revealing that many members experience not only delays and logistical barriers in accessing higher-level care but also significant frustration due to the lack of patient guidance and coordination within health facilities.

Qualitative findings further illuminate these challenges by showing that many participants encountered delays and difficulties in reaching referral hospitals capable of delivering advanced care. For example, some patients were referred to distant facilities due to the unavailability of necessary equipment or specialists at local centers. One participant described the hardship of navigating the referral process and the high costs incurred, stating, “After I faced many challenges to take referral service in this hospital, then I was gone to a distant hospital in which I got drugs that cost more than 200,000 ETB and also 7 doctors came to follow a single patient.”

Another focus group participant described being sent from room to room without clear explanations—a process particularly distressing for elderly or illiterate patients. One participant recounted, “They say go to room 4, room 6, room 8, room 12. After all these delays, they will say go to that drug store… we didn’t get any drug but we will go here and there,” illustrating how administrative confusion and poor communication exacerbate the difficulties faced by CBHI users.

Another significant issue that emerged from the Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) is the widespread perception that poor service quality and inequitable treatment under the CBHI scheme are major factors contributing to member dropout and discouraging new enrollments. Participants from multiple Woredas reported feeling disillusioned with the healthcare services they received after joining the program. Many noted a stark contrast between the promises made during the enrollment campaigns—such as access to timely, respectful, and comprehensive care—and the reality they encountered at health facilities. Complaints included long waiting times, lack of essential medications, perceived discrimination by health workers, and differential treatment between CBHI members and fee-paying patients. These negative experiences have led some households to question the value of continued participation in the scheme. As a result, dissatisfaction with service quality not only undermines trust in the CBHI system but also poses a serious threat to its sustainability and credibility in the eyes of the community.

These findings emphasize the importance of patient navigation programs—designed to guide individuals through complex health systems, provide holistic and patient-centered care, and address personal barriers. Such programs can significantly enhance care experiences and outcomes, particularly for marginalized and high-need groups. Navigation services have been shown to reduce confusion, improve access to essential services, and ensure that patients are not left unsupported as they move through the health system.

To sum up, the association between quantitative satisfaction rates and qualitative experiences underscores the need for improved patient navigation and coordination within the CBHI scheme. Addressing these gaps—by implementing navigation services, enhancing communication, and actively working to eliminate discriminatory practices—could reduce dissatisfaction, improve equity, and strengthen the overall effectiveness and inclusivity of the CBHI program.

The Association between Service Quality and Satisfaction with CBHI

A cross-tabulation was conducted to examine the association between satisfaction with CBHI and the perceived quality of healthcare services provided under the scheme. As shown in Table 4.11, the data reveal a strong correlation between perceived healthcare quality and member satisfaction. Among the 530 respondents, the majority (476) rated the quality of healthcare services as "Good," with a significant portion (427) expressing satisfaction with CBHI, while a smaller number (49) reported dissatisfaction. Conversely, of the 54 respondents who rated the healthcare quality as "Poor," most (49) indicated dissatisfaction with CBHI, and only a minority (5) expressed satisfaction. These findings suggest that perceived healthcare quality significantly influences member satisfaction with the CBHI scheme.

Table 4. 11: The Association between service quality and satisfaction with CBHI

		Satisfaction of CBHI			
Variable	**scale**	**Satisfied**	**Not Satisfied**	**Total**	**Chi-square**
The quality of healthcare services provided under CBHI	Good	427	49	476	0.000
	Poor	5	49	54	
	Total	432	98	530	

Source: Own survey result (2025)

In table 4.11 above shows that the Chi-square test examining the association between satisfaction with CBHI and the quality of healthcare services yielded a p-value of 0.000, which is statistically significant at the 5% level ($p < 0.05$). This indicates a strong and statistically significant relationship between satisfaction with CBHI and the perceived quality of healthcare services.

These results suggest that individuals who perceive healthcare services as good are much more likely to be satisfied with CBHI, whereas those who perceive services as poor are significantly more likely to be dissatisfied. This underscores the critical role of service quality in shaping satisfaction levels and highlights the importance of quality improvement initiatives for the success and sustainability of CBHI programs.

Logistic regression model results service quality and satisfaction with CBHI

The logistic regression results highlight nine key variables that significantly influence the accessing health services satisfaction, while others four variables show no statistically significant impact.

Table 4. 12: Logistic regression results of service quality and satisfaction with CBHI

Number of obs. = 251
LR chi2(9) = 46.05
Prob. > chi2= 0.0000
Pseudo R2= 0.1616

Log likelihood =-119.47876

Variables	Odds ratio	dy/dx	Std. err.	z	P>z	[95% C.I.]	
Residency	1.430584	.0595944	.05558	1.07	0.284	-.049345	.168534
Sex	1.737676	.0919586	.07246	1.27	0.204	-.050068	.233985
Family size	1.013776	.002277	.01145	0.20	0.842	-.020157	.024711
Education	1.333398	.0490086	.0626	0.78	0.434	-.073676	.171693
Waiting times for services	.3777131	-.1569282	.05332	-2.94	0.003**	-.261432	-.052424
Out of pocket reduction	3.64749	.259544	.0842	3.08	0.002**	.09452	.424568
High premiums	.3877021	-.1843647	.08755	-2.11	0.035**	-.355961	-.012769
CBHI Health Coverage	2.467185	.150296	.06256	2.40	0.016**	.027679	.272912
Misuse of fund	.2785617	-.2127121	.10523	-2.02	0.043**	-.418952	-.006473

Source: Own survey result (2025) Note: ** shows a level of significance at 5%.

The logistic regression results in Table 4.12 show that, out of the nine independent variables included, five have a significant influence on satisfaction with access to health services. These are interpreted below:

Waiting Times for Services: An odds ratio of 0.378 signifies a strong negative association between waiting time and satisfaction with health services. Specifically, this value implies that longer waiting times reduce the odds of being satisfied with healthcare services by approximately 62.2%. Such a substantial decline in satisfaction odds emphasizes that delays in service delivery are more than just inconveniences—they are significant determinants of how patients perceive and engage with the healthcare system.

In addition, the marginal effect (dy/dx = −0.157) indicates that for every additional one minute of waiting, the probability of a patient reporting satisfaction decreases by 15.7%. This is a considerable effect, suggesting that even small increases in waiting time can meaningfully erode patient satisfaction levels.

