



**JIMMA UNIVERSITY INSTITUTE OF HEALTH,  
DEPARTMENT OF HEALTH POLICY AND MANAGEMENT**

**Cost of Tuberculosis to Patients and Their Family in Adama Town, Oromia,  
Ethiopia: A facility based study**

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**A thesis Submitted to Jimma University Institute of Health, Department of Health Policy and Management for the Partial Fulfillment of the Requirements for the Degree of Master Of Science in Health Economics.**

**July, 2018**

**Jimma, Ethiopia**

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## Abstract

**Background:** Tuberculosis is a global health problem. Worldwide in low- and middle income countries the total funding for tuberculosis prevention, diagnostic and treatment reached US\$6.9 billion in 2018, an increase from US\$6.2 billion in 2017 and the median cost per patient treated in 2017 was US\$ 1224 for drug-susceptible tuberculosis and US\$ 7141 for drug resistance tuberculosis. Previous studies conducted in Ethiopia were addressing only patients side cost and included only public health facilities. This study includes companion side costs and private health facilities cost of TB patient.

**Objective:** This study is aimed to determine cost of tuberculosis to patients and their family in Adama town, Ethiopia.

**Methods:** Facility based cross-sectional study design was employed and cost of illness study on 229 tuberculosis cases at health facilities in Adama town was conducted using interveiwer administered semi-structured questionnaire. A systematic random sampling technique was employed to select study participants. We employed a micro-costing bottom–up approach in order to estimate direct cost of tuberculosis. Indirect costs for the study participants and their accompanyins persons were calculated interns of productive time losses, using human capital approach. The data cleaning and entry was undertaken using Epi data 3.1 and analyze using SPSS-20 statistical software, and result was presented using descriptive statistics like, frequency, percentage, mean, standared divetion, median and intr-quartertile range. The Ethical approval was obtained from the Institutional Review board of the Jimma University, legal letters from respected organization and oral informed consent from study participants.

**Result:** A total 229 TB patients were interviewed, 45.4% were smear-positive pulmonary TB, 28.4% smear-negative pulmonary TB, 24.9% Extra-pulmonary TB and 1.3% was multi-drug resistance TB cases. The total mean direct cost of TB patient was ETB 5784.01 (USD 210.54) with SD 4019.12 (USD 146.30). Of direct costs, direct non-medical cost accounted 73.5% of the total mean direct costs of TB patients. The total mean indirect cost was ETB 5481.61 (USD 199.53) with SD of ETB 6588.48 (USD 239.82). The total mean and median cost of TB illness to patient and accompanyins were ETB 11265.62 (USD 410.08) with SD of ETB 9286.68 (338.05) and ETB 8870.0 (USD 322.88) with IQR of ETB(6097.50,14140), respectively.

**Conclusion:** Tuberculosis patients incur substantial cost for care seeking and treatment despite the availability of free of charge anti-TB drug. Direct non-medical costs and indirect costs were high cost on tuberculosis patients. **Key words:** (Tuberculosis, cost-of-illness, Adama, Ethiopia)

## **ACKNOWLEDGEMENTS**

I am very grateful to Jimma University, Institute of Health, and Department of health Policy and Management for providing me this imperative opportunity.

I would like to express my thanks to my advisors Mr. Shimeles Ololo and Mr. Biniyam Tadesse for their insightful comments.

In addition, I would like to acknowledge my friends and classmate for their support, encouragement, and advices.

I would like to acknowledge study participants, data collectors and supervisors.

My acknowledgement also goes to my beloved family for their tireless support and encouragement throughout the years of my study. Above all, Almighty God is worthy of all praises for being my side in all my endeavors, and giving me strength and capacity to reach this stage.

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## **List of Abbreviations**

AIDS	Acquired Immune deficiency syndrome
BSc	Bachelor of Science
COI	Cost of Illness
CSA	Central Statistics Authority
DOTS	Directly observed therapy short course
DS-TB	Drug susceptible tuberculosis
HIV	Human immunodeficiency virus
MDR-TB	Multidrug resistance tuberculosis
NGO	Non-governmental organization
NTP	National tuberculosis control program
OOP	Out of pocket
PTB	Pulmonary tuberculosis
RR-TB	Rifampicin only resistance tuberculosis
TB	Tuberculosis
USD	United state Dollar
WHO	World Health organization



## CHAPTER ONE: INTRODUCTION

### 1.1. Background

Tuberculosis (TB) is a chronic infectious disease caused in most cases by *Mycobacterium tuberculosis* and remain as a global health problem (1).It primarily affects the lungs (causing pulmonary tuberculosis, but it can also affects other organs (extra pulmonary tuberculosis)(2).

TB mainly affects individuals of all ages and both sexes who are active economically productive age group between (15-45 years), thus leading to grave socioeconomic consequences in countries with a very high prevalence of TB(3,4).

Globally in 2016 there were an estimated 10.4 million incident cases and there were 1.3 million TB deaths in addition 374000 deaths from TB among HIV-positive peoples. Among all TB cases, 87% were found in 30 high burden countries globally(5).

In Africa, the five most highly affected countries are Nigeria, Ethiopia, South Africa, Kenya and Democratic Republic of Congo(5,6). Ethiopia is one of the 30 and 27 highest TB infected countries with the burden of tuberculosis and MDR-TB respectively and about 2 percent of new TB cases and 18 percent of retreatment cases are MDR-TB(7,8). TB disease worsens poverty by reducing patients' physical strength and ability to work, ultimately leading to loss of income(9,10). The economic costs due to tuberculosis on the family is then further exacerbated by the costs incurred while seeking health care(11).

Economic costs are related to opportunity costs; that is, when facing a choice between two alternatives, opportunity costs refer to the costs of losing the forgone benefits that would be gained if another alternative was chosen. In other words, to obtain a health gain, there are always opportunity costs when choosing to invest on a health services rather than in a current treatment(12).

The cost per patient treated for drug-susceptible and MDR-TB in 2014 fell into the range of US\$ 100–US\$ 500 and US\$ 5000–10 000 respectively in most countries with a high burden of TB, but the average varied from US\$ 6 826 in low-income countries to US\$ 21 265 in upper middle-income countries(13).

In 2010/11, the national health account (NHA-5) indicates, the major source of TB funding were 51% from the rest of the world, followed by households, which accounted for 36 percent, and

overall spending on TB were US\$ 51.2 million which accounts for 3% of overall national health expenditure (14).

The World Health Organization (WHO) is developing a post-2015 Global TB Strategy, which highlights the need for all countries to progress towards universal health coverage to ensure “universal access to needed health services without financial hardship in paying for them,” as well as social protection mechanisms for “income replacement and social support in the event of illness(15). One of the tentative global targets for the strategy is “no TB patient or their family face “catastrophic total costs” due to TB, to be reached global by 2020(4,13).

## **1.2.Statement of the problem**

About 58% of prevalent cases in our country are under 35 years of age and 39% of deaths per year are concentrated among adults from 15 to 64 years of age, leading to losses of family wage earners and parents of small children(13).

TB patients face a number of barriers in seeking diagnosis and treatment, including financial costs related to charges for health services, transportation, accommodation, nutrition, and lost income(16). These barriers cause delays in seeking health care, resulting in more advanced disease and continued transmission of TB. Direct out-of-pocket costs for public and private health services, and indirect opportunity costs can cause a deeper poverty for TB patients and their families(17) and affecting their health seeking behavior(18).

Worldwide in 119 low-and middle income countries funding for TB prevention, diagnostic and treatment reached US\$6.9 billion in 2018, increase from US\$6.2 billion in 2017 and the median cost per patient treated in 2017 was US\$ 1224 for drug-susceptible TB and US\$ 714 for MDR-TB(19).

In Sub-Saharan Africa, in high TB burden countries, 60% of overall health expenditure is in the private sector, which was paid out-of-pocket by patients, and previous studies have documented the consequences of the direct and indirect costs that TB patients and families incur and more than 50% were experience financial difficulties due to TB(10)

In Ethiopia overall expenditure on TB was US\$51,162,055 in 2010/11 which accounted for 3% of overall national health expenditure. TB outpatient services consume the largest share of TB resources (61 percent) of TB funding. Prevention and public health program on TB account for 20 percent, TB-related inpatient curative care for 8 percent(14).

Despite higher burden of the disease and its impacts on productivity and its economic cost, there is paucity of studies concerning the costs incurred during treatment among patients affected by tuberculosis and their families in Ethiopia.

A previous study done on cost of TB patients at Addis Ababa and Southern part of Ethiopia were addressed only patient side costs. They were not addresses costs incurred and lost by TB patient's family and costs in private health facilities were not included(20,21). This study included costs of accompany and private health facilities those provided TB diagnosis and treatment in the town.

### **1.3. Significance of the study**

This study identified the affected groups, the cost spent to goods and health services, time loss or loss of income due to tuberculosis illness of the patients.

Health policy makers and managers need the information on economic cost of the disease on the community and scarce resource use, and the adequacy of the control programs. Then they need a clear understanding of the disease burden in order to give priority in the allocation of resources and developing guidelines.

Identifying costs of tuberculosis at individual and family level; can increase the awareness at all level which can protect individuals and households from high costs and avail information for donors who have interested to participate in the alleviation of the burden of tuberculosis.

The finding of this study benefits the government and nongovernmental organizations (NGOs), health professionals and persons with tuberculosis and their family to be aware of the current and future economic impact of this disease.

This study was provide valuable economic information of tuberculosis to the healthcare planners, managers and the societies, and serve as baseline data for further detailed studies (research) in this aspect.

## **CHAPTER TWO: LITERATURE REVIEW**

### **Cost of illness**

The cost of illness (COI) estimates direct and indirect costs of the illness for a particular population in a specific period of the illness. Direct costs are the value of resources used in the treatment of disease. Direct costs included all OOP expenditures of patients that were attributable to their illness, which include direct medical costs such as consultation fees, investigations fee, drugs and hospitalization fees and direct non-medical cost includes money spent for transportation, lodging, food and beds. Direct costs estimated using bottom-up approaches.

Indirect costs are the value of income (wage lost) because of illness. These costs included visits to the health facilities and hospitalization as well as other work absenteeism and loss of wages due to the inability to work because of the illness.

Indirect costs estimated using human capital approach, fraction cost method and willingness to pay method(12,22–25).

Cost is the value of resources used to produce a good or service. Economic costs are related to opportunity costs; that is, when facing a choice between two alternatives, opportunity costs refer to the costs of losing the forgone benefits that would be gained if another alternative was chosen. In other words, to obtain a health gain, there are always opportunity costs when choosing to invest on a health services rather than in a current treatment. The main implication, then, from an economic perspective, is that costs are the value of opportunity costs; for this reason, decision makers and health economists focus on the value of allocating resource sufficiently, that is, maximizing benefits for patients.

### **Costs of tuberculosis treatment**

#### **Direct costs**

Study done in Indonesia in 282 TB and 64 MDR-TB patients show that for TB related services the median of total costs incurred by households was 133 USD (55-576); for MDR-TB related services, it was 2804 USD. The incidence of catastrophic total costs in all TB-affected households was 36%. For MDR-TB affected households, the incidence was 83%. The treatment costs (direct costs) amounted to 88% of median total costs for TB patients and 98% for MDR\_TB patients(26).

A prospective observational study done in India on 97 patients indicates that, the mean total cost for pulmonary tuberculosis treatment was found to be 5474.7(\$85.4), Extra pulmonary TB was 10574.8 (\$164.9) and pulmonary and Extra pulmonary was 14638.5 (\$228.3) respectively. Out of total cost the cost incurred by the patients for the hospital stay and diagnosis (i.e., tuberculosis detection) has the maximum expenditure cost which was 90.4% for pulmonary tuberculosis, 77.2% extra pulmonary and 72.5% pulmonary and extra pulmonary(27).

Another study done in India indicates that, the total costs to patient with TB were (US\$ 41.1). Overall, patients spent for medical costs during shopping for diagnosis like medicines (35%) investigations (15%), and fees (8%)and for transportation 12%.During diagnosis medical costs was higher than the non-medical costs(28)..

Empirical study in three cities of China tells that, the average total expenditure on diagnosis and treatment for non-compliant patients is US\$2836.5 (median US\$1354), and for compliant patients is US\$1635.5(median US\$842.2). For non-compliant patients the average transportation cost and lodging and food costs is US\$39.8 (median US\$26.43) and US\$142 (median US\$42.7), respectively, and for compliant patients the same costs is US\$40.50 (median US\$18.37) and US\$84.79 (median US\$19.34), respectively, and the similar result for dietary supplement costs with US\$49.16 (median US\$40.30) VS US\$46.58 (median US\$32.24) (29).

A systematic study done in California shows, the average direct cost of treating and managing a TB case was \$34,600 in 2015. The average cost of a multidrug-resistant TB case was \$110,900. Health care spending for treating and case managing TB patients in California amounted to approximately \$75.6 million for the 2133 new cases reported in 2015(30).

Another study done in USA indicates that, in-patient costs averaged US\$25 853 per person and \$1036 per person-day of hospitalization. Outpatient costs per person ranged from \$5744 to \$41821 (average \$19028, or \$44 a day). Direct medical costs averaged \$44 881and in-patient and outpatient costs ranged from \$12 495 to \$115 393 (average \$44 881; median \$34 103) per person.; Direct costs were higher for moderate than for severe MDR-TB patients (median \$89149 vs. \$28550) due to survival and thus longer lengths of therapy (median 804 vs. 286 days) and longer periods of hospitalization (median 64 vs. 14 days)(31).

Study done in Dominican Republic shows, the median direct costs before and during diagnosis of new patient \$45.5 and MDR-TB patient were \$154.1(32).

The study done in Benin show that, the median direct cost was US \$264.8 per patient of the annual household income(33).

In Burkina Faso a cross-sectional study done among smear positive patients indicated that the median direct cost specific to the pre-diagnosis stage US\$8.5 (8.9-41.2), related to diagnosis was US\$ 26.7 (13.3-56.9), for treatment initiation US\$ 13.3-49.3), during intensive treatment US\$ 9.1 (4.4-23.9) and during continuation treatment was US\$ 11.1 (4.4-20.0) per patient. Overall from onset of symptoms to end of treatment, the median direct cost incurred by TB patients was US\$101.1 (53.1–172.4) as a consequence of fees, drug costs during care-seeking paid outside public health facilities, medical costs induced by TB control practitioners, transportation and food costs(34).