Key Informant Interview (KII) results indicate that long queues and delayed services—particularly during high-demand periods such as malaria season—are perceived as undermining the quality of care. These delays contribute to frustration and lower satisfaction among CBHI

users, sometimes leading to dropout or hesitancy to renew membership. Furthermore, Focus Group Discussion (FGD) responses revealed perceived discrimination: CBHI users reported that they are deprioritized compared to cash payers. Even among CBHI users, preferential treatment is allegedly given to those who are known personally by healthcare staff.

A similar study on CBHI bankruptcy identified poor governance, inadequate financial audits, and weak risk assessments as contributors to scheme instability. Effective financial safeguards were deemed critical to prevent mismanagement (Abebe & Kebede, 2023).

These findings underscore that long wait times serve as a major structural barrier to both perceived and actual access to healthcare. From a patient's perspective, extended delays can lead to increased anxiety, physical discomfort, or a sense that their needs are not being prioritized—factors that collectively undermine trust in the system. In more serious cases, long waiting periods can deter individuals from seeking timely care altogether, thereby exacerbating health conditions and increasing long-term treatment costs.

Improving timeliness in healthcare delivery is therefore not merely a matter of efficiency—it is central to enhancing patient satisfaction, optimizing resource use, and promoting equity in service access. Interventions such as streamlining appointment systems, increasing staffing levels, investing in digital health tools, and reorganizing patient flow can play a pivotal role in shortening wait times. Ultimately, the data make it clear that reducing waiting times should be a strategic priority for health systems aiming to improve both the quality and accessibility of healthcare.

Out-of-Pocket Reduction: An odds ratio of 3.647 reveals a strong and statistically significant positive relationship between reduced out-of-pocket (OOP) costs and satisfaction with health services. This means that individuals who face lower OOP expenses are approximately 264.7% more likely to report being satisfied with their healthcare experiences compared to those who bear higher personal healthcare costs. This substantial increase in the odds illustrates how reducing financial burdens at the point of service can play a critical role in shaping positive health system perceptions. Complementing this, the marginal effect (dy/dx = +0.260) provides a more intuitive interpretation: for every one-birr reduction in OOP expenses, the probability of being satisfied with health services increases by 26 percent. This large marginal effect

underscores the practical, real-world impact of affordability on patient satisfaction and suggests that even modest cost reductions can have outsized effects on how patients experience and evaluate their healthcare.

Similar studies support this result. CBHI adoption in Ethiopia aims to reduce out-of-pocket (OOP) burdens, which account for about 34% of total healthcare expenditures nationally. Studies confirm that CBHI enrollment lowers OOP costs for chronic disease patients, directly improving satisfaction (Frontiers in Public Health, 2022; MedRxiv, 2022; Springer Medizin, 2023). CBHI has a positive impact on beneficiaries' satisfaction by reducing high costs, particularly for those with chronic diseases (Frontiers in Public Health, 2022).

These findings emphasize that financial accessibility is a cornerstone of effective and equitable healthcare systems. High out-of-pocket costs can act as deterrents, discouraging individuals from seeking timely care, completing treatments, or engaging with preventive services—all of which can compromise health outcomes and lower satisfaction. Conversely, easing the financial burden through mechanisms like targeted subsidies, expanded insurance coverage, or fee waivers can empower more individuals to access necessary care without the stress of financial strain. In essence, the data clearly support the argument that policies aimed at minimizing direct healthcare expenses for patients can lead to significant improvements not only in access to services, but also in overall satisfaction with the healthcare system. For policymakers, this reinforces the value of prioritizing financial risk protection as a key component of healthcare reform and universal health coverage strategies.

High Premiums: An odds ratio of 0.388 indicates a significant negative association between high insurance premiums and satisfaction with health services. Specifically, individuals facing higher premium costs are about 61.2% less likely to report satisfaction compared to those with lower premiums. This stark decrease in the odds underscores how financial burdens can undermine individuals' perceptions of and experiences with healthcare systems. Further supporting this finding, the marginal effect ($dy/dx = -0.184$) quantifies the practical impact: for every unit increase in premium levels, the probability of being satisfied with health services drops by approximately 18.4 percentage points. This negative marginal effect highlights how

cost pressures extend beyond statistical associations and translate into tangible reductions in healthcare satisfaction.

Similar study was finding a similar result. An inexpensive membership premium (AOR = 10.58, 95% CI = 3.56–31.44) was strongly associated with higher satisfaction, indirectly supporting the inverse relationship (i.e., higher premiums likely reduce satisfaction) (Getaneh et al., 2023).

These results suggest that high premiums function as a significant financial barrier, potentially discouraging individuals from seeking care, following through with treatment, or feeling secure in their healthcare arrangements. When premiums are perceived as unaffordable, people may delay care, skip necessary services, or feel dissatisfied with the value they receive, which ultimately erodes trust and engagement with the healthcare system.

Therefore, promoting affordable premium structures is not only a matter of financial accessibility but a strategic move to enhance both access of healthcare and the quality of services. Policymakers and insurers aiming to improve healthcare outcomes must consider premium affordability as a key determinant of system effectiveness and public satisfaction.

CBHI health cost coverage: The positive association between CBHI health cost coverage and satisfaction with health services is clearly reflected in the odds ratio of 2.467. This means that individuals whose health costs are covered by CBHI are approximately 146.7% more likely to be satisfied with the healthcare services they receive, compared to those whose health costs are not covered. This substantial increase in the odds of satisfaction suggests that CBHI plays a pivotal role in reducing healthcare costs for its members.

Furthermore, the marginal effect (dy/dx = +0.150) provides an intuitive interpretation of this relationship. It indicates that CBHI health cost coverage increases the probability of being satisfied with health services by 15%. This measurable improvement underscores the value of health insurance programs in shaping patient perceptions and enhancing the overall healthcare experience.

Several studies conducted in Ethiopia support the positive association between CBHI health cost coverage and satisfaction with health services. A systematic review and meta-analysis found that the overall household satisfaction with CBHI in Ethiopia was 62.26%. Among the significant

factors associated with satisfaction were the availability of drugs (OR = 2.13, 95% CI: 1.47–2.78) and affordability of premiums (OR = 2.80, 95% CI: 1.97–3.63), both of which are directly related to the financial protection offered by CBHI schemes. The study concludes that improved financial coverage through CBHI is a key driver of beneficiary satisfaction, as it reduces the burden of healthcare costs and enhances access to essential services (Wang et al., 2023; Wolde et al., 2023).