Study done in South Africa indicates that, the cost per case of smear-positive DS-TB was \$191.66 whereas the cost of a smear-negative and retreatment case was more expensive, at \$252.54 and \$455.50 respectively, mainly due to the increased number of diagnostic tests and the longer and more expensive retreatment regimen. The overall cost of DS-TB was \$256.61 and the cost of MDR-TB was much more expensive than DS-TB, at \$5,930.02 for an MDR-TB outpatient and \$14,348.94 for an MDR-TB inpatient(35). Another study done on costs of inpatient treatment for MDR-TB patient in the same country (South Africa) shows, the mean hospital stay was 105 days. The mean total cost per patient was \$17 164, of which 95% were hospitalization costs (buildings, staff, etc.) and \_ 2% each for MDR-TB drugs (\$380); TB laboratory tests, including drug susceptibility testing (\$236); and other costs(36).

Study done in Nigeria indicates TB patients expended an average of US\$52.02 each on all visits associated with diagnosis and receipt of diagnostic test results. Travel costs, food and accommodation accounted for about 68.1% of the total costs incurred. Other direct costs of anti-tuberculosis treatment included charges for administration (12.8%), tests (5.3%), X-rays (6.2%) and drugs (7.4%). The estimated average income per month for all persons in the house, including patients' income, welfare payments, government assistance and other social support before TB illness, was US\$230.34. While the average income per household after the illness was estimated at \$173.00, resulting in a shortfall of about \$57.30, or 24.9% of income lost to the household(37).

Study done in Kenya show that the total median costs of direct and indirect costs was (350 USD). This was equivalent to 45% of median annual individual incomes (784 USD) and 27% of median annual household incomes before TB illness (1,296 USD)(38).

A cross-sectional cost of illness study done in Addis Ababa, Ethiopia on 576 TB patients' indicates, direct (Out-of-Pocket) mean and median costs of TB illness to patients were \$123.0 (SD = 58.8) and \$125.78 (R = 338.12), respectively, and direct costs were catastrophic for 63 % of TB patients, regardless of significant difference between gender and type of TB cases(21). Another study done in Ethiopia shows the total costs for diagnosis and current treatment episodes for TB patients and MDR-TB patients were estimated to be USD 260 and USD 1838 respectively(39).

A longitudinal study done in southern Ethiopia showed that patient incurred a median (IQR) of USD 201.48 (136.7-318.94). Of the total costs the indirect and direct costs respectively constituted 70.6 and 29.4%. TB patients incurred a median (IQR) of USD 97.62 (6.43-184.22) and USD 93.75 (56.91-141.54) during the pre-and post-diagnosis periods, respectively(20).

### **Indirect costs of Tuberculosis**

Study done in Indonesia in 282 TB and 64 MDR-TB patients show that for TB related services the median of total costs incurred by households was 133 USD (55-576); for MDR-TB related services, it was 2804 USD(1008-4325), among those who lost their jobs, average income loss amounted to 80% of total costs(26).

Study done in India on 97 patients indicates that, the mean total cost for pulmonary tuberculosis treatment was found to be 5474.7(\$85.4), Extra pulmonary TB was 10574.8 (\$164.9) and pulmonary and Extra pulmonary was 14638.5 (\$228.3) respectively. Out of the total costs, about 39.2% of patients and their care takers lost work days. 52.0% pulmonary patients, 68.4% extra-pulmonary and 66.7% pulmonary and extra-pulmonary patients had decreased earning ability due to illness(27)

Study done in USA indicates that, in-patient costs averaged US\$25 853 per person and \$1036 per person-day of hospitalization. Outpatient costs per person ranged from \$5744 to \$41821 (average \$19028, or \$44 a day). Indirect costs for those who survived averaged \$32 964 per person, and total costs per person ranged from \$28 217 to \$181 492 (average \$89 594) for those who survived. Indirect costs or productivity losses for those who survived ranged from \$9208 to \$66 099 per person (average \$32 964; median \$34 669). Indirect costs were higher for moderate than for mild MDR-TB patients (median \$49 547 vs. \$9316) also due to longer lengths of therapy (804 vs. 295 days)(31).

Empirical study in three cities of China indicates that, the total indirect costs compared with non-compliant patients, compliant patients' average income reduction due to missed work is higher, with US\$62.10 VS US\$28.37(29).

Study done in Dominican Republic indicates that, the indirect costs were higher than direct costs for all treatment categories, which shows \$726.4 and \$3145.0 for new TB and MDR-TB patients respectively(32).

In Benin the study done shows, the median indirect cost was 131 (IQR, 77–207) days lost by the patient because of illness and care-seeking and waiting for consultation; 30 (IQR, 3–87) days were lost by informal caregiver and guardian. Median shares of total days lost were 90.4% (IQR, 75.0–95.5), 9.5% (IQR, 3.4–22.4) and 0.1% (IQR, 0.0–3.1), respectively, for illness, travel and waiting time, and labor substitution(33).

Study done in Addis Ababa on 576 TB patients' indicates, indirect costs (loss wage) mean and median costs were \$54.26 (SD = 43.5) and \$44.61 (R = 215.6), respectively. Mean and median total cost of TB illness to patient were \$177.3 (SD = 78.7) and \$177.1 (R = 461.8), respectively. TB patients mean productivity and income reduced by 37% and 10% respectively, compared with pre-treatment level, while mean household expenditure increased by 33% and working hours reduced by 78% due to TB illness (21).

Most studies were defined costs in terms of direct and indirect costs. Direct costs comprise transport costs for the patients, food costs, and any payments for diagnosis and treatment. Indirect costs include number of workdays lost and reduced income due to illness as well as loss of productivity. Some studies were analyzed mainly by assessing the cost of tuberculosis before and after diagnosis, and during inpatient treatment which was focused only patient perspective and estimates costs per patient (31,36). Studies in Burkina Faso was conducted only among smear positive pulmonary tuberculosis from diagnosis and completion of continuation phase of treatment that estimates the cost per patient(34). A cross-sectional cost of illness study in Addis Ababa and a longitudinal study in southern Ethiopia were conducted at public health facilities, but not included private health facilities and not estimated companion costs, and the data was collected two times in point during the first two months of treatment and at the end of the treatment completion(20,21).



## Conceptual framework of economic cost of TB to patient and their family

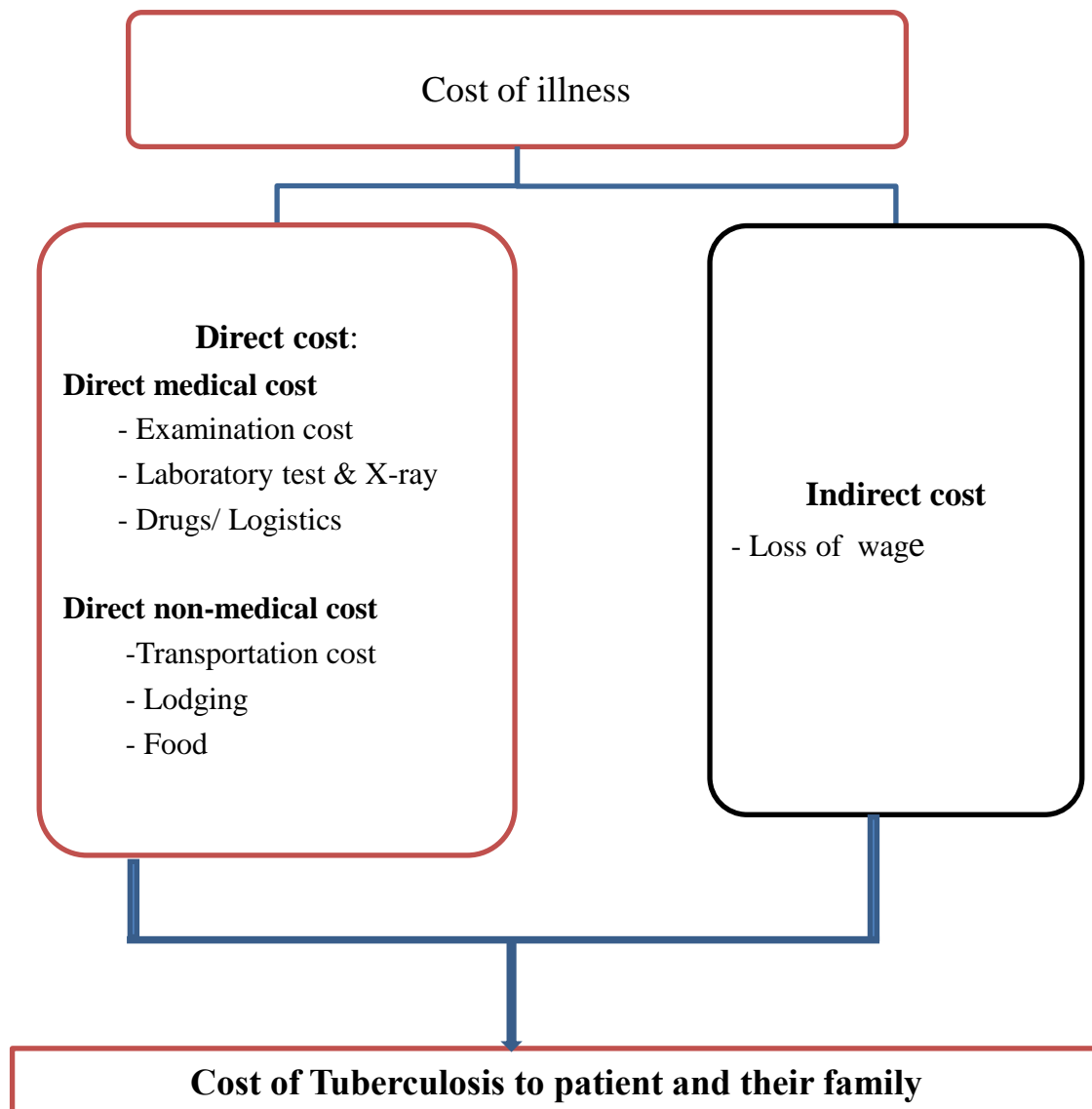


Figure 1: Conceptual framework of economic cost of tuberculosis to patients and their family, adapted with little modification(21), Adama, 2018

## **CHAPTER THREE: OBJECTIVE**

### **3.1. General objective**

To assess the cost of tuberculosis to patients and their family in Adama town, Ethiopia, 2018

### **3.2. Specific objectives**

- To determine the direct costs of tuberculosis to patients and their family.
- To estimate the indirect costs of tuberculosis to patients and their family.

## **CHAPTER FOUR: METHODS AND MATERIALS**

### **4.1. Study area and period**

This study was conducted at public, non-government and private health facilities which provide TB diagnosis and treatment in Adama town from August 13 to September 02, 2018. The town is found in Oromia Regional State located about 100 km away from Addis Ababa and surrounded by east shoa zone. Administratively, the town is divided into six sub-cities and eighteen administrative kebeles under those sub-cities. According to the 1999 Ethiopian fiscal year (2007/08) population and house survey of Central Statistics Authority (CSA), the projected population of Adama town for the 2010 Ethiopian fiscal year (2017/2018) is estimating to be 352,233. Out of 352,233, the male population accounts for 177,878 (50.5%) and the female for 174,355 (49.5%) individuals. According to Adama town health office health profile, there are seven public health centers, one public hospital, three non-governmental organization (NGO) clinics, and one NGO health center, four private hospitals, one hundred eleven private clinics of different categories, sixteen pharmacies, and two private diagnostic laboratories. Of these health facilities only 20(16.5%) health facilities are provide TB diagnosis and treatments according to National tuberculosis program (NTP). In 2010 EFY there are 743 all forms TB detected and enrolled in treatment at health facilities in Adama town.

### **4.2. Study design**

Health facility based cross-sectional study design was employed.

### **4.3. Population**

#### ***4.3.1. Source populations***

All TB patients that were treated in the public and private health facilities in Adama town.

#### ***4.3.2. Study population***

Selected TB patients who were treated as outpatient and inpatient during the study period;

#### ***4.3.3. Inclusion and Exclusion Criteria***

##### **Inclusion criteria**

All TB patients  $\geq 18$  years of age who are on treatment and able to communicate during data collection was included in the study.

## Exclusion criteria

Patients who are critically ill during data collection period were excluded from the study.

## 4.4. Sample size and Sampling Procedure

### 4.4.1. Sample size determination

The number of TB cases to be included in the study was determined using a single population mean formula from previous study conducted at public health facilities in Addis Ababa, the mean total cost of TB illness to patient was \$177.3 with standard deviation \$78.7(21) and the calculation of the sample size is 95% confidence interval (CI), marginal error (d) of 5 %.

$$n = \frac{(Z_{\alpha/2})^2 S^2}{d^2}$$

Where, **n** = sample size

$Z_{\alpha}$  = the confidence level 95%, 1.96

S = the sample standard deviation

**d** = margin of error (5% of the mean of previous study)(21).

$$n = \frac{(1.96)^2 \times (1,644)^2}{(3,703.8 \times 0.05)^2}$$

**n= 303**

Since the total numbers of TB patient enrolled in TB treatment unit in Adama town public and private health facilities are 743, population correction formula was used. Which is:  $n_f = \frac{n_0}{1 + n_0/N}$  where  $n_f$  = final sample size,  $n_0$  = total sample size and N= total population, then  $n_f = \frac{303}{1 + 303/743} = 215$

Non response rate =  $215 \times 10\% = 21.5$

Therefore, the final sample size was **237**.

### 4.4.2. Sampling technique

The sampling frame of study participants was prepared from the TB registration forms of health facilities providing treatment for TB patients in Adama Town. Health facilities were selected using simple random sampling technique by lottery method. Then systematic random sampling technique was used to select the study participants. The number of study sample for each unit was proportionally allocated based on the number of patients flow in the last months.

Formula for proportional allocation: -  $n_i = n/N * N_i$ ,

Where:  $n_i$  = required sample in each categories',

$n$  = total required sample in study,

$N_i$  = number of patients in each HF.

$N$  = average total number of client who had follow up in identified facility

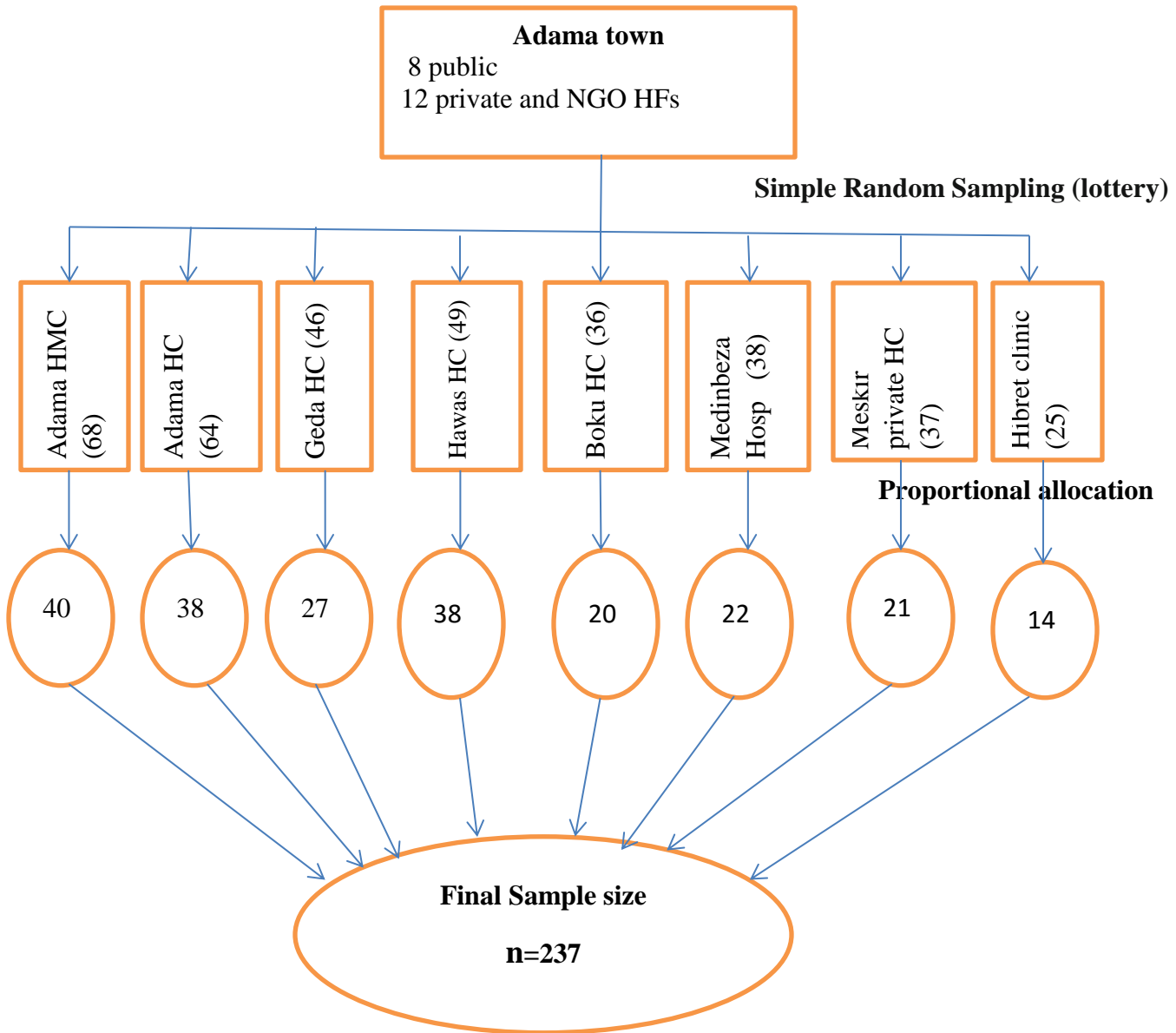


Figure 2: Schematic representation of sampling procedure for study of economic cost of TB to patients and their family, Adama, 2018.

## **4.5. Data collection Procedures**

### ***4.5.1. Data Collection Instrument***

A semi-structured questionnaires were used from a standardized tool to estimate tuberculosis patient costs developed by the WHO, KNCV tuberculosis foundation and Japan TB association(40) by adapting, modifying and adjusting to the objective of this study and translated to local languages Afan Oromo and Amharic then back to English to maintain consistency. Questionnaires were administered using face to face interview.

### ***4.5.2. Data collectors***

Data was collected by six data collectors who have at least diploma in nursing and two supervisors having a minimum of first degree in health field and who have previous experience in data collection and supervision was recruited from Modjo health center and hospital. Two days training was provided on objective of study, contents of questionnaire, clarity of questionnaire and ethical issues during interview. Questionnaire was pretested at health facilities not included in the study. Then some correction, clarity and common understanding were made accordingly.

### ***4.5.3. Data collection methods and measurements***

Questionnaire was administered face-to-face interview by data collectors for each study participant. Cost data was measured using Bottom–up approaches to estimate direct medical costs and direct non-medical costs which includes, cost of prescribed drugs excluding anti TB drugs, investigation costs (Laboratory test and X-ray cost), transportation cost, lodging and food costs during tuberculosis diagnosis and treatment by estimating the average cost of tuberculosis treatment on patients and family. Human capital approach which measures the lost income/ wages, in terms of lost earnings, of a patient and caregiver to be used to estimate indirect costs along with patient perspective and prevalence based module which quantifies economic costs by measuring all costs due to TB occurring within a given period, usually a single year, regardless of the time disease onset.

## 4.6. Study variables

### Direct cost:

#### Direct medical cost

- Consultation fee
- Investigation cost
- Drugs

#### Direct non-medical cost

- Transportation cost
- Lodging
- Food

### Indirect cost

- Loss of workdays
- Loss of income/ wage

Socio-demography: - age, sex, religion, education, occupation, income

## 4.7. Operational definition

**Cost-of-illness study (COI):** analysis that computes the total costs incurred by patients and their family as a consequence of TB.

**Direct costs:** costs or expenditures in Ethiopian Birr (USD) have born by patients and their family during illness and treatment of tuberculosis. It includes medical and non-medical costs incurred by patients and care giver.

**Direct Medical costs:** Includes the costs of diagnostic tests (laboratory tests costs, X-ray), prescribed medicines (symptom relieving medication cost) and health service provider consultation fees (registration fee).

**Direct Non-medical costs:** includes transport, lodging, cafeteria services, and food and drink costs.

**During treatment:** the period spanning from the beginning of the intensive treatment phase to the end of continuation treatment phases.

**Care givers:** it includes individual who cares the tuberculosis patients.

**Indirect costs:** losses wages in Ethiopian Birr (USD) that losses by patients and their families with contact of tuberculosis due to absent from work. E.g., income lost due to absent of work

**Inpatient case:** a TB case that has been admitted and treated as an inpatient TB case.

**Outpatient TB case:** a TB case who has been put on anti-TB treatment and is receiving his/her treatment on ambulatory basis.

**Patient:** an individual who has TB related symptoms and who have tuberculosis and followed up in tuberculosis treatment centers/hospitals/health centers/clinics

**Pre-treatment:** The period from self-reported, onset of TB related symptoms until TB treatment initiation.

**Total costs TB:** is the sum of direct medical, direct non-medical, and indirect costs incurred during illness and treatment to patients(6,41).

#### 4.8. Cost estimation

Cost data was collected from patient perspective using prevalent approach that estimate economic cost of an illness to patients at specified period of time. Direct costs consisted of out-of-pocket spent for medical services (consultation, prescribed drugs, investigation / laboratory test, X-ray) and non-medical services (transportation, food, drink and accommodation) while visiting healthcare facilities. The valuation of direct costs was depending on patients' recall. The transportation cost was calculated by multiplying the number of visits with the fee per trip.

Indirect costs are defined as economic loss due to illness. The indirect costs that were estimated earning lost because of travel to health facilities with illness related to tuberculosis on patients and their families. These workdays were changed into monetary terms using the wage (income) the patient and their families have been earning. Workday lost was converted into monetary cost based on the daily gross salary for paid work. The indirect cost for those unemployed was calculated based on their estimation of daily earning. All costs were inquired in local currency, Ethiopian Birr (ETB) and then converted to US dollars (USD) using the average exchange rate of (USD 1= 27.4715 ETB) August, 2018.

#### 4.9. Data Processing and Analysis procedures

The data cleaning and double entry in one computer by two persons was undertaken using Epidata3.1 and analyzed using the statistical package for social scientists version 20 (SPSS-20) statistical software, and descriptive statistics was applied in analysis. Descriptive statistics in terms of frequency counts and percentages were used. Results were presented in frequency, percentage, mean, SD, media and interquartile ranges estimated and presented with tables, graphs and texts.



#### **4.10. Data quality management**

Based on the objective of the study a questionnaire was adapted with little modification(40). The questioners were pre-tested in 5% of the sample size on out of study area. Two days training was provided for data collectors, supervisors, and the principal investigator and supervisors check on daily basis for completeness, accuracy, clarity and any miss understanding in the questioner was corrected and entered to software carefully. Miss entered data was checked cleared and corrected.

#### **4.11. Ethical consideration**

The Ethical clearance/approval was first obtained from the Institutional Review board of the Jimma University Institute of Health. In addition, Oromia regional health bureau ethical committee approval was ensured and from Adama town health office legal letters were submitted to respected health facility and get permission. Oral informed consent was taken by informing the purpose of the study to participant before collecting data and anyone not interested and considering as non-respondent. Only participants who agree were interviewed after their full consent and confidentiality was assured, including by not mentioning their name in any communication.

#### **4.12. Dissemination plan**

The finding of this study will be presented and submitted to Jimma university institute of health, Oromia regional health bureau, Adama town health office, health facilities and NGOS. In addition, publication of the paper will also be considered in the scientific journal.

## CHAPTER FIVE: RESULT

### 5.1. Socio-demographic characteristics

A total of 229 TB patients who are currently receiving the services from public and private health facilities of Adama were interviewed during this study, giving a response rate (96.6%). Out of these participants 143(62.4%) were from public health facilities, whereas the remaining 59(25.8% and 27(11.8%) were from private health facilities and NGO health facilities, respectively. From the total respondents male accounts 54.1% and the distribution of the study participant showed that 19.2% of respondent were below the age of 25 (18-24 years of age) where majority of the study participant was between the age of 25 and 34. The mean age of the study participant was 32.02 and 61.6% married, 29.3% single and the rest 4.8%, 2.6% and 1.7% of respondents were separated, divorced and widowed respectively.

The study shows that 42.4% of the participants have secondary school education (grade 9-12) while 25.3% have junior secondary education (grade 1-8) and 17.5% attended college diploma.

Family size of the study participant showed that most of the study participant 207(90.4%) had a family size of less than five persons per family. The mean of family size was 3.24 with SD of 1.51 and median of 3 with IQR (2, 4)

Most of the respondents, 135(59%) reported that they were Orthodox Christians, 62(27.1%) of respondents were Muslims and 26(11.4%) were protestants. Regarding the ethnicity of the study participant 130(56.8%) was Oromo and the rest Amhara and Gurage were 27.1%, 12.2%, respectively (Table1).

Table 1: Socio-demographic characteristics of the study participant (n=229), Adama, 2018

<b>Sex</b>	<b>Frequency</b>	<b>Percent</b>
Male	124	54.1
Female	105	45.9
<b>Age</b>		
18-24	44	19.2
25-34	75	32.8
35-44	52	22.7
45-54	58	25.3
<b>Marital Status</b>		

Single	67	29.3
Married	141	61.6
Divorced/Separated	17	7.4
Widowed	4	1.7
<b>Educational status</b>		
No education	10	4.4
Read and write	3	1.3
Junior secondary education	58	25.3
Secondary education	97	42.4
Diploma	40	17.5
Degree and above	21	9.2
<hr/>		
<b>Family size</b>		
1-3	133	58.1
4-4	74	32.3
5-6	20	8.7
7 and above	2	0.9
<hr/>		
<b>Occupational status</b>		
Private business	63	27.5
Employed	54	23.6
Trade	52	22.7
daily Laborer	34	14.8
House Wife	18	7.9
Reteired	4	1.7
Student	4	1.7
<hr/>		
<b>Religion</b>		
Orthodox	135	59.0
Protestant	26	11.4
Muslim	62	27.1
Catholic	5	2.2
Others*	1	.4
<hr/>		
<b>Ethnicity</b>		
Oromo	130	56.8
Amhara	62	27.1

Gurage	28	12.2
Tigre	6	2.6
Others	3	1.3
<b>Monthly Family income</b>		
<3000	72	31.4
3000-4500	46	20.1
4501-5650	54	23.6
>5650	57	24.9
<b>Participant monthly income</b>		
<3000	122	53.3
3000-4500	51	22.3
4501-5650	35	15.3
>5650	21	9.2

Note: Age and Family size category were based on (42) \* *Wakefata*

Based on their history of tuberculosis diagnosis, 104(45.4%) were smear positive PTB cases, 57(24.9%) smear negative PTB cases, 65(28.4%) Extra PTB cases, and 3(1.3%) were MDR-TB cases (Figure 3).

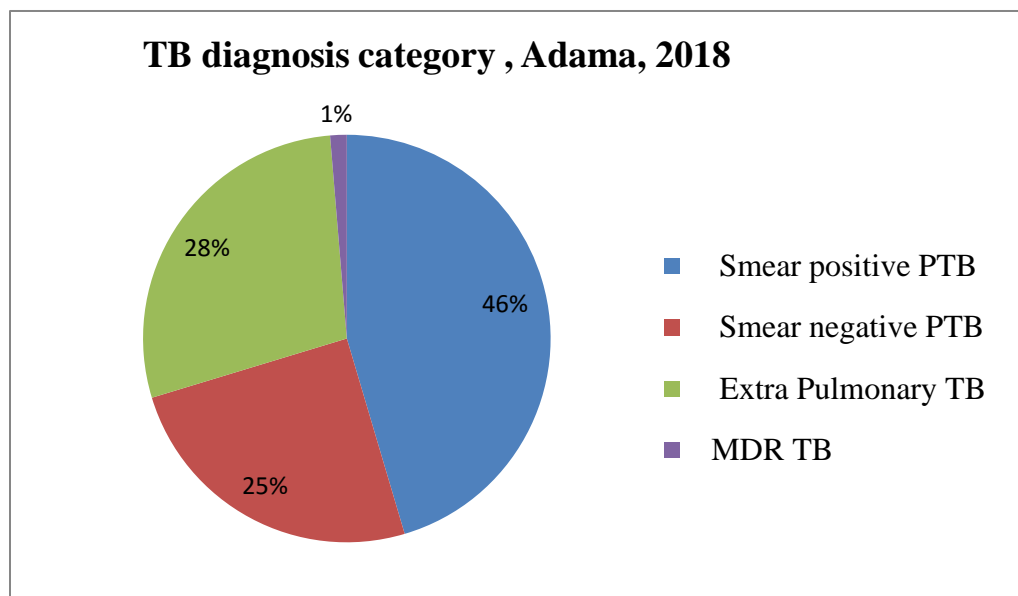


Figure 3: Category of Tuberculosis diagnosis of respondents, Adama, 2018

## 5.2. Cost of TB patient before and during diagnosis

### 5.2.1. Patient side cost

This study shows 82.1% of the study participants reported as they visited different health facilities including public health facilities with TB related symptom before being diagnosed and started tuberculosis treatment. Nearly two-third (60.70%) of the participant visited other than public health care facilities before TB diagnosis. The types of health care facilities visited before and during TB diagnosis were private health care facilities 114(49.8%), NGOs (10.9%) and public health care facilities (21.4%) (Figure4).