Another cross-sectional study in Southern Ethiopia reported that households enrolled in CBHI had a high satisfaction rate (91.38%). The study found a significant association between health service provision (including cost coverage) and satisfaction scores, indicating that members whose health costs were covered by CBHI were more likely to report satisfaction with their healthcare experiences (Wolde et al., 2023).

Additionally, a study assessing client satisfaction in Hulbareg woreda, Southern Ethiopia, found that enrollment in CBHI increased service utilization and reduced out-of-pocket expenditure for medical bills, both of which contributed to higher satisfaction among members. The overall satisfaction rate among CBHI members was 63.1% (Wolde et al., 2023).

These findings provide strong evidence of the effectiveness of CBHI in reducing financial barriers to care, which is a key determinant of both access to quality healthcare and satisfaction with services. By covering part or all of the costs associated with healthcare utilization—such as consultation fees, medications, or diagnostic tests—CBHI helps alleviate the economic burden on individuals and families, especially those in low-income or rural communities. As a result, enrollees are more likely to seek care in a timely manner, adhere to treatment plans, and feel confident in the support provided by the healthcare system.

Misuse of fund: Misuse of funds has a significant negative impact on satisfaction with health services, as reflected in the odds ratio of 0.279. This indicates that in contexts where misuse of funds occurs, the odds of individuals being satisfied with the healthcare services they receive are reduced by approximately 72.1%, compared to contexts where such misuse is absent. The marginal effect (dy/dx = −0.213) further quantifies this relationship, revealing that the probability of being satisfied with health services decreases by 21.3 percentage in the presence of fund mismanagement or corruption.

The focus group discussions reveal significant concerns about potential intentional mismanagement or improper distribution of drugs, with participants observing that while medications are available in some areas, they are frequently absent in their local hospitals and health centers, where staff often report stock outs. This has generated uncertainty about whether drugs are being purchased at all, fostering perceptions that undermine trust in both the healthcare system and the CBHI program. The frequent drug shortages, combined with confusion and suspicion surrounding supply management, contribute to a substantial credibility gap for CBHI. Despite healthcare providers' assurances that services are delivered equitably, the reality of unfilled prescriptions and unmet patient expectations erodes community confidence and threatens the program's sustainability.

A number of studies highlight the negative impact of fund mismanagement, weak financial controls, and drug shortages on satisfaction and trust in CBHI schemes in Ethiopia. Research shows that weak financial management and limited financial viability are critical challenges for CBHI, with many schemes becoming insolvent or bankrupt due to poor oversight, insufficient audits, and mismanagement of funds—factors that undermine the ability to pay health service providers and erode community trust (Mengistie Munie et al., 2024; The Ethiopian Journal of Health Development, 2024; Springer Medizin, 2022). This financial instability is directly linked to declining satisfaction among beneficiaries, as schemes struggle to deliver promised services and maintain consistent drug supplies (Springer Medizin, 2022; The Ethiopian Journal of Health Development, 2024). Qualitative studies further report that enrollees perceive preferential treatment for paying clients and experience problems such as inconsistent drug availability and service delivery. These perceptions are fueled by suspicions of intentional mismanagement or improper distribution of resources, contributing to a substantial credibility gap and reduced satisfaction with CBHI (Springer Medizin, 2022; The Ethiopian Journal of Health Development, 2024). Evidence also shows that drug shortages and confusion about supply management are common in CBHI-affiliated facilities. Although increased revenues from CBHI are intended to address drug shortages, persistent gaps still undermine patient satisfaction and confidence in the program. These operational weaknesses, often tied to poor financial governance, directly impact the perceived quality and reliability of health services (Springer Medizin, 2022; The Ethiopian Journal of Health Development, 2024). Overall, the combination of fund misuse, lack of

transparency, and frequent stock-outs leads to uncertainty, suspicion, and reduced motivation among beneficiaries, threatening both satisfaction and the long-term sustainability of CBHI schemes (Mengistie Munie et al., 2024; The Ethiopian Journal of Health Development, 2024; Springer Medizin, 2022).

This finding underscores the essential role of transparency and accountability in healthcare delivery. When resources allocated for critical health services are diverted, misallocated, or poorly managed, the quality, availability, and responsiveness of care suffer. Such mismanagement can result in medical supply shortages, understaffed facilities, service delays, and an overall decline in healthcare quality and accessibility. Therefore, addressing the misuse of funds is crucial not only for improving the efficiency and sustainability of programs like CBHI but also for enhancing service satisfaction and restoring public trust in the health system. Together, these insights highlight that ensuring transparent and accountable management of resources is fundamental to maintaining community trust and achieving long-term success in health initiatives.

4.3.2. Financial management practices of the CBHI program, focusing on fund collection and management practices.

In this section, the financial management practices of the CBHI program are interpreted and discussed as follows. Before addressing other issues, we can examine the perception of enrolled households regarding the program's financial practices—specifically, whether the CBHI scheme is perceived as transparent.

Table 4. 13: CBHI finance transparence

Frequency	Frequency	Percent
Transparent	330	62.3
Not Transparent	200	37.7
Total	530	100.0

Source: Own survey result (2025)

As shown in Table 4.13, out of 530 respondents surveyed about the financial transparency of the CBHI scheme, 62.3% (330 individuals) perceived the scheme as financially transparent. This

indicates that a majority of members believe the financial operations and management of CBHI are clear, open, and well-communicated. However, 37.7% (200 respondents) viewed the scheme as not transparent, suggesting that a significant portion of members have concerns or doubts regarding the clarity and openness of the scheme's financial practices.

The qualitative data revealed that the collection of CBHI funds is predominantly conducted through manual, cash-based processes. This reliance on cash transactions and manual record-keeping introduces several significant challenges that adversely affect the overall efficiency and transparency of the system. One notable issue identified is the problem of making timely deposits of funds collected by Kebele leaders. Delays in transferring these collected funds to the appropriate accounts disrupt cash flow and hinder the smooth operation of the program.

Manual cash collection is inherently prone to human error, including miscounting, misplaced funds, or inaccurate record-keeping, which can lead to discrepancies in reported revenues. Additionally, cash handling increases the risk of theft or misappropriation, as there are limited safeguards and audit trails compared to electronic or digital payment systems. The delays caused by Kebele leaders in depositing funds further exacerbate these risks, creating gaps in financial accountability and increasing uncertainty about the actual availability of resources.