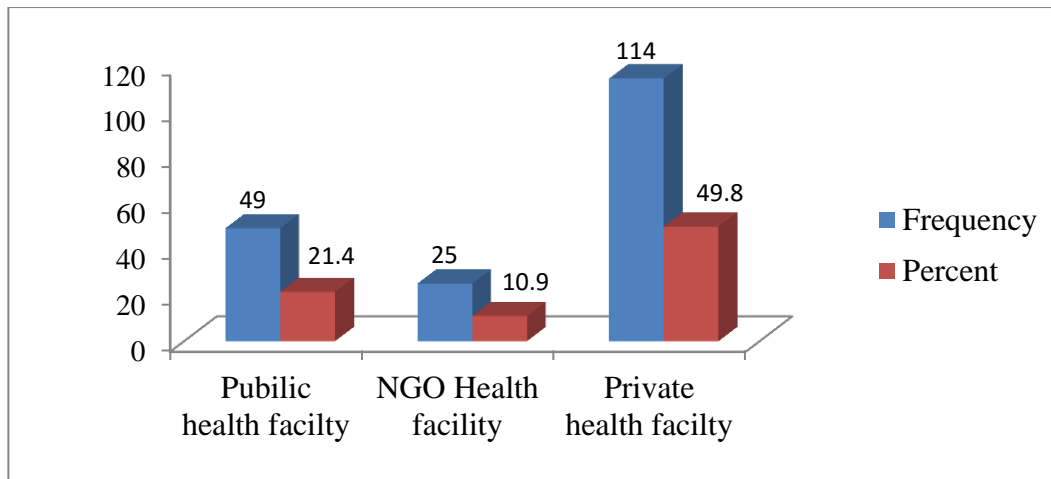


Figure 4: Health facilities visited by patients with symptom of TB before and during diagnosis, Adama, 2018

The mean and median direct costs of TB patient before and during diagnosis were ETB 1146.23 (USD 41.72) with SD of ETB 1285.25 (USD 46.78) and ETB 895 (USD 32.57) with IQR ETB (358.75,1418.75) respectively, which includes the direct medical and non-medical costs incurred by patients.

In this study, the mean and median patient delay (onset of the disease to the first time the patient visited the health care facility) were 60.41days (median 26 days: range: 2-730 days), with the mean and median transportation time to reach health facility was 43.55 minute and 30.00 minutes, respectively.

The mean and median indirect cost (income loss) of patient due to illness and absenteeism from work before and during diagnosis was ETB 1693.52 (USD 61.64) with SD ETB 2418.74(USD 88.05) (median: 1000 ETB) (USD 36.40) with IQR ETB(200,2000), which accounts (59.74%) of the total costs before and during diagnosis of TB. The total mean cost of TB patient before and

during diagnosis was ETB 2834.75 (USD 103.18) with SD ETB2839.75 (USD103.37) and (median=2000 ETB) (USD 72.80) IQR ETB (1185, 3480) (Table2).

Table 2: Costs of tuberculosis to patient before and during diagnosis, Adama, 2018

<b>Category of cost (ETB)</b>	<b>Mean</b>	<b>Median</b>	<b>SD</b>
<b>Direct medical cost (n=228)</b>	<b>974.58</b>	<b>775</b>	<b>981.19</b>
Consultation fee (n=198)	89.85	100	74.32
Investigation fee (n=228)	515.59	380	569.17
Drug cost (n=228)	380.96	312	402.32
<b>Direct non-medical cost</b>	<b>171.65</b>	<b>80</b>	<b>505.47</b>
Transportation cost	106.08	80	157.25
Other expenditure (food, drink)	65.57	32	392
<b>Total direct cost ( Medical and non- medical cost) (n=228)</b>	<b>1146.23</b>	<b>895</b>	<b>1285.26</b>
<b>Indirect Costs</b>			
Duration of complaint in days	60.41	26	106.44
Day absent from work	18.96	14	32.37
Transportation time	43.55	30	41.43
<b>Wage lost (n=229)</b>	<b>1693.52</b>	<b>1000</b>	<b>2418.74</b>
<b>Total direct and indirect cost of TB treatment before and during diagnosis (n=229)</b>	<b>2839.75</b>	<b>2000</b>	<b>3074.36</b>

Note: The difference is due to difference in number of observation.

### 5.2.2 Family/care giver side cost

In this study, 56.8% of the participants received care from their families/friends before the identification of the disease and 173 care givers stayed off from their work for an average of 5.02 (SD=6.35) days and median was 4 days

The mean and median indirect (income/wage lost) cost before the identification of TB was ETB 774.38 (USD 28.18) with SD ETB 830.97() and ETB 500 (USD18.20) with IQR ETB (300, 1000) USD (10.92, 36.40), respectively.

The mean cost of direct non-medical cost incurred was ETB 555.75 (USD 20.23) with SD ETB 446.01 (USD 16.23).

The total mean and median cost of family/care giver before and during diagnosis was ETB 1330.13 (USD 48.41) with SD ETB 1085.70 (USD 39.52) and median ETB 1050 (USD 38.22) with IQR ETB (450, 1600) USD (16.38, 58.24) (Table3).

Table 3: Cost of Tuberculosis to care giver before and during diagnosis, Adama (n=139), 2018

Category of cost (ETB)	Mean	Median	SD
<b>Direct non-medical cost</b>	<b>555.75</b>	<b>500</b>	<b>446.01</b>
Transportation cost	119.17	100	94.48
Other expenditure (food, drink, and bed room)	436.38	400	432.63
<b>Indirect Costs (Wage lost) (n=139)</b>	<b>774.38</b>	<b>500</b>	<b>830.97</b>
Day remained from work	5.02	4	6.35
Transportation time	45.7	40	29.29
<b>Total sum of direct non-medical and Indirect cost(wage lost)(n=139)</b>	<b>1330.13</b>	<b>1050</b>	<b>1085.70</b>

### 5.3: Cost of TB patients during outpatient treatment

#### 5.3.1 Patient side cost

The mean direct medical cost was ETB 1636.56 (USD 59.57) with SD ETB 1338.89 (USD 48.74), and the mean of direct non-medical costs were ETB 3150.22 (USD 114.67) with SD ETB 2120.47 (USD 77.18). From the components of direct medical cost the investigation fee accounts 64% of the total direct medical costs. The total mean and median direct cost during outpatient treatment were ETB 3671.92 (USD 133.66) with SD of ETB 2780.69 (USD 101.22) and (median= 2800 ETB) (USD 101.92) with IQR ETB (1505, 5130) USD (54.78, 186.73), respectively.

The direct non-medical cost constituted about 85.8% of the total mean direct costs. From the mean direct non-medical costs other expenditure like food and drink constituted the largest share, which is ETB 2164.02 (USD 78.88) with SD ETB 1789.10 (USD 78.77) was 68.7% of the total direct non-medical costs.

On average patient loses 27.66 days, during this time they lost income/wages (indirect cost) on average ETB 2616.31 (USD 95.23) with SD ETB 3149.20 (USD 114.63) (Table4).

Table 4: Costs of tuberculosis to patient during outpatient treatment (n=229) Adama, 2018

Category of cost (ETB)	Mean	Median	SD
<b>Direct medical cost (n=73)</b>	<b>1636.56</b>	<b>1250</b>	<b>1338.89</b>
Consultation fee	177.87	200	78.01
Investigation fee	1036.44	800	1089.87
Drug cost	422.25	320	424.32
<b>Direct non-medical cost (n=229)</b>	<b>3150.22</b>	<b>2600</b>	<b>2120.47</b>
Transportation cost	404.81	360	260.95
Other expenditure (food, drink)	2164.02	1600	1789.1
Accommodation, loges	581.39	500	571.06

<b>Total direct cost (n=229)</b>	<b>3671.92</b>	<b>2800</b>	<b>2780.69</b>
<b>Indirect Costs (wage lost) (N=229)</b>	<b>2616.3</b>	<b>1840</b>	<b>3149.2</b>
Duration of complaint in days	66.22	50	47.02
Day remained from work	27.66	20	30.61
Transportation time(minute)	48.1	40	42.08
<b>Total cost of TB treatment per patient during outpatient</b>	<b>6288.22</b>	<b>5150</b>	<b>4990.12</b>

This study shows, the total mean direct cost of TB to patients were ETB 2551.27 (USD 92.86) with SD ETB 1708.81(USD 62.20) at public health facilities, ETB 4057.56 (USD 147.70) with SD ETB 3390.79 (USD 123.43) in NGO health facilities and ETB 6211.59 (USD 226.11) with SD ETB 2892.41 (USD 108.28) at private health facilities, respectively. This shows TB patient incurred more money during TB outpatient treatment in private health facilities than other health facilities (Figure 5).

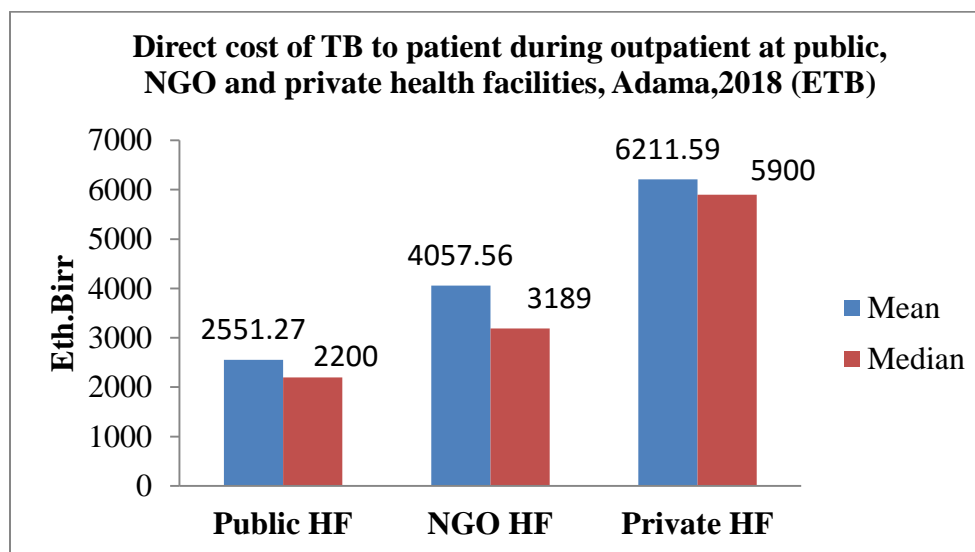


Figure 5: Total direct cost of TB to patient during outpatient treatment by HF, Adama, 2018

### 5.3.2 Family side cost

The mean and median indirect cost by patients' family during TB treatment was ETB 1171.88 (USD 42.65) with SD ETB 1488.45 (USD 54.18) and ETB 775 (USD 28.21) with IQR ETB (400,1200) USD (14.56, 43.68), respectively. On average they paid ETB 240.39 (USD 8.75) with SD ETB 327.46 (USD 11.92) for transportation which accounts 22.97% of the direct non-medical costs and 77.03% for other expenditures (food and drink) (Table5).



Table 5: Cost of Tuberculosis to patient's Family during Outpatient treatment (n=90) Adama, 2018

Category of cost (ETB)	Mean	Median	SD
<b>Direct non-medical cost (n=90)</b>	<b>1046.50</b>	<b>775</b>	<b>946.08</b>
Transportation cost (n=90)	240.39	150	327.46
Other expenditure (food, drink) (n=90)	806.11	600	835.64
<b>Indirect Costs (income/ Wage lost) (n=90)</b>	<b>1171.88</b>	<b>775</b>	<b>1488.45</b>
Day absent from work (#days)	10.04	7	11.16
Transportation time (minute)	52.59	40	51.3
<b>Total sum of direct non-medical and Indirect cost(wage lost) (n=90)</b>	<b>2218.38</b>	<b>1455</b>	<b>2102.87</b>

## 5.4. Cost incurred during inpatient treatment

### 5.4.1. Patient side cost

The total mean and median direct costs of TB patient during hospitalization were ETB 3143.35 (USD 114.42) and ETB 1825 (USD 66.43), respectively. The direct non-medical cost was 81.56% of the total direct costs during inpatient cases. The mean income lost due to hospitalization was ETB 2852.15 (USD 103.82) with SD ETB 4014.35 (USD 146.13), which accounts 47.57% of total patient cost during inpatient treatment (Table 6).

Table 6: Costs of tuberculosis to patient during inpatient treatment Adama (n=14), 2018

Classification of cost	Mean	Median	SD
<b>Direct medical cost(n=7)</b>	<b>1239.57</b>	<b>710</b>	<b>977.47</b>
Consultation fee	31.43	10	40.59
Investigation fee	414.29	300	343.65
Drug cost	793.85	500	606.58
<b>Direct non-medical cost(n=13)</b>	<b>2563.84</b>	<b>1300</b>	<b>3116.01</b>
Transportation cost(n=13)	651.54	150	1335.21
Other expenditure (food, drink) (n=13)	970	400	1457.86
Non-prescribed remedies (n=13)	942.30	425	1486.98
<b>Total direct cost</b>	<b>3143.35</b>	<b>1825</b>	<b>3546.33</b>
<b>Indirect Costs (income/ Wage lost) (n=14)</b>	<b>2852.15</b>	<b>1400</b>	<b>4014.35</b>
Duration of complaint in days	29.92	15	33
Day remained from work	32.72	17.5	31.66
Transportation time	68.08	40	106.29
<b>Total cost</b>	<b>5995.50</b>	<b>3555</b>	<b>5405.95</b>

Note: Due to difference in observation total mean direct cost not align of direct medical and non-medical cost

### 5.4.2 Family side cost

The mean and median direct non-medical cost incurred by patient's family during hospitalization was ETB 974.78 (USD 35.48) with SD ETB 660.96 (USD 24.05) and ETB 848.50 (USD 30.88) with IQR ETB (540,1312.50) USD (19.65, 47.77) , respectively. On average indirect cost was ETB 2111.54 (USD 80.50) with SD ETB 3944.20 (USD 143.57). Indirect cost was accounted 67.38% of the tota costs incurred by patient's family/care giver during hospitalization (Table7).