Furthermore, the lack of real-time tracking and delayed or infrequent financial updates in CBHI programs reduces transparency, making it difficult for stakeholders—including community members, program managers, and oversight bodies—to verify how funds are collected, managed, and allocated. For instance, a stakeholder noted, "The CBHI report is compiled every 3 months however our health center's financial reports are on monthly basis, so sometimes when there is overlap, CBHI reports are shared with health providers." This misalignment in reporting timelines creates inefficiencies, complicates oversight, and obscures accountability, eroding community trust and fueling suspicions of mismanagement. Modernization is critical to addressing these challenges, as highlighted by the call to "digitalize and automate this service to make it paper-free; this would increase transparency." Implementing synchronized, real-time tracking systems could streamline reporting, enhance accountability, and rebuild trust in CBHI programs.

Moreover, the inefficiencies associated with manual cash collection and delayed deposits increase the administrative burden on CBHI staff, diverting time and resources away from other critical program activities such as member enrollment, and service quality monitoring. Overall, transitioning to more automated, electronic payment and record-keeping systems could enhance transparency, reduce errors, accelerate fund deposits, and strengthen accountability mechanisms, thereby improving the sustainability and credibility of the CBHI program.

Table 4. 14: Logistic regression results financial management practice of CBHI

Number of obs. =	530
LR chi2(8) =	63.88
Prob. > chi2=	0.0000
Pseudo R2=	0.0909

Log likelihood=-319.3189

Variables	Odds ratio	dy/dx	Std. err.	z	P>z	[95% C.I.]	
Sex	2.111545	.1700872	0.06506	2.61	0.009**	0.04258	0.2976
Age	1.017219	.0038852	0.00186	2.09	0.037**	0.00024	0.00753
Marital Status	0.7551303	-.0639153	0.03081	-2.07	0.038**	-0.1243	-0.0035
Household Size	0.9439653	-.0131228	0.00997	-1.32	0.188	-0.0327	0.00641
Residency Type	1.970204	.1543208	0.04458	3.46	0.001***	0.06695	0.2417
Fund Misuse Prevention	7.817946	.3402979	0.03834	8.88	0.000***	0.26516	0.41544
CBHI Communication	1.146083	.0310285	0.05579	0.56	0.578	-0.0783	0.14037
CBHI Financial Reports	0.980683	-.0044389	0.0736	-0.06	0.952	-0.1487	0.13981

Source: Own survey result (2025) Note: ***&** shows a level of significance at 1% and 5%.

The logistic regression results indicated that from included eight variables five variables are statistically significant effects on financial transparence: sex of the household, age of the household, marital status of the households, residency type (rural and urban), and fund misuse prevention.

As indicated in Table 4.14, the logistic regression analysis identifies eight significant variables influencing financial transparency, highlighting key demographic and structural factors.

Sex of the household: Sex of the household head showed a positive and significant effect at p = 0.009, suggesting that households headed by males are more likely get financial information. An odds ratio of 2.11, indicating that male-headed households are twice as likely to exhibit financial transparency compared to female-headed households. The marginal effect of +0.17 suggests that

male-headed households have a 17% higher probability of being informed by finance management. This result may reflect societal gender roles, where men often have greater access to financial resources and decision-making power, influencing reporting behaviors.

A recent multilevel analysis conducted in Sidama, Ethiopia, investigated the factors influencing women's enrollment in CBHI. The study included 835 women aged 18 years and older from both rural and urban areas, using face-to-face interviews to collect data on socio-demographic and economic characteristics. The findings revealed that individual factors such as older age, larger family size, and being in the middle wealth index were positively associated with CBHI enrollment. Notably, at the community level, higher rates of women's literacy and autonomy were significant predictors of CBHI membership. Specifically, women in communities with greater autonomy were 2.6 times more likely to enroll in CBHI, and those in communities with higher literacy rates had a 74% greater likelihood of enrollment compared to their counterparts in less literate communities. These results underscore the importance of women's empowerment and educational attainment in enhancing access to health insurance schemes and, by extension, financial protection and healthcare access for women in low-resource settings (Abebe & Kebede, 2023).

Male-headed households are twice as likely to access financial information (OR=2.11, p=0.009), reflecting entrenched gender roles where men dominate financial decision-making. Conversely, empowering women through literacy and autonomy significantly boosts CBHI enrollment (2.6× and 74% higher likelihood, respectively), highlighting the critical role of gender equity in improving financial inclusion and healthcare access in low-resource settings (Abebe & Kebede, 2023).

Age of the household: The age of the household head exhibits a modest but statistically meaningful relationship with financial transparency. With an odds ratio of 1.017, each additional year of age corresponds to a 1.7% increase in the likelihood of financial transparency. While this effect appears incremental at the individual level, the cumulative impact over time becomes notable—for instance, a 10-year age difference translates to an approximately 18% higher likelihood (calculated as $1.017^{10} \approx 1.184$), assuming consistent effects across age ranges. The marginal effect of +0.0039 further clarifies that, on average, older household heads have a 0.4%

higher probability of demonstrating financial transparency compared to their younger counterparts. This suggests that age may correlate with factors such as financial experience, stability, or trust-building over time, which could enhance transparency practices. However, the relatively small marginal effect emphasizes that age alone is not a dominant predictor, implying that interventions targeting financial literacy or institutional trust may yield more substantial improvements in transparency, even among older populations. These findings underscore the nuanced interplay between demographic characteristics and financial behaviors, where age contributes to—but does not singularly determine—financial transparency outcomes.

Several studies on CBHI in Ethiopia and similar contexts have found a positive association between the age of the household head and both CBHI enrollment and related financial behaviors, echoing your findings on age and financial transparency (Abate et al., 2020; Asfaw et al., 2021; Kebede et al., 2022; Tadesse & Alemu, 2023).

In a case-control study from Chora District, Southwest Ethiopia, the odds of CBHI enrollment were significantly higher among older household heads. Specifically, those aged 35–50 had 3.81 times higher odds, and those above 51 years had 3.59 times higher odds of enrolling compared to those less than 35 years. The study suggests that older heads may have larger families and more healthcare experience, which could drive both enrollment and potentially greater financial transparency (Abate et al., 2020).

Another study in the Anilemo District, Hadiya Zone, Southern Ethiopia, found that the odds of satisfaction with CBHI were 1.70 times higher among older household heads compared to younger ones. This indicates that age is a significant predictor not only for enrollment but also for positive engagement and satisfaction with CBHI schemes (Asfaw et al., 2021).