**Table 7:** Cost of Tuberculosis to patient's Family during hospitalization (n=14), Adama, 2018

Category of cost (ETB)	Mean	Median	SD
<b>Direct non-medical cost (n=14)</b>	<b>974.78</b>	<b>848.50</b>	<b>660.96</b>
Transportation cost	236.21	180	207.61
Other expenditure (food, drink)	738.57	650	486.20
<b>Indirect Costs (income lost) (n=14)</b>	<b>2111.54</b>	<b>700</b>	<b>3944.2</b>
Day remained from work	17	10	22.59
Transportation time	68.07	40	106.29
<b>Total cost</b>	<b>3086.32</b>	<b>1610</b>	<b>4539.19</b>

Table 8: Summary of total patient side cost of TB to patients, Adama, 2018 (ETB)

Patient side cost									
	Before and during diagnosis (n=229)			Outpatient (n=229)			Inpatient (n=14)		
	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
<b>Mean</b>	1146.23	1693.52	2839.75	3671.92	2616.30	6288.22	3143.35	2852.15	5995.50
<b>Median</b>	895	1000	2000	2840	1840	5150	1825	1400	3555
<b>S.D</b>	1285.26	2418.74	3074.36	2780.69	3149	4990.12	3546.35	4014.35	5405.95

Note: - The total direct and indirect costs indicated in table 8 were calculated patient side cost only, not included care giver costs and estimated the total cost of each service period alone.

In summary, the total mean and median direct cost of TB was ETB 5784.01 (USD 210.54) with SD 4019.12 (USD 146.30) and ETB 4945.00(USD 180.00) with IQR ETB (3170, 6995) USD (115.39, 254.63), respectively. Of direct costs, direct non-medical cost accounted 73.5% of the total mean direct costs of TB case. The total mean indirect cost was ETB 5481.61 (USD 199.53) with SD of ETB 6588.48 (USD 239.82). The total mean and median cost of TB illness to patient

and accompanyins were ETB 11265.62 (USD 410.08) with SD of ETB 9286.68 (338.05) and ETB 8870.0 (USD 322.88) with IQR of ETB (6097.50, 14140), respectively (Table 9).

Table 9: Total cost of tuberculosis to patients and their companion, Adama,2018

<b>Cost category (ETB)</b>	<b>Mean</b>	<b>Median</b>	<b>Std</b>	<b>IQR</b>
Total direct cost	5784.01	4945	4019.12	(3170, 6995)
Total indirect cost	5481.61	4000	6588.48	(2100, 7000)
<b>Total cost</b>	<b>11265.62</b>	<b>8870</b>	<b>9286.68</b>	<b>(6097.60, 14140)</b>

## CHAPTER SIX: DISCUSSION

The primary aim of this study was to assess the economic cost of tuberculosis to patients and their families in general and the direct and indirect costs of tuberculosis in particular. Tuberculosis affects all age groups, but has its greatest impact on productive adults. The mean age of study participants with tuberculosis was  $32.02 \pm 8.62$  years and 171 (74.6%) were in the age category of 18-44 years. This showed that tuberculosis affects the most productive age group. So, tuberculosis may have the potential to delay the economic development of both individuals and society.

This study documented that large amount expenditure occurred during the outpatient treatment against tuberculosis with total mean direct cost of ETB 3671.92 (USD 133.66) with SD ETB 2780.69 (USD 101.22) and median ETB 2800 (USD 101.92) with IQR ETB (1505, 5130) USD (54.78, 186.73). This is high when compared to other study done in Nigeria and Ethiopia. Study done in Nigeria showed the mean direct cost of post diagnosis per patient were USD 70(43) and study done in Addis Ababa, Ethiopia showed the mean direct costs of TB illness to patients during DOTS were USD 123.0(21). The main reason for this difference may be due to the frequent visit of health facilities and may due to quarter of outpatient TB cases were treated and followed at private health facilities in this study. This may lead them to incurred direct costs for investigation, consultation and prescribed drugs during their outpatient treatment and follow-up. The total mean and median cost of TB treatment before and during diagnosis which includes direct and indirect cost by patient was ETB 2839.75 (USD 103.37) and ETB 2000.00 (USD 72.80), respectively. This is low when compared to other study done at southern Ethiopia which indicated the median cost of pre-diagnosis of TB was USD 97.6 (20). This variation may be due to difference in study design used with study done in southern Ethiopia was a longitudinal study design. This study shows, the total mean and median direct cost of TB patient was ETB 5784.01 (USD 210.54) with SD 4019.12 (USD 146.30) and ETB 4945.00(USD 180.00) with IQR ETB (3170, 6995) USD (115.39, 254.63), respectively. This is high when compared to study done at Burkina Faso, which shows the median direct cost incurred by TB patient was US\$ 101.1 IQR (53.1-172.4)(34). This difference variation might be due to time of the research undertaking and difference in data collection technique in-depth interview were under taking over a year among smear positive pulmonary TB. Our study included private health facilities and all types of tuberculosis.

The total mean and median costs of tuberculosis illness were ETB 11265.62 (USD 410.08) with SD of ETB 9286.68 (338.05) and ETB 8870.0 (USD 322.88) with IQR of ETB (6097.50, 14140), respectively. This finding is high when compared to other study done in Ethiopia which showed the total mean and median cost were 177.3 USD with SD 78.7 USD and 177.1 USD (R=215.6) (21), respectively. This difference may be due to; this study included private health facilities. Inpatient cases expended total mean direct and indirect costs was ETB 3143.35 (USD114.42) and ETB 2852.15 (USD103.82) respectively. This study shows, the mean direct cost of TB patient during outpatient treatment were ETB 6211.59 (USD 226.11) with SD ETB 2892.41 (USD105.28) at private health facilities. This is high when compared with public and NGO health facilities, were ETB 2551.27 (USD 92.86) with SD ETB 1708.81(USD 62.20) at public health facilities and ETB 4057.56 (USD 147.70) with SD ETB 3390.79 (USD 123.43) in NGO health facilities.

The total mean and median indirect cost of tuberculosis patient was ETB 5481.61(USD 199.54) with SD ETB 6588.48 (USD 239.83 ) and ETB 4000.00 (USD 145.60) with IQR ETB (2100,7000) USD (76.44, 254.80), respectively. This is high when compared with study done in Addis Ababa, Ethiopia was the mean indirect cost was USD 54.26(21). This variation may be this study includes private and NGO health facilities and companion cost.

This study showed that the total mean and median cost of companion was ETB 3015.30 (USD 109.76) and ETB 2112.00 (USD 76.87), respectively. Indirect cost was constituted 56.15% of the total costs of companion.

This study showed that TB patient incurred a largest cost during outpatient TB treatment at private health facilities. This may be leading the patient and their families to substantial healthcare expenditure.

## **Strength and limitation of study**

### **Limitation**

This study did not analysed costs that patient incurred after TB treatment completion time. The study did not make other measures of poverty, such as household assets and materials.

There might be recall bias from participant. The other limitation of the study was that the study did not take into account intangible costs and economic losses due to death, especially when breadwinner of the family died of tuberculosis. The cost of illness analysis is limited to patient side and their accompany cost, not included provider side costs.

## **CHAPTER SEVEN: CONCLUSION AND RECOMMENDATION**

### **7.1. Conclusion**

The study showed that the average costs of tuberculosis to patients and their families were very high when compared with the mean monthly family income.

The total direct median cost of TB to patient during outpatient treatment was higher than pre-diagnosis and during inpatient treatment. Direct costs were largely driven with special purchased food as nutritional supplement for illness and other expenditure has the highest share from direct non-medical cost elements. TB patient incurred the largest direct median cost at private health facilities during outpatient TB treatment.

The total indirect median cost of tuberculosis to patient and their family was high during outpatient and inpatient treatment, respectively. Patients' care givers incurred the average indirect (lost income/ wage) cost was high during inpatient than outpatient, whereas, direct non-medical cost was high during outpatient treatment.

Costs for prescribed drugs, investigations, transportation and in particular, costs due to lost work days (lost income/ wages) and food expenditure put a high economic cost on patients and their families.

Tuberculosis patients incur substantial cost for care seeking and treatment despite the availability of free of charge anti-TB drug.

### **7.2. RECOMMENDATIONS**

This study revealed that the following recommendations will be important to alleviate the economic cost of tuberculosis to patients and their families:

- A. Strengthen early detection/diagnosis mechanisms for tuberculosis cases to minimize the costs incurred by patients and their families in seeking cure from their illness.
- B. Increase efforts to find cases early to reduce indirect costs related to inability to work.
- C. Strengthen referral linkage between public and private health facilities for early diagnosis and treatment initiation.
- D. Strengthen community based TB detection to reduce patient costs before and during diagnosis.

- E. Strong integration and coordination between private and government health care facilities since most of the patients visited private health care facilities before their disease being identified and diagnosed.
- F. Further studies on cost of tuberculosis on patients, their family and provider perspective should be strengthen the findings and to have a better estimate.
- G. Prospective studies on which patients are followed for an appropriate period of time could give better estimate of costs incurred by patients and their families.



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## Annexes

### Annexe1. English version questionnaire

**Questionnaire Number:** \_\_\_\_\_

#### INTRODUCTION AND CONSENT

Hello. My name is \_\_\_\_\_ and I am part of a team of people who are carrying out a study on “Economic cost of Tuberculosis to Patients and their Families: A Cross-sectional Study at Adama town, Oromia Regional State” (Show a letter of approval from ORHB). We would very much appreciate your participation in this survey. I would like to ask you some questions and it will take about 25 minutes. Your answers will remain confidential, and we will not be taking down your name or address, so your answers will be anonymous.

Participation in this survey is voluntary and you can choose not to answer any individual question or all of the questions. However, we hope that you will participate in this study since your views are important.

At this time, do you want to ask me anything about the survey?

May I begin the interview now?

Start time: \_\_\_\_\_ End time: \_\_\_\_\_ Date \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

**Respondent Agrees To Be**

**Respondent Does Not Agree To Be**

**Interviewed** \_\_\_\_\_ 1

**Interviewed** \_\_\_\_\_ 2

**Name of Data collector:** \_\_\_\_\_ **Signature** \_\_\_\_\_

**Name of Supervisor:** \_\_\_\_\_ **Signature** \_\_\_\_\_

## Section1. Socio-economic and Demographic Characteristics

S/No	Questions	Possible answers and coding	Skip
101	Sex	1. Male            2. Female	
102	How old are you?	1. _____years 98. I don't know 99. refused to tell	
103	What is your marital status?	1. Single (never been married) 2. Married            3. Separated 4. Widowed            5. Divorced 6. Other (specify)_____	
104	What is your educational status?	1. No education 2. Read and write only 3. Grade 1-8 (primary education) 4. Grade 9-12 (secondary education) 6. Diploma 7. Degree and above	
105	What is your main occupation (Past twelve months)?	1. Unemployed            2. Employed 3. Retired            4. Student 5. House wife            6. Trade 7. Private business            8. Others _____	
106	What is your religion?	1. Christian orthodox 2. Christian protestant 3. Muslim 4. Catholic 5. Others (specify)	
107	What is your ethnicity?	1. Tigray 2. Amhara 3. Oromo 4. Gurage 4. Others (specify) _____	
108	Number of people living in your family	1. _____            99. Refused to tell	

109	History/ Type of tuberculosis	<ol style="list-style-type: none"> <li>1. Smear positive PTB</li> <li>2. Smear negative PTB</li> <li>3. Extra-pulmonary TB</li> <li>4. MDR/RR-TB</li> </ol>	
110	Total duration of planned treatment	<ol style="list-style-type: none"> <li>1. 6 months</li> <li>2. 8 months</li> <li>3. Others</li> </ol>	
111	Where was the patient taking TB treatment?	<ol style="list-style-type: none"> <li>1. Public health facility</li> <li>2. NGO health facility</li> <li>3. Private health facility</li> </ol>	
112	How many members of the families are employed/ working at the moment?	1. _____ 99. Refused to tell	
113	What is their regular total monthly income?	1. _____ 98. I don't know 99. Refused to tell	
114	What is your monthly income?	1. _____ Birr or _____ in Kind 98. I don't know 99. Refused to tell	

## Section 2: Costs of Tuberculosis before diagnosis

S/No	Questions	Possible answers and coding	Skip
201	How long did you have your complaints before becoming a patient at this health facility?	1. _____ days 98. I don't know 99. Refused to tell	
202	How many days had you remained from work?	1. _____ days 98. I don't know 99. Refused to tell	
203	Amount of wages lost for days lost from work	1. _____ Birr 98. I don't know 99. Refused to tell	

204	Did you visit any other providers before diagnosis of TB?	1.yes 2.No	If 2,Skip toQ 214
205	If yes to Q 204, number of health services/providers visited before diagnosis?	1._____ 98.I don't know 99. Refused to tell	
206	Which health services did you visit?	1. Government 2.NGO 3.Private 4.Traditional Healer 5.other (specify)_____	

### Costs at visited facilities

	207. Total Registrati on fees	208. Investigati on(Laboratory , X-ray, etc.) fee	209. Total cost of drugs purchased	210. Means of transportation to get to the health facilities?*	211. How long does it take you to get the health services site?***	212. Total cost of Transporta tions fee	213. Other total costs
#1							
#2							
#3							

Note: \* 1. On foot      2. Taxi /Bus      3.other specify      \*\* Hours or Minute

214	Has anyone from your family or friends looked after you prior to coming here?	1.Yes 2.No	If no, skip to Q 301
215	If yes to Q 214, number of days lost from work to accompany You?	1._____ 98. I don't know 99. Refused to tell	
216	If yes to Q 214, what is their monthly income?	1._____ 98.I don't know 99. Refused to tell	