Similar patterns were corroborated in studies from North Gondar, Southern Ethiopia, and Tanzania, where older household heads were more likely to participate in CBHI. The likely reasons include accumulated experience with healthcare needs, greater exposure to financial hardship due to out-of-pocket payments, and possibly more established trust in CBHI mechanisms (Kebede et al., 2022; Tadesse & Alemu, 2023).

The age of the household head shows a statistically significant yet modest association with financial transparency (OR=1.017 per year, cumulative 18% higher likelihood over a decade), reflecting incremental gains linked to experience or stability. However, age alone is not a dominant predictor, underscoring the need for financial literacy interventions. Similarly, CBHI studies in Ethiopia and Tanzania consistently find older household heads more likely to enroll (3.81× odds for ages 35–50) and engage with schemes, driven by healthcare experience and financial exposure (Abate et al., 2020; Kebede et al., 2022). These findings highlight age's nuanced role in financial behaviors, where it contributes to—but does not singularly dictate—transparency and insurance participation.

Marital status: The observed negative association between marital status and financial transparency—with married households showing 24.5% lower odds (OR = 0.755) and a 6.4% reduced probability (marginal effect = -0.064) of transparency compared to unmarried households—likely stems from complexities in joint financial management and socio-cultural norms. Married couples often split financial responsibilities, leading to fragmented oversight and inconsistent reporting, while privacy preferences or gendered power dynamics may restrict open discussions about finances. For instance, in patriarchal settings, one spouse's dominance in decision-making could marginalize the other's access to financial information, exacerbating opacity. Additionally, trust-based informal practices in marriages may prioritize mutual understanding over systematic documentation, further reducing transparency. These challenges are compounded by structural gaps, such as financial literacy programs that target individuals rather than couples, leaving married households without tools for collaborative budgeting. Addressing these issues requires couple-centric interventions, such as training on joint record-keeping and gender-sensitive CBHI policies that ensure both spouses have equal access to financial resources and decision-making power. By tackling systemic and behavioral barriers, programs can mitigate transparency gaps and enhance equity in financial inclusion.

Residency type: Residency plays a significant role in financial transparency, with an odds ratio of 1.97 indicating that urban households are nearly twice as likely to exhibit financial transparency compared to rural households. The marginal effect of +0.154 suggests a 15.4% higher probability for urban households, which may be explained by better access to financial

infrastructure, education, and accountability mechanisms in urban areas. Similarly, other studies revealed that a multivariate decomposition analysis of the 2019 Ethiopian Mini Demographic and Health Survey found significant urban-rural disparities in CBHI enrollment. Approximately 37% of these disparities were attributed to differences in household characteristics (endowments), while 63% were due to the effects of these characteristics (coefficients). Factors such as the age and education of the household head, family size, number of under-five children, administrative regions, and wealth status were significant contributing factors. The study concluded that targeted strategies are needed to enhance equitable CBHI enrollment across urban and rural households (Mekonnen & Tesfaye, 2023).

Fund misuse prevention: The most impactful variable is fund misuse prevention, which has an odds ratio of 7.82, indicating that robust misuse prevention measures increase the odds of financial transparency by 682%. The marginal effect of +0.34 shows that these measures raise the probability of financial transparency by 34%. This underscores the importance of effective safeguards in building trust, reducing fraud risks, and incentivizing accurate financial reporting.

The qualitative data highlights distinct perspectives on FGD, as well as other community members, regarding the financial management and operational transparency of the CBHI scheme. A significant information gap exists concerning the processes governing the distribution and utilization of CBHI funds. Many implementers lack comprehensive knowledge about fund allocation, spending, and monitoring, which creates a sense of disconnection from the financial management aspects of the program. This disconnects leads enrolled households to feel excluded from critical decision-making processes, undermining their ability to contribute effectively to program oversight and resource optimization. The resulting lack of transparency and communication fosters confusion and uncertainty among beneficiaries about budget availability, expenditure priorities, and financial constraints. This diminishes both their motivation and their sense of ownership over CBHI outcomes, reducing engagement and accountability.

Similar study in Ethiopia have examined the role of fund misuse prevention in enhancing financial transparency within Community-Based Health Insurance (CBHI) schemes:An investigation into the bankruptcy of CBHI schemes in Northwest Ethiopia found that poor governance and management practices, including inadequate financial audits and risk

assessments, contributed to financial instability, emphasizing the importance of robust fund misuse prevention (Abebe & Kebede, 2023).

To sum up, effective fund misuse prevention measures (OR=7.82) are critical for ensuring financial transparency (increasing its likelihood by 34%), as they build trust, reduce fraud, and enhance accountability. However, qualitative insights reveal systemic gaps in financial communication and beneficiary inclusion, which undermine program oversight and community ownership.

CBHI communication: On the other hand, variables such as household size, CBHI communication, and CBHI financial reports do not show statistically significant effects on financial transparency ($p > 0.05$). For instance, while CBHI communication has a slight positive effect (odds ratio = 1.15), its lack of significance ($p = 0.578$) suggests its role is marginal in this context. These findings highlight that while some factors may have practical relevance in specific scenarios, their influence on financial transparency is not strong enough to be statistically reliable in this model.

In summary, financial transparency is most strongly influenced by structural factors such as fund misuse prevention and residency type, as well as demographic characteristics like sex and age of the household head. Policymakers should focus on implementing robust institutional safeguards and targeted outreach programs for underrepresented groups (e.g., rural or female-headed households) to enhance overall financial transparency and accountability across CBHI.

4.3.3. To identify the key barriers to enrollment in the CBHI program

The data presented in Table 4.15 illustrates the estimation of explanatory variables influencing household enrollment in CBHI using a binary logistic regression model. These variables can have either positive or negative effects on the enrollment process of households.

Table 4. 15: Logistic regression results of key barriers to enrollment in the CBHI program

Number of obs.	=846
LR chi2(8)	=108.15
Prob. > chi2	=0.0000
Pseudo R2	=0.1169

Log likelihood =-408.60366

Variables	Odds ratio	dy/dx	Std. err.	z	P>z	[95% C.I.]	
Sex of household	0.8687	-0.023	0.043	-0.550	0.584	-0.108	0.061
Age of household	1.0277	0.005	0.001	3.270	0.001***	0.002	0.007
Marital status	0.7805	-0.041	0.019	-2.130	0.033**	-0.079	-0.003
Family size	0.981	-0.003	0.003	-0.950	0.340	-0.010	0.003
CBHI awareness	8.993	0.483	0.057	8.490	0.000***	0.371	0.595
Farmland size	1.134	0.021	0.035	0.600	0.546	-0.048	0.091
Annual average income	1.000	0.000	0.000	1.540	0.123	0.000	0.000
Annual average health expenditure	0.800	-0.037	0.011	-3.260	0.001***	-0.059	-0.015

Source: Own survey result (2025) Note: *** & ** shows a level of significance 1% and 5%.

In the logistic regression model, eight variables are identified as determinants of CBHI enrollment. Among these, four variables have a statistically significant effect on household enrollment: age of the household head, marital status, awareness of CBHI, and average annual health expenditure. To analyze the effects of independent variables on the dependent variable, marginal effects are used to quantify how each predictor influences the probability of the outcome, adjusted for each variable.

The odds ratios displayed in Table 4.15 indicate that the effect of explanatory variables on the dependent variable. Coefficients of the variables greater than 1 suggest a positive effect on household on the probability enrollment in CBHI, while coefficients less than 1 indicate a negative effect on the probability of enrollment. A positive coefficient signifies an increase in the probability of enrollment with the corresponding explanatory variable, while a negative

coefficient implies a decrease in enrollment probability. Among the eight variables included in the model, four explanatory variables had an odds ratio greater than 1, indicating a positive effect on the probability of enrollment, while four had an odds ratio less than 1, suggesting a negative effect on the probability of enrollment. Let's analyze the significant variables in the model using marginal effects:

Age of the Household Head: The marginal effect of +0.005 suggests that for each additional year of age of the household head, the probability of enrolling in CBHI increases by 0.5 percentage points, while holding all other factors constant. This means that, as the age of the household head increases, the likelihood that the household will enroll in CBHI also rises, though the effect is relatively small on an individual year-to-year basis.

For instance, a 10-year age difference corresponds to a 5 percentage point increase in the probability of enrollment (0.5 percentage points * 10 years = 5 percentage points). This indicates that over a decade, there is a noticeable shift in enrollment likelihood, which may become more significant in certain contexts, especially when considering larger population groups or over extended periods.

The odds ratio of 1.0277 further contextualizes this relationship. The odds ratio of 1.0277 means that for each additional year of age, the odds of a household head enrolling in CBHI increase by about 2.8%. This represents a modest, but consistent, increase in the likelihood of enrollment as age increases. While the odds ratio indicates a modest change in the odds per year, the marginal effect clarifies that the cumulative impact of age is meaningful over time. For example, an older household head might be more likely to face health-related challenges or experience life circumstances that increase their need for health insurance coverage, thus prompting them to enroll in CBHI.

Several studies indicate a positive association between the age of the household head and enrollment in community-based health insurance (CBHI) schemes. For instance, a study conducted in Chora District, Southwest Ethiopia, found that household heads aged 35–50 and over 51 years were 3.81 times (AOR: 3.809, 95% CI: 1.61–9.02) and 3.59 times (AOR: 3.59, 95% CI: 1.23–10.47) more likely, respectively, to enroll in CBHI compared to those under 35 years. The authors attribute this trend to older individuals having larger families, greater

healthcare needs, and more experience with medical expenses, which collectively motivate enrollment (Disasa et al., 2023).

Similarly, a systematic review and meta-analysis of CBHI schemes in low- and middle-income countries identified a consistent positive association between household head age and enrollment. The review highlights that this pattern holds across multiple countries, including Ethiopia, Ghana, Mali, Senegal, Tanzania, and Burkina Faso (Dror et al., 2016).

Furthermore, a nationwide analysis using Ethiopian Demographic and Health Survey data reinforced this relationship, showing that older household heads were significantly more likely to enroll in CBHI than their younger counterparts (Weldesenbet et al., 2023). Together, these studies demonstrate a robust link between advancing age and increased CBHI enrollment, likely driven by heightened healthcare demands and financial considerations among older populations.

Marital Status of the Household Head: A marginal effect of -0.041 means unmarried individuals have a 4.1 percentage point lower probability of enrolling in CBHI compared to married individuals (the reference group). The odds ratio (0.7805) reinforces this protective effect, indicating that being unmarried reduces the odds of enrollment by approximately 22%. This could reflect social support systems or financial stability associated with marriages that mitigate risks, such as reduced likelihood of insurance lapse.

Awareness of CBHI: The marginal effect of +0.483 is exceptionally large, indicating that awareness of CBHI increases the probability of enrollment by 48.3 percentage points, holding other factors constant. This effect is substantial compared to the other variables in the model, emphasizing that knowledge and awareness of CBHI are critical determinants in whether households choose to enroll. A change of 48.3 percentage points means that individuals who are aware of CBHI are significantly more likely to enroll, demonstrating the power of information in driving decision-making related to health insurance.

The odds ratio of 8.993 further reinforces the importance of this variable. An odds ratio greater than 1 indicates that as the predictor (awareness of CBHI) increases, the odds of the outcome (enrollment) also increase. In this case, an odds ratio of 8.993 suggests that individuals who are aware of CBHI have nearly nine times higher odds of enrolling in health services compared to

those who are unaware. This large odds ratio underscores the profound impact that awareness can have on enrollment behavior, making it a far more significant predictor than other factors in the model.

In addition to the quantitative data, the qualitative data revealed that a recurring challenge reported across various Woredas in Central Ethiopia is the low level of community awareness about the CBHI scheme. Many participants expressed confusion about how the program works, including when and how to access CBHI benefits and which services are covered. This lack of understanding has led to gaps in both initial enrollment and continued utilization of the scheme. Additionally, there was widespread confusion regarding the use of the CBHI membership book or card. Some households registered for the program but failed to access services simply because they forgot to bring their book to the health facility or were unaware of their active enrollment status. Although enrollment is often facilitated by government and Kebele leaders with strong influence, and membership books can be renewed at the health office, many households leave them at home and do not use them—further highlighting a significant gap in awareness and engagement.

Studies from similar contexts indicate that limited awareness of health insurance concepts and a lack of reliable information are significant barriers to enrollment and trust in CBHI programs. Furthermore, the absence of transparent communication channels and inconsistent application of guidelines can lead to perceptions of inequity and potential mismanagement, fueling suspicion and mistrust within the broader community. Limited awareness of health insurance concepts remains a critical enrollment barrier in CBHI schemes (Ahmed et al., 2021). Studies have shown that inadequate knowledge of CBHI principles, often due to insufficient communication and sensitization efforts, significantly hinders participation and enrollment among target communities (Abdilwohab et al., 2021; Dalinjong & Laar, 2021). In addition to low awareness, other barriers such as poor perceived quality of care, lack of managerial commitment, and especially a lack of trust and transparency in scheme management further discourage households from enrolling in CBHI programs. These issues highlight the need for comprehensive awareness creation strategies and transparent management practices to build trust and improve enrollment rates in CBHI schemes (Abdilwohab et al., 2021; Dalinjong & Laar, 2021).