217	If yes to Q 214, Do any of the care-givers lose any income because they cared for you?	1.Yes 2.No	
218	If yes to Q 214, amount of wages lost per days lost from work?	1. _____ Birr 98. I don't know      99. Refused to tell	
219	What is the means of transportation for caregivers to get to the health facility?	1.On foot      2.Taxi/bus 3.Other(specify)_____	
220	How long does it take them to get the health services site?	1. _____ hours or _____ minutes 98. I don't know      99. Refused to tell	
221	If yes to Q 214, amount of cost for transportation?	1. _____ Birr 98. I don't know      99. Refused to tell	
222	If yes to Q 214, amount of cost for other expenditures?	1. _____ Birr 98. I don't know      99. Refused to tell	

### **Section 3: Costs of Tuberculosis during treatment as an Outpatient**

<b>S/N</b>	<b>Questions</b>	<b>Possible answers and coding</b>	<b>Skip</b>
301	How long have you been an outpatient for TB treatment?	1. _____ days 98. I don't know      99. Refused to tell	
302	How many outpatient visits have you had in that time?	1. _____ 98. I don't know      99. Refused to tell	
303	How many days have you remained from work being an outpatient?	1. _____ days 98. I don't know      99. Refused to tell	

304	Amount of wages lost for days lost from work	1. _____Birr 98. I don't know      99. Refused to tell	
305	Did you have to pay anything for your treatment, prescribed drugs or tests since you have been an outpatient?	1. Yes 2.No	If no, skip to Q 315
306	If yes to Q305, How much have you spent on prescribed drugs while you were an outpatient?	1. _____Birr 98. I don't know      99. Refused to tell	
307	If yes to Q305, How much have you spent on investigations while you were an outpatient?	1. _____Birr 98. I don't know      99. Refused to tell	
308	If yes tor Q305, How much have you spent on other items, (Doctors payments, and registration cards)?	1. _____Birr 98. I don't know      99. Refused to tell	
309	If yes to Q305, How much have you spent on any other non-prescribed remedies?	1. _____Birr 98. I don't know      99. Refused to tell	
310	If yes to Q305, How much have you or any visitors spent on your food?	1. _____Birr 98. I don't know      99. Refused to tell	
311	What is the means of transportation to get to the health facility?	1.On foot      2.On animal Back 3.Taxi/bus      4.Other(specify)_____	
312	How long does it take you to get the health services site?	1. _____hours or _____ minutes 98. I don't know      99. Refused to tell	
313	Total cost of Transportations	1. _____Birr 98. I don't know      99. Refused to tell	

314	Has anyone from your family or friends looked after you during your treatment?	1.Yes 2.No	If no, skip to Q401
315	If yes to Q 315, number of days lost from work to accompany You?	1. _____ days 98. I don't know    99. Refused to tell	
316	If yes to Q 315, what is their monthly income?	1. _____ Birr 98. I don't know    99. Refused to tell	
317	If yes to Q 315, Do any of the caregivers lose any income because they cared for you?	1.Yes 2.No	If no, skip to Q 401
318	If yes to Q318, amount of wages lost per days absent from work?	1. _____ Birr    98.I don't know 99. Refused to tell	
319	What is the means of transportation for caregivers to get to the health facility?	1.On foot    2.Taxi/bus 3.Wheelkart (Gari)_____	
320	How long does it take them to get the health services site?	1. _____ hours or _____ minutes 98. I don't know    99. Refused to tell	
321	If yes to Q 318, amount of cost for transportation?	1. _____ Birr 98. I don't know    99. Refused to tell	
322	How much did he/she spend for other expenseslike food, drink bed room on the way to here with you?	1. _____ Birr 98. I don't know    99. Refused to tell	
323	If yes to Q 318, amount of cost for other expenditures?	1. _____ Birr 98. I don't know    99. Refused to tell	

#### Section 4. Costs of Tuberculosis after Diagnosis as an Inpatient

S/No	Questions	Possible answers and coding	Skip
401	Have you history of admission because TB after the disease is	1. Yes 2. No	If no skip to Q 424

	identified?		
401	How many days did you stay in hospital?	1. _____ days 98. I don't know 99. Refused to tell	
402	Did you have to buy anything special for your stay in hospital (i.e. towels, home dressing gown, sleepers, etc.)?	1. Yes 2. No	If no, skip to Q 305
403	If yes for Q402, How much have you spent?	1. _____ Birr 98. I don't know 99. Refused to tell	
404	How many days have you remained from work being an inpatient?	1. _____ days 98. I don't know 99. Refused to tell	
405	Did you lose any income as a result of being in hospital?	1. Yes 2. No	If no, skip to Q307
406	If yes Q405, How much have you spent per days lost from work?	1. _____ Birr 98. I don't know 99. Refused to tell	
407	Did you have to pay anything for your treatment, prescribed drugs or tests since being in this hospital?	1. Yes 2. No	If no, skip to Q 311
408	If yes, How much have you spent on prescribed drugs while you were an inpatient?	1. _____ Birr 98. I don't know 99. Refused to tell	
409	If yes Q407, How much have you spent on investigations while you were an inpatient	1. _____ Birr 98. I don't know 99. Refused to tell	
410	If yes Q407, How much have you spent on other payments to the hospital or staff? (Doctors payments, registration cards)?	1. _____ Birr 98. I don't know 99. Refused to tell	
411	How much on any other un prescribed remedies?	1. _____ Birr 98. I don't know 99. Refused to tell	
412	Amount of cost for transportation?	1. _____ Birr 98. I don't know 99. Refused to tell	
413	How much have you or any visitors spent on your food while in hospital?	1. _____ Birr 98. I don't know 99. Refused to tell	

414	Has anyone from your family or friends looked after you during your stay in the hospital?	1.Yes 2.No	If no, skip to Q 417
415	If yes Q414, number of days lost from work to accompany You?	1. _____ Birr 98. I don't know 99. Refused to tell	
416	If yes Q414, what is their monthly income?	1. _____ Birr 98. I don't know 99. Refused to tell	
417	If yes Q414, Do any of the caregivers lose any income because they cared for you?	1.Yes 2.No	If 2, skip to Q424
418	If yesQ417, amount of wages lost per days lost from work?	1. _____ Birr 98. I don't know 99. Refused to tell	
419	If yes Q417, what is the means of transportation for caregivers to get to the health facility?	1.On foot 2.On animal Back 3.Taxi/bus 4.Other(specify)_____	
420	If yes Q417, how long does it take them to get the health services site?	1. ____ hours or ____ minutes 98.I don't know 99. Refused to tell	
421	If yes Q417, amount of cost for transportation?	1. _____ Birr 98. I don't know 99. Refused to tell	
422	How much did he/she spend for other expenses like food, drink bed room on the way to here with you?	1. _____ Birr 98.I don't know 99. Refused to tell	
423	If yes, amount of cost for other expenditures?	1. _____ Birr 98. I don't know 99. Refused to tell	
424	What is the average monthly income of the household?	1. _____ Birr 98. I don't know 99. Refused to tell	
425	What is the main source of income for the family	1. Trade 2. Production of handicraft 3. Daily Labor 4. Monthly income from employment 5. other Specify _____	

**THANK YOU FOR YOUR TIME AND COOPERATION!**

## Annexe2. Afan Oromo version Questionnaire

### Gaafannoo ragaan ittin sassaabamu

#### Seensa

Fayyaan/nagaan isinif yaa ta'u, akkam oltan /tte, Ani \_\_\_\_\_jeedhama.

Kanan baradhu Yunivarsiiti jimmatti koollejji saayinsii fayyaa sagantaa diigri lammaffa gosa barnoota Dinagdee Fayyaa yoo ta'u, Qo'annoon kun "dhukkubni sonbaa dhukkubsataa fi maatii isaa irratti dhibbaan baasii dingadee" kan jedhu dha.

Qo'annoon kun dhukkubni sombaa dhukkubsataa fi maatii isaa irratti dhibbaan baasii dingadee irratti qabu tilmaamuf faayida gudda qaba. Isin qo'annoo kanarratti kan filatamtan haal-dure tokko malee yoo ta'u, feedhii keessan qofa irratti kan hundee dha. Qo'anno kana irratti mirgi hirmaachu dhabu keessani kan eeggame dha. Garu hirmaachun keessan qo'annoo kanaaf bu'a gudda waan buusuf Sababa dhukkubaatin baasi diinagdee bahuf qabatamaan tilmaamu waan nudandeessisu fi rakkoo kanaaf furmaata kaa'uf waan gargaaruf akka hirmaattan isin jajjabeessina. Turmaata gabaaba waliin qabnuuf gaafiwwan muraasa isinif dhiyeessina. Gaafin isinif dhiyaatu odeeffannoo wali-galaa, haala fayyummaa keessani , baasii sababa dhukkubaatin isin irra gahe fi dhimmoota kanaan wal-qabatan ta'a. Gaafannoon kana keessatti waantoonni namummaa keessan ibsu hin barreefamu. Gaafannoon kun harka namaa biraa haala hin gallen kan eggammu dha. Kanaafu ragaan kennitan icitin isa kan eeggeme dha. Bu'an/argannoon qoo'annoo kana akka barbaachisumma isaatti yoo dhiyaatu icciti dhunfa keessani kan ibsu hin dhiyaatu. Qoo'annoo kana irratti hirmaachuf feedhi yoo qabaattan ta'e gaafiwwan waliigalaf daqiqaa 20-25 fudhachu danda'a. Gaafii qabdu?

Qo'annoo kana irratti himaachu fi fedhi keessan nuf ibsu/kennu/dandeessu?

Eeyyan\_\_\_\_\_ (Gaafi fi deebii keenya jalqabu dandeenya)

Hindanda'u \_\_\_\_\_ (gaaficha addan kuta).

Maqaa raga guree \_\_\_\_\_ Mallattoo \_\_\_\_\_ Guyyaa \_\_\_\_\_

Maqaa too'ata \_\_\_\_\_ Mallattoo \_\_\_\_\_ Guyyaa \_\_\_\_\_

## Kutaa tokko: Haala waliigala raga hawaasumma fi diinagdee

Lakk	Gaafii	Filanno deebii	Irra utaali
101	Saala	1. Dhiira            2. Dubarti	
102	Umriin keessan meeqa?	2. Waggaa _____ 98. Hin beeku    99. Ragaan hin jiru	
103	Haala fuudha fi heerumaa?	1. Hinfuune        2. Fuudhee 3. Gargarbahan    4. Du'an addabahan 5. Seeran walhiikan    6. Kan bira _____	
104	Haala baruumsaa keessani?	1. Hinbaranee     2. Dubisu fi barreessu 3. Kutaa 1-8        4. kutaa 9-12ffaa 5. Dipiloomaa     6. Diploma 7. Digirii fi isaa oli	
105	Ji'ota 12n kana keessatti hojiin keessan guddaan maalii?	1. Hojii hin qabu    2. Qaxaramaa dha 3. Soorama         4. Barataa dha 5. Haadha warraa    6. Daldalaa 7. Hojii dhuunfaa    8. Kan biraa ____	
106	Amantaan keessan maalii?	1. Ortoodoksii     2. Pheenxee 3. Musliima         4. Kaatolikii 5. kan biraa ____	
107	Sabni keessan maalii?	1. Tigree            2. Amaara 3. Oromoo            4. Guraage 5. Kan biraa _____	
108	Baayinni maatii keessani isin dabalatee meeqa dha?	1. _____        99. Ragaan hin jiru	
109	Gosa dhukkuba sonbaa keessan maali dhaa?	1. Dhukkuba sombaa qoranno laaboratoriidhan beekame 2. Dhukkuba sombaa qoranno laaboratoriidhan hin mirkannofne	

		3.Dhukkuba sombaa sombaan ala ta'e 4.Dhukkuba sombaa qorichaan walbaratee	
110	Yeroo hagamiif yaala kana hordoftuu?	1. Ji'a 6f 2. Ji'a 8f 3. Kan bira----	
111	Yaala dhukkuba sombaa kana eessatti hordofaa jirtu?	4. Mana yaalaa mootummaa 5. Mana yaalaa mit-mootumma 6. Mana yaala dhuunfa	
112	Maatii keessan keessa meeqatu hojii qabaa?	1. _____ 99. Ragaan hin jiru	
113	Walumaagala galiin isaani meeqa ta'aa?	1. Qarshii _____ 98. Hin beeku 99. Ragaan hin jiru	
114	Galiin keessan ji'atti meeqa?	1. Qarshiidhan _____ 98. Hin beeku 99. Ragaan hin jiru	

**Kuaa lama: Dhukkuba sombaa ta'un odoo hin beekamin dura bahii bahee**

Lak	Gaafii	Filann deebii	Irra utali
201	Mana yaala kana dhufuun dura guyyoota meeqaf dhukuba kana waliin turtan?	1. Guyyoota _____ 98. Hin beeku 99. Ragaan hin jiru	
202	Sababa dhukkuba sombaa kanatin guyyota meeqaf hojii idilee irraa haftanii?	1. Guyyoota _____ 98. Hin beeku 99. Ragaan hin jiru	
203	Guyyoota hojirra haftaniif galiin dhabdan qarshiidhan meeqa ta'aa?	1. Qarshii _____ 98. Hinbeeku 99. Ragaan hin jiru	
204	Mana yaala kana dhufuu keessanin dura yaala argachuf gara mana yaalaa biraa deemtan jiraa?	1.Eyyen 2.Hin jiru	Hin jiru yoo ta'e gara lak.