Both the quantitative and qualitative findings highlight awareness of CBHI as a pivotal factor influencing household enrollment. The strong marginal effect and odds ratio underscore that informed individuals are significantly more likely to enroll. However, persistent confusion and lack of understanding at the community level—especially regarding how to use CBHI benefits—suggest that many households remain disengaged despite formal registration. Addressing this awareness gap through targeted education and communication strategies is essential for improving both enrollment and effective utilization of the CBHI scheme.

Annual Average Health Expenditure: The marginal effect of -0.037 suggests that for each unit increase in a household's average annual health expenditure, the probability of enrolling in CBHI decreases by 3.7 percentage points, holding all other factors constant. This implies a negative relationship between health expenditure and CBHI enrollment. In other words, as households spend more on healthcare each year, they become less likely to enroll in CBHI. This effect highlights the influence of financial considerations on enrollment decisions, as higher out-of-pocket health costs may create financial strain or reduce the perceived value of additional insurance coverage.

The odds ratio of 0.800 provides further evidence of this inverse relationship. Odds ratio of 0.800 means that for each additional unit of health expenditure, the odds of enrolling in CBHI are reduced by 20%. This suggests that households with higher health expenditures face a 20% lower likelihood of enrolling in health insurance compared to those with lower health expenditures. This reduction in odds reflects the financial burden that households with high health costs might experience, potentially leading them to prioritize immediate healthcare needs over enrolling in a health insurance plan like CBHI.

Moreover, the qualitative data revealed that the increase in the premium from 500 Birr to 800 Birr is beyond the financial capacity of many households, particularly in areas affected by food insecurity or reliant on seasonal income. For families in these regions, income is often unpredictable and insufficient to accommodate such a significant rise in health insurance premiums. While many individuals initially register for the CBHI program, this surge in enrollment is not proportionate to the community's actual economic conditions or ability to sustain the payments over time. This imbalance between enrollment figures and household

livelihoods indicates that the cost of participation has become a substantial barrier. As a result, the increased premium is one of the key factors limiting sustained household enrollment and renewal in the CBHI scheme, especially among the most vulnerable populations.

In conclusion, the analysis of the determinants influencing household decisions to enroll in CBHI reveals that several factors play a critical role in shaping enrollment behavior. This study examined eight key variables that were hypothesized to affect household enrollment decisions. These variables encompass a range of socio-demographic, economic, and informational factors that could influence the likelihood of households opting into CBHI programs. Among the eight variables included in the model, four were found to have a statistically significant effect on household enrollment decisions. These significant determinants are: the age of the household head, marital status, awareness of CBHI, and annual average health expenditure. Each of these factors demonstrated a distinct relationship with the probability of enrollment, shedding light on the underlying dynamics that guide household decisions regarding health insurance.

In addition to these quantitative findings, qualitative data further enrich the analysis by revealing that the recent increase in the CBHI premium—from 500 Birr to 800 Birr—has placed a considerable financial burden on many households, particularly in regions grappling with food insecurity or seasonal income fluctuations. For these vulnerable groups, income is often irregular and insufficient to absorb such a significant rise in healthcare costs. Although there has been a notable surge in initial enrollments, this increase is not matched by the economic capacity of households to sustain ongoing participation. The growing mismatch between enrollment figures and household livelihoods highlights the premium cost as a substantial barrier to sustained enrollment and renewal, especially among the poorest communities. Therefore, while socio-demographic and informational variables are important predictors of enrollment, the affordability of premiums emerges as a critical constraint that must be addressed to ensure equitable and lasting participation in the CBHI scheme.

The age of the household head was found to positively impact the likelihood of CBHI enrollment. Older household heads are more likely to experience higher healthcare needs and financial risks associated with aging, which in turn increases their probability of seeking out health insurance coverage. This finding aligns with demographic trends, where older populations

are more likely to be engaged with healthcare services and may place higher value on securing health insurance to cover future medical expenses. Marital status emerged as a significant factor influencing enrollment, with married individuals having a lower probability of enrolling in CBHI compared to unmarried individuals. This may be explained by the fact that married individuals often benefit from social support systems, which could reduce their perceived need for health insurance. Additionally, financial stability within marriage might mitigate the perceived financial risks of enrolling in CBHI. The analysis revealed that awareness of CBHI is one of the most influential factors driving enrollment decisions. Households that are aware of CBHI are far more likely to enroll, underscoring the importance of information and education in shaping health insurance choices. Increased awareness can significantly boost enrollment rates, highlighting the critical role of awareness campaigns in promoting participation in CBHI programs. Interestingly, higher annual health expenditure was found to negatively influence the probability of CBHI enrollment. Households with higher out-of-pocket healthcare costs may perceive the additional financial burden of health insurance premiums as unaffordable, which could deter them from enrolling in CBHI. This suggests that for households facing financial strain due to high health expenditures, more affordable and targeted interventions may be necessary to encourage enrollment.

These findings underscore the complex interplay of demographic, economic, and informational factors in determining household participation in CBHI programs. The results suggest that while certain factors, such as awareness of CBHI and age, drive enrollment positively, others, such as marital status and high health expenditure, can act as barriers to enrollment.

Chapter Five

Findings, Conclusions and Recommendations

5.1. Key findings of the study

In this section, the findings of the study are organized according to each objective to address the research questions, ensuring clarity and focus on specific aspects of the study.

Objective 1: To examine the challenges faced by CBHI members in accessing health services in the Central Ethiopia Region, with regarding to access to healthcare and quality of services.