			213utaali
205	Mana yaala kana dhufu keessanin dura manneen yaala meeqa deemtani?	1. _____ 98. Hinbeeku      99. Ragaan hin jiru	
206	Manneen yaala deemtan gosaan maal fa'aa?	1. Kan mootumma      2.Mit-mootumma 3. Kan dhuunfaa      4.Kan biraa _____	

	207. Galmeedh af qarshii hagam kafaltani?	208. Qorannoodha f basiin baaftan (Laboratorii, Raajii fi kkf) meeqa?	209. Waliigala bittaa qorichaatiif meeqa kanfaltani?	210. Qorannoo taasisuf gara mana yaala yoo deemtan geejiba maal fayyadamtani?*	211. Iddo yaala gahuuf geejiba kanaan yeroo hangam fudhataa? (Sa'aa)**	212. Walumaag alatii geejibaaf meeqa kafaltanii?	213. waliigala baasii biraa
#1							
#2							
#3							

Note: \* 1. Lukaan      2. Taaksii/konkolaata      3.kan biraa      \*\* Sa'aati ykn Daqiiqaa

214	Maatii, firaa, hiriyyaa keessan fi kan biraa keessaa kan isiin yaalchisaa ture qabduu/ jiraa?	1.Eeyyen 2.Hinjiru	Deebin 2,yoo ta'e gara lakk301utaali
215	Isin yaalchisuf guyyaa meeqaf hojii idilee isaatirra hafee?	1. Guyyaa _____ 98. Hinbeeku      99. Ragaan hinjiru	
216	Namnii isin yaalchise yookan kununsee galiin isaa kan ji'a tokko meeqa ta'aa?	1.Qarshii _____ 98. Hinbeeku      99. Ragaan hinjiru	

217	Namnii isin yaalchisu sababa kanaan baasii baasaninjiru?	1.Eeyen 2.Hinjiru	
218	Namni isin yaalchisuuf guyyaa hojirra keessatti basin baasee maallaqan hangam ta'aa?	1.Qarshii_____ 98. Hinbeeku      99. Ragaan hinjiru	
219	Namni isin yaalchise geejibaa maaliin fayyadame ture?	1. Lukaan      2. Taaksii/Awutobisii 3. Kan biraa yoo jirate yaa ibsamu	
220	Namni isin yaalchise bakka gahuudhaf geejiba ibsame kanan sa'aa meeqa jalaa fudhataa?	1. Sa'aa _____ Yokkan, daqiiqa _____ 98. Hinbeeku      99. Ragaan hinjiru	
221	Namnii isin yaalchise geejibaaf qarshii meeqa baase?	1. Qarshii_____ 98. Hinbeeku      99. Ragaan hinjiru	
222	Namni isin yaalchise isin wajjin yoo dhufu waan adda addaatiif kan akka nyaataa, dhugaatii bultii (siree) dhaf qarshii meeqa baasee?	1. Qarshii_____ 98. Hinbeeku      99. Ragaan hinjiru	

**Kutaa sadii: Yaala dhukkuba Sombaatiif yoo deddeebi'ani yaalaman baasii bahe**

<b>Lakk</b>	<b>Gaafii</b>	<b>Filann deebii</b>	<b>Irra utali</b>
301	Sababa dhukkuba sombaatin deddebitanii yoo yaalamtan yeroo meeqa turtani?	1. Guyyaa_____ 98. Hinbeeku      99. Ragaan hinjiru	
302	Sababaa dhukkuba kanatin yeroo meeqaf deddebitani?	1.Guyyaa_____ 98. Hinbeeku      99. Ragaan hinjiru	
303	Sababaa dhukkuba kanaatin guyyaa meeqaf hojii idilee keessan irra haftani?	1.Guyyaa_____ 98. Hinbeeku      99. Ragaan hinjiru	

304	Guyyoota yaalaf deddeebitaniif galii dhabdan maallaqan meeqa ta'aa?	1. Qarshii _____ 98. Hinbeeku      99. Ragaan hin jiru	
305	Yeroo deddeebitani yaalamtan baasin (qorichaaf, qorannodhaf fi kkf) kan kafaltan jiraa?	1. Eeyyen 2. Hin kafaluu	Deebin 2 yoo ta'e gara 314utaali
306	Yeroo deddeebitani yaalamtan qorchaa ogeessan isinif ajajamef qarshii meeqa baaftani?	1. Qarshii _____ 98. Hin beeku99. Ragaan hin jiru	
307	Yeroo deddeebitani yaalamtan qorannoo (Laaboratorii, Raajii, Altirasaawundi fi kkf) qarshii hagami baaftani?	1. Qarshii _____ 98. Hin beeku99. Ragaan hin jiru	
308	Yeroo deddeebitani yaalamtan galmeedhaf/kaardidhaf qarshii hagam baaftani?	1. Qarshii _____ 98. Hin beeku99. Ragaan hin jiru	
309	Yeroo deddeebitani yaalamtan qorichoota ogeessan isinif ajajameen alatti dhukkuba keessanin walqabatee qarshii hagam baaftani?	1. Qarshii _____ 98. Hin beeku99. Ragaan hin jiru	
310	Yeroo deddeebitani yaalamtan isin yokan nama isin yaalchisu nyaataf qarshii hagam baaftani?	1. Qarshii _____ 98. Hin beeku99. Ragaan hin jiru	
311	Gara iddo yaalatti geejibaa maalin deemtan?	1. Lukaan      2.Taaksii/konkolaata 4. kan bira yoo jiraate yaa ibsamu	
312	Iddoo hordoffii yaala ittigootan geejiba ibsameen yeroo hagam isinirra fudhataa?	1. Sa'aa _____ yokan, Daqiiqa _____ 98. Hin beeku      99. Ragaan hin jiru	

313	Geejibaaf qarshii hagam kafaltani?	1. Qarshii _____ 98. Hin beeku 99. Ragaan hin jiru	
314	Maatii keessan, fira, hiriyyaa ykn kan biraa kan isin kununsu qabduu?	1. Eeyyen 2. Hin jiru	Deebin 2 yoo ta'e gara401uta ali
315	Isin kununsuf hojii idilee isaa/shi irra guyyoota meeqa hafani?	1. Guyyaa _____ 98. Hin beeku 99. Ragaan hin jiru	
316	Namni isin kununsu/yaalchisu galiin ji'aa hagami?	1. Qarshii _____ 98. Hin beeku 99. Ragaan hin jiru	
317	Namni isin kununsu/yaalchisu yeroo isin yaalchisuf galiin dhabu jiraa?	1. Eeyyen 2. Hin jiru	Deebin 2 yoo ta'e gara401uta ali
318	Namni isin kununsu/yaalchisu yeroo isin yaalchisuf guyyootaa hafan keessatti giddugaleessan galiin dhaban qarshiidhan hagami?	1. Qarshii _____ 98. Hin beeku 99. Ragaan hin jiru	
319	Namni isin kununsu/yaalchisu iddoo gahuuf geejiba maal fayyadamani?	1. Lukaan 2. Taaksidhan/konkolaata 3. Kan bira -----	
320	Namni isin kununsu/yaalchisu iddoo gahuuf geejiba kanan yeeroo hagam irra fudhataa?	1. Sa'aa _____ ykn Daqiiqaa _____ 98. Hin beeku 99. Ragaan hin jiru	
321	Namni isin kununsu/yaalchisu geejibaaf qarshii hagam baasani/kanfalani?	1. Qarshii _____ 98. Hin beeku 99. Ragaan hin jiru	

322	Namni isin kununsu/yaalchisu isin waliin yeroo dhufu baasii biraatiif (nyaataf, dhugaati fi iddo bultitiif qarshii hagam baasani?)	1.Qarshii_____ 98. Hin beeku 99. Ragaan hin jiru	
323	Kan hin xuqamnee baasin dabalataa yoo jiraate?		
425	Galiin maatii ji'atti giddugalessan hagam ta'aa?	1.Qarshii_____ 98. Hin beeku 99. Ragaan hin jiru	
426	Irra jireenyan maddii galii maati maali?	1. Qonna2. Daldala3. Ogummaa harkaa 4. Hojii guyyaa 5.Mindaa ji'a 6. Kan bira____	

**Galatoomaa!**

**Annexe3. Amharic version Questionnaire**

**የመረጃ መሰብሰቢያ መጠይቅ**

መግቢያ

ጤና ይስጥልኝ፣ እንደምን አረፈዱ/ ዋሉ። እኔ \_\_\_\_\_ እባላለሁ።

የሚመራው በጅምር ስርዓት፣ የጤና ሳይንስ ኢንስቲትዩት፣ የኢኮኖሚክስ፣ የጥናትና ፖሊሲ ትምህርት ክፍል ሲሆን፣ የዲሃረ-ምረቃ መመሪያ ማሟያ ለሚሆን ዳሳሳ ጥናት ለማካሄድ ነው። ይህ ጥናት « የሳንባ በሽታ በህመም ታኛ እና በቤተሰቡ ሊያሟያ ስከተለው ኢኮኖሚያዊ ጭና (ወጪ) » ይሰኛል። ይህ ጥናት፣ የሳንባ በሽታ በህመም ታኛው እና በቤተሰቡ ኢኮኖሚ ሊያሟያ ስከተለው ንወጪ ለመገመት ያለው ጠቀሜታ እጅ ግብጥም የሳንባ ነው። እርስዎ፣ ለዚህ ጥናት የተመረጡት ያለምንም ቅድመ ሁኔታ ሲሆን፣ በእርስዎ ፈቃደኝነት ላይ ብቻ የተመሰረተ ነው። በዚህ ጥናት ሊይ ያለ መሳተፍ መብትዎ የተጠበቀ ነው። ነገር ግን የእርስዎ ተሳትፎ ለዚህ ጥናት ያለው አስተዋፅኦ የላቀ ስለሆነ፣ በበሽታው ምክንያት የተከሰተውን የኢኮኖሚ ወጪ በተጨማሪ ለመገመት ስለሚረድ አና ለችግሩ መፍትሄ ለማፈለግ ስለሚያግዝ እንዲሳተፉ እና በረታታ ያታያሉ።

በሚኖረን የአፍታቆይታ የተወሰኑ ጥያቄዎች እና ቀርብልታ ለን። የሚቀርብልዎ ጥያቄዎች፣ አጠቃላይ መረጃዎች፣ የጤናዎችን ሁኔታ የተመለከቱ፣ በሽታው ያስከተለው ወጪ እና እንዲሁም ተያያዥ ጉዳዮችን የሚደስሱ ይሆናሉ። በዚህ መጠይቅ ሊያደርስዎን ማንነት ሊገልፅ የሚችሉ መረጃ አይፃፍም። መጠይቆቹ በሙሉ ለሌላ ሰው በማይደርስበት ሁኔታ የተጠበቀ ነው። ስለዚህም የሚሰጡት መረጃ ሚስጥራዊነት በጥብቅ የተጠበቀ ነው። የዚህ ጥናት ውጤት እንዲስፈላጊነቱ በሚቀርብበት ሁኔታ ሁሉ የእርስዎን የግል ማንነት ሊገልፅ የሚችል መረጃ አይቀርብም። በዚህ ጥናት ለመሳተፍ ፈቃደኛ የሚሆኑ ከሆነ፣ ጥያቄዎቹ በአጠቃላይ ከ 20-25 ደቂቃ ሊወስድ ይችላል።

ጥያቄ አለዎ? በዚህ ጥናት ለመሳተፍ መልካም ፈቃድዎን ሊሰጡኝ ይችላሉ?

አዎ..... (ቃለመጠይቁን መጀመር ይችላሉ)      አልችልም..... (መጠይቁን አቋርጥ)

የመረጃ ሰብሰቢያው..... ፊርማ..... ቀን.....

የተቆጣጣሪው..... ፊርማ..... ቀን.....

**ክፍሌአንድ፡ ማህበራዊናእኮኖሚያዊእናአጠቃላይየግለሰብመረጃ**

ተ/ቁ	ጥያቄዎች	አመራጭ መልሶች	እለፍ/ዝላል
101	ፆታ	1. ወንድ                      2. ሴት	
102	እድሜዎ ስንት ዓመት ነው?	1 _____ ዓመት 98. እኔ አላውቅም      99. መረጃ የላም	
103	የጋብቻ ሁኔታ?	1. ያላጋባጠ. ያጋባ                      3. ተለያይቶዋል 4. በሞት የተለያዩ                      5. በሕግ የተፋቱ 6. ሌላ ካለ ይገለፅ _____	
104	የትምህርት ሁኔታ ?	1. ያልታማረ                      2. ማንበብና መጻፍ ብቻ 3. ከ 1ኛ-8 ክፍል                      4. ከ8ኛ-12ኛ ክፍል 5. ድፕሎማ6. 7. ድግሪ ከዚያ	
105	ለአላፋት 12 ወራት ዋናው ስራዎ ምንድን ነው?	1. ስራ የሌለው                      2. ተቀጣሪ 3. ጡረታኛ                      4. ተማሪ 5. የቤት እመቤት                      6. ንግድ 7. የግል ሥራ                      8. የቀንስራ	
106	ሃይማኖትዎምንድን ነው?	1. ኦርቶዶክስ2. ፕሮቴስታንት 3. እስሌም4. ካቶሊክ 5. ሌላ _____	
107	ብሄርዎምንድን ነው?	1. ትግሬ2. አማራ 3. ኦሮሞ4. ጉራጌ 5.   _____	
108	እርስዎ በሚገኙበት ቤተሰብ ውስጥ እርስዎን ጨምሮ የቤተሰብ አባላት ብዛት ስንት ነው?	1. _____ 99. መረጃ የላም	
109	የሳንባ በሽታ አይናት	5. በክታ ምርመራ የታወቀ የሳንባ በሽታ 6. በአክታ ምርመራ ያልታወቀ የሳንባ በሽታ	

		7. ከሳንባ ውጪ የሆነ የሳንባ በሽታ 8. መድሐኒት የተለመደ የሳንባ በሽታ	
110	ለምን ያህል ጊዜ ነው ሕክምናው የሚወስዳው?	2. ለ6 ወር      2. ለ8 ወር    3. ሌላ-----	
111	የሳንባ ህመምታኛው ሕክምና የሚከታተልበት ቦታ የት ነው?	2. የመንግስት ጤና ድርጅት 3. መንግስታዊ የልሆኑ ጤና ድርጅት 4. የግል ጤና ድርጅት	
112	በቤተሰብዎ ውስጥ በአሁኑ ጊዜ ስንቶቹ ስራ አላቸው?	1. _____      99. መረጃ የለም	
113	አጠቃላይ ወርሃዊ ገቢዎቹ ወስንት ነው?	1. _____ ብር 98. አለውቅም      99. መረጃ የለም	
114	የእርስዎ ወርሃዊ ገቢ መጠን ስንት ነው?	1. _____ ብር      _____ በዓይነት 98. አለውቅም      99. መረጃ የለም	

**ክፍል ሁለት: የሳንባ በሽታው ከመታወቁ በፊት ያለው ወጪ**

ተ.ቁ	ጥያቄ	አማራጭ/ መልስ	እለፍ
201	እዚህ ጤና ድርጅት ከመምጣትዎ በፊት ምን ያህል ጊዜ በዚህ ሕመም ቆይተዋል?	1. _____ ቀናት 98. አለውቀውም      99. መረጃ የለም	
202	በህመሙ ሳቢያ ለስንት ቀናት ከወትሮ ስራዎቻቸው?	1. _____ ቀናት 98. አለውቀውም      99. መረጃ የለም	
203	በቀሩ ባቸው ቀናት ውስጥ ያጡት የገቢ መጠን በገንዘብ ምን ያህል ነው?	1. _____ ብር 98. አለውቀውም      99. መረጃ የለም	



204	እዚህከመምጣትዎበፊት፡ ህክምናለማግኘትየሄዱበትየጤናተቆም ወይምሌላቦታአለ?	1.አዎ 2.የለም	የለም ከሆነወደ ተ.ቁ 213 እለፍ
205	እዚህከመምጣትዎበፊትስንትተቋማት ሄደዋል?	1. _____ 98. አለውቀውም 99. መረጃ የለም	
206	የሄዱባቸውተቋማትበአይነትምንአይነት ናቸው?	1. የመንግስት 2. መንግስታዊ ያልሆኑ 3. የግል 4. የባሕል ሕክምና 5. ሌላ (ይገለፅ) _____	

በሄደባቸውተቋማትያወጡትወጪ

	207. የካርድ ክፍያ	208. የምርመራ ክፍያ(የላብራቶሪ ፣የራጅ፣ወ.ዘ.ተ	209. የመድሃኒት ግዢየከፈሉት ገንዘብ?	210. ወደቦታው የተጓዙበት መጓጓዣ ምንነበር?*	211. ከቦታውለመደረስ በተጠቀሰውመገኛ ግምንያህልጊዜወሰድብዎ?	212. ለመጓጓዣውምንያህልገንዘብ ከፈሉ?	213. ሌሎች ያልተጠቀሱ ተጨማሪ ወጪዎች?
#1							
#2							
#3							

\*1 = በእግር, 2 = በአውቶብስ/ቦታክሲ, 4 = ሌላ

214	ከቤተሰቡአባላት፣ዘመድ፣ ጓዳኛወይምሌላ፣ እርስዎንየሚያስታምምዎነበረዎት?	1.አዎ 2.የለም	የለም ከሆነ ወደ ተ.ቁ 301 እለፍ
215	እርስዎንለማስታመምለምንያህልቀናት ከመደበኛስራው/ዋቀርተዎል?	1. _____ ቀናት 98. አለውቀውም 99. መረጃ የለም	
216	የሚያስታምምዎሰውወርሃዊገቢምንያህልነው?	1. _____ ብር98.አለውቀውም 99. መረጃ የለም	

217	አስታሚዎች በእርስዎ እንክብካቤ ምክንያት ወጪ አውጥተዋል ሆይ?	1.አዎ 2.የለም	መልሱ 2 ከሆነ ወደ 218 ዝላል
218	አስታሚዎ ለማስታመም በቀሩት ቀን ውስጥ ያጡት የገቢ መጠን በገንዘብ ምን ያህል ነው?	1. _____ ብር 98. አላውቀውም      99. መረጃ የለም	
219	የሚያስታምም ያሰው ወደ በታወቀው የተጓዙ በትመጓጓዣ ምን ያህል ነበር?	1. በእግር      2. ታክሲ/ ባጃጅ 3. ሌላ ካለ ይገለጽ	
220	የሚያስታምም ያሰው ከታወቀው ለመድረስ በተጠቀሰው መጓጓዣ ምን ያህል ጊዜ ወስደዋል?	1. _____ ሰዓት ወይም _____ ደቂቃ 98. አላውቀውም      99. መረጃ የለም	
221	አስታሚዎ ለመጓጓዣ ምን ያህል ገንዘብ አውጥተዋል?	1. _____ ብር 98. አላውቀውም      99. መረጃ የለም	
222	የሚያስታምም ያሰው ከእርስዎ ጋር በሚመጣበት ወቅት ለሌሎች ነገሮች (ለምሳሌ ግብ፣ ለመጠጥ፣ ለማደራጀት ወዘተ) ምን ያህል ገንዘብ ከፈለገ?	1. _____ ብር 98. አላውቀውም      99. መረጃ የለም	

**ክፍል ሶስት: በተመላላሽ የሳንባ ህክምና ወቅት የወጣ ወጪ**

ተ.ቁ	ጥያቄ	አማረጭ/መልስ	እለፍ
301	በሳንባ ህክምና ምክንያት በተመላላሽ ታካሚነት ምን ያህል ጊዜ ቆይቶ?	1. _____ ቀናት 98. አላውቅም      99. መረጃ የለም	
302	በተመላላሽ ታካሚነት ለስንት ጊዜያት ተመላላሱ?	1. _____ ቀናት 98. አላውቅም      99. መረጃ የለም	
303	ተመላላሽ ታካሚ ሆነው በህመም ሳቢያ ለስንት ቀናት ከወትሮ ስራዎቻቸው?	1. _____ ቀናት 98. አላውቅም      99. መረጃ የለም	
304	ተመላላሽ ታካሚ ሆነው በቀሩት ቀን ውስጥ ያጡት የገቢ መጠን በገንዘብ ምን ያህል ነው?	1. _____ ብር 98. አላውቅም      99. መረጃ የለም	

305	ተመላላሽታካሚበሆኑበትወቅትለህክምናዎ የሚደረገውንወጪ(ለመድሃኒት፤ ለምርመራውዘተ) ይከፍሉነበር?	1.አዎ 2. አልከፍልም	2 ከሆነ ወደ ተ.ቀ 314 እለፍ
306	ተመላላሽታካሚበሆኑበትወቅትበሐኪምዎለ ታዘዘልዎመዲሃኒትመግዣምንያህልገንዘብአ ወጡ?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
307	ተመላላሽታካሚበሆኑበትወቅትየምርመራክ ፍያ(የላብራቶሪ፣የራጅ፣ አልትራሰውንድወ.ዘ.ተ) ምንያህልገንዘብአወጡ?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
308	ተመላላሽታካሚበሆኑበትወቅትለካርድምን ያህልገንዘብአወጡ?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
309	ተመላላሽታካሚበሆኑበትወቅትበሐኪምዎከ ታዘዘልዎመዲሃኒትውጪከህመምዎጋርበተ ያያዘምንያህልገንዘብአወጡ?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
310	ተመላላሽታካሚበሆኑበትወቅትለምግብዎ እርስዎወይምተንከባካቢዎምንያህልገንዘብአ ወጡ?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
311	ወደባታውየተጓዙበትመጓጓዣምንነበር?	1.በእግር 2.በታክሲ/አውቶብስ 4.ሌላ ካለ የገለፅ_____	
312	ክትትል ወደሚያደርጉበት ጤና ድርጅትለመድረስበተጠቀሰውመጓጓዣምን ያህልገንዘብይወስድባቸዋል?	1. _____ ሳዓት ወይም _____ ደቂቃ 98. አላውቅም 99. መረጃ የለም	
313	ለመጓጓዣውምንያህልገንዘብከፈሉ?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
314	ከቤተሰቡአባላት፣ዘመድ፣ጓዳኛወይምሌላ፣ እርስዎንየሚያስታምዎቻቸውበረዎት?	1.አዎ 2.የለም	መልሱ 2 ከሆነ ወደ 401 እለፍ

315	እርስዎን ለማስታመም ለምን ያህል ቀናት ከመደበኛ ስራው/ዋቀር ተዎል?	1. _____ ቀናት 98. አላውቅም 99. መረጃ የለም	
316	የሚያስታምም ዎሰው ወር ሃዋገቢ ምን ያህል ነው?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
317	የሚያስታምም ዎሰው እርስዎን ሲያስታምም የሚያጣው ገቢ አለ?	1. አዎ 2. የለም	መልስ 2 ከሆነ ወደ 401 ዝላል
318	አስታሚ ሚዎ ለማስታመም በቀናት ቀን ውስጥ ያጡት የገቢ መጠን በገንዘብ ምን ያህል ነው?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
319	የሚያስታምም ዎሰው ወደ ቦታው የተጓዙበት መጓጓዣ ምን ነበር?	1. በእግር 2. በታክሲ/ አውቶብስ 3. ሌላ -----	
320	የሚያስታምም ዎሰው ከቦታው ለመድረስ በተጠቀሰው መጓጓዣ ምን ያህል ጊዜ ወሰደባቸው?	1. _____ ሰዓት ወይም _____ ደቂቃ 98. አላውቅም 99. መረጃ የለም	
321	የሚያስታምም ዎሰው ለመጓጓዣ ምን ያህል ገንዘብ ከፈሉ?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
322	የሚያስታምም ዎሰው ከእርስዎ ጋር በሚመጣበት ወቅት ለሌሎች ነገሮች (ለምግብ ለመጠጥ ለማደሪያ ወዘተ) ምን ያህል ገንዘብ ከፈሉ?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
323	ያልተጠቀሱ ሌሎች ተጨማሪ ወጪዎች ካለ?		

**ክፍል አረት፤ የሳንባ ህመም ታኛ በሽታው ከታወቀ በኋላ ተኝተው ስታከም ያወጣው ወጪ**

ተ.ቁ	ጥያቄ	አማራጭ/መልስ	እለፍ
401			
402	በሆስፒታሉ ውስጥ ምን ያክል ቀናት ቆዩ?	1. _____ ቀናት 98. አላውቅም 99. መረጃ የለም	
403	በሆስፒታል ቆይታዎ የገዙት የተለየ ነገር አለ (ፋሻ፣ ጋውን፣ ሽብጥ ወዘተ)?	1. አዎን	መልስ 2 ከሆነ ወደ 404 እለፍ

		2.የለም	
404	የገዙትን ገርምን ያህል ገንዘብ ፈጅብዎ?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
405	ተኝተው ታካሚ በሆኑ በትዕቃት ለስን ትቀናት ከወትሮ ስራዎቻቸው?	1. _____ ቀናት 98. አላውቅም 99. መረጃ የለም	
406	ተኝተው ታካሚ በሆኑ በትዕቃት ያጡት ገቢ አለ?	1. አዎን 2. የለም	የለም ከሆነ ወደ ቁ. 407 ዝለል
407	ተኝተው ታካሚ በሆኑ በትዕቃት በቀን ውስጥ በአማካይ ያጡት የገቢ መጠን በገንዘብ ምን ያህል ነው?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
408	ተኝተው ታካሚ በሆኑ በትዕቃት ለህክምና ወይም ለሌላ ምንጭ (ለመድሃኒት፣ ለምርመራ ወይም ለሌላ) ይከፍሉ ነበር?	1. አዎን 2. አልከፍልም	አልከፍልም ከሆነ ወደ ተ. ቁ. 411 ዝለል
409	ተኝተው ታካሚ በሆኑ በትዕቃት በሌሊት ምዕራባዊ ወይም ሌላ ምንጭ ለምን ያህል ገንዘብ አወጡ?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
410	ተኝተው ታካሚ በሆኑ በትዕቃት የምርመራ ክፍያ (የላብራቶሪ፣ የራጅ፣ ወ.ዘ.ተ) ምን ያህል ገንዘብ አወጡ?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
411	ተኝተው ታካሚ በሆኑ በትዕቃት ለካርድ ምን ያህል ገንዘብ አወጡ?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
412	ተኝተው ታካሚ በሆኑ በትዕቃት በሌሊት ምዕራባዊ ወይም ሌላ ምንጭ ለምን ያህል ገንዘብ አወጡ?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
413	ተኝተው ታካሚ በሆኑ በትዕቃት ለምን ግብዓት ለምን ያህል ገንዘብ አወጡ?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
414	ለመጓጓዣ ምን ያህል ገንዘብ ከፈለጉ?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
415	ከቤተሰቡ አባላት፣ ዘመድ፣ ጎደኛ ወይም ሌላ፣ እርስዎን የሚያስታምዎትን ሰረዎች?	1. አዎን 2. የለም	የለም ከሆነ ወደ ተ. ቁ. 501 ዝለል
416	እርስዎን ለማስታወስ ለምን ያህል ቀናት	1. _____ ብር	

	ከመደበኛ ስራው/ዋቀር ተዋል?	98. አላውቅም 99. መረጃ የለም	
417	የሚያስታምም ዎሰው ወርሃ ዊገቢ ምን ያህል ነው?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
418	የሚያስታምም ዎሰው እርስዎን ሲያስታምም የሚያጣው ገቢ አለ?	1. አዎን 2. የለም	የለም ከሆነ ወደ ተ.ቁ 501 ዝላል
419	አስታሚ ሚዎ ለማስታመም በቀሩት ቀን ውስጥ በቀን በአማካይ ያጡት የገቢ መጠን በገንዘብ ምን ያህል ነው?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
420	የሚያስታምም ዎሰው ደቦታው የተጓዙት መጓጓዣ ምን ያህል ነው?	1. በእግር 2. በታክሲ/ አውቶብስ 4. ሌላ-----	
421	የሚያስታምም ዎሰው ከቦታው ለመድረስ በተጠቀሰው መጓጓዣ ምን ያህል ጊዜ ወስደዋቸው?	1. _____ ሰዓት ወይም _____ ደቂቃ 98. አላውቅም 99. መረጃ የለም	
422	የሚያስታምም ዎሰው ለመጓጓዣ ምን ያህል ገንዘብ ከፈለ?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
423	የሚያስታምም ዎሰው ከእርስዎ ጋር በሚመጣበት ወቅት ለሌሎች ነገሮች (ለምግብ፣ ለመጠጥ፣ ለማደሪያ፣ ታክሲ ወዘተ) ምን ያህል ገንዘብ ከፈለ?	1. _____ ብር 98. አላውቅም 99. መረጃ የለም	
424	ያልተጠቀሱ ሌሎች ተጨማሪ ወጪዎች ካሉ?		
425	የቤተሰቡ ወርሃዊ አማካኝ ገቢ ምን ያህል ነው?	1. _____ ብር 2. አላውቅም 3. መረጃ የለም	
426	የቤተሰቡ ዋና የገቢ ምንጭ ምን ይደረገዋል?	1 ግብርና 2 ንግድ 3 የእጅ ሙያ 4 የቀንስራ 5 ወርሃዊ ደምወዝ 6 ሌላ _____	

## DECLARATION

I, the undersigned, declare that this thesis is my original work, has not been presented for a degree in this or any other university and that all sources of materials used for the thesis have been fully acknowledged,

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Date of submission: \_\_\_\_\_

This thesis has been submitted for fulfillment of requirement for Master of Science in Health Economics with my approval as University advisors & Examiner

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