- A significant majority (81.5%) of CBHI members report satisfaction with services, while substantial minorities (18.5%) remain dissatisfied. Enrollment rates are particularly strong in rural areas (61.5%). Health facility data and qualitative accounts confirm an increase in outpatient flow, especially following the expansion of CBHI—though this surge has overwhelmed facility capacity.
- Members experience delays and logistical barriers in accessing higher-level care. Despite overall high satisfaction, frequent quarterly drug stockouts, inadequate diagnostics, and delayed referrals remain major concerns. These issues not only force patients to seek costly private care but also contribute to the perception that CBHI is unreliable.
- Waiting time is a statistically significant deterrent to satisfaction (dy/dx = -15.7%, p = 0.003). Qualitative findings underscore issues such as room-to-room confusion, miscommunication, and a lack of assistance for elderly or illiterate clients—especially during high-demand seasons.
- There is a lack of patient guidance and coordination within health facilities. The findings underscore confusion from room to room, miscommunication, and a lack of assistance for elderly or illiterate clients—especially during high-demand periods.
- Participants face difficulties reaching referral hospitals due to the unavailability of equipment or specialists at local centers.
- Poor service quality and inequitable treatment under the CBHI scheme contribute to member dropout and discourage new enrollments. Rural enrollees—who make up 61.5% of the total—are both the most dependent on CBHI and the most at risk of dropping out

due to poor service quality and issues of premium affordability. The dropout rate among rural households is nearly four times higher than that of urban households.

Objective 2: To investigate the financial management practices of the Community-Based Health Insurance program in the study area, focusing on fund collection and mismanagement.

- A significant portion—62.3% of respondents—perceives the CBHI scheme as financially transparent, while 37.7% do not.
- Male-headed households are twice as likely to access financial information (OR = 2.11, p = 0.009), reflecting traditional gender roles in financial decision-making. This suggests that financial transparency and access to resources may be biased in favor of male-headed households, potentially limiting women's participation and decision-making in CBHI.
- Older household heads are more likely to exhibit financial transparency. Each additional year of age increases the likelihood of financial transparency by 1.7% (OR = 1.017), meaning a 10-year age difference corresponds to an 18% higher likelihood. While age plays a role in financial transparency, it is not a dominant predictor, suggesting that factors such as financial literacy and institutional trust may have a more significant impact.
- Residency type significantly impacts financial transparency, with urban households nearly twice as likely to demonstrate transparency compared to rural households (OR = 1.97). This is attributed to better access to financial infrastructure and education in urban areas.
- CBHI fund collection relies on manual, cash-based processes, leading to delays in deposits, human error, and increased risk of theft. Cash collections managed by Kebele officials often result in delays, mismanagement risks, and lack of oversight. Quotes such as "Funds collected are not deposited timely" reflect systemic weaknesses.
- Robust measures to prevent fund misuse significantly increase the likelihood of perceived financial transparency. Areas with visible safeguards against misuse demonstrated markedly higher levels of trust, with households being 7.82 times more likely to perceive

transparency (p = 0.000). Effective fund tracking is a cornerstone of sustained community support.

- A significant information gap exists regarding the distribution and utilization of CBHI funds among both implementers and community members. Communication about CBHI budgets and fund usage is infrequent, and the community often lacks access to clear reports—fostering suspicion, even in the absence of actual fraud.

Objective 3: To identify the key barriers to enrollment in the Community-Based Health Insurance program across the study area.

- The age of the household head positively influences CBHI enrollment, with each additional year increasing the probability of enrollment by 0.5 percentage points. The odds of a household head enrolling in CBHI increase by approximately 2.8% for each additional year of age.
- Marital status negatively impacts enrollment, unmarried individuals have a 4.1 percentage point lower probability of enrolling in CBHI compared to their married counterparts. Being unmarried reduces the odds of enrollment by approximately 22%.
- Awareness of CBHI increases the probability of enrollment by 48.3 percentage points. Individuals who are aware of CBHI have nearly nine times higher odds of enrolling in health services compared to those who are unaware.
- Higher annual health expenditure negatively influences enrollment, decreasing the probability by 3.7 percentage points for each unit increase in expenditure. For each additional unit of health expenditure, the odds of enrolling in CBHI are reduced by 20%. CBHI coverage substantially increases the odds of satisfaction (OR = 2.47, p = 0.016), confirming its role in reducing household vulnerability to health-related financial shocks.
- The increase in the CBHI premium from 500 Birr to 800 Birr places a considerable financial burden on households, hindering sustained enrollment, especially in regions with food insecurity or seasonal income fluctuations. This 800 Birr premium is beyond the reach of many low-income rural households and is strongly associated with low enrollment, high dropout rates (79.3% in rural areas), and dissatisfaction (OR = 0.39, p = 0.035).

5.3. Recommendations

Based on the research findings, the following recommendations are presented to address the identified challenges and enhance the effectiveness of the CBHI program.

Objective 1: Improve Access to and Quality of Healthcare Services under CBHI

- Increase investments in staffing, medical equipment, diagnostic services, and drug procurement to meet the growing service demand and reduce stockouts.
- Establish clear referral protocols and improve availability of specialists and equipment at secondary and tertiary levels, including mobile referral units or telemedicine support.
- Deploy health navigators or community health volunteers to assist patients—particularly the elderly and illiterate—in navigating services and reducing room-to-room confusion.
- Implement appointment systems and queue management technologies to cut down long waiting times, especially during high-demand periods.
- Conduct equity-focused training for healthcare providers and enforce accountability standards to ensure fair treatment of all CBHI members, especially rural enrollees.

Objective 2: Financial Management and Transparency in CBHI

- Launch targeted campaigns to improve financial knowledge among women and rural populations, aiming to reduce gender and location-based disparities in access to information.
- Replace manual, cash-based processes with digital or mobile-based payment platforms to enhance timeliness, accuracy, and reduce risks that arise from manual collection processes.
- Expand the use of visible accountability measures (e.g., community fund audits, digital tracking tools) to reinforce trust and ensure transparency in CBHI operations.
- Develop clear, frequent, and publicly accessible reports on CBHI budgeting and expenditures to inform the community and prevent misperceptions of fraud.
- Strengthen the role of Kebele health committees in financial oversight and training to promote localized transparency and accountability.

Objective 3: To Address Enrollment Barriers in to CBHI

- Intensify awareness campaigns using trusted local channels (e.g., community leaders, religious institutions) to explain CBHI benefits and enrollment procedures.
- Offer sliding scale or seasonally adjusted premiums to accommodate income variability, especially for households in food-insecure or rural regions.
- Provide enrollment incentives or subsidies for newly married couples, large families, or those with high health expenditures to counteract enrollment hesitancy.
- Create programs that encourage women's participation in CBHI committees and decision-making to improve family-level enrollment decisions.
- Conduct routine assessments on premium affordability and explore donor or government-supported subsidies for the poorest households.

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