
**ADDIS ABABA UNIVERSITY**
**SCHOOL OF PHARMACY, DEPARTMENT OF PHRMACEUTICS AND SOCIAL PHARMACY**

# CATASTROPHIC HEALTHCARE EXPENDITURE AND COPING STRATEGIES AMONG PATIENTS ATTENDING CANCER TREATMENT SERVICES IN ADDIS ABABA, ETHIOPIA: A HOSPITAL-BASED CROSS-SECTIONAL STUDY

**BY**

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# Catastrophic Healthcare Expenditure and Coping Strategies among Patients Attending Cancer Treatment Services in Addis Ababa, Ethiopia: A Hospital-Based Cross-Sectional Study

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## School of Graduate Studies

This is to certify that the thesis prepared by Gebremicheal Gebreslassie Kassahun, entitled: "Catastrophic Healthcare Expenditure and Coping Strategies among Patients Attending Cancer Treatment Services in Addis Ababa, Ethiopia: A Hospital-Based Cross-Sectional Study" and submitted in partial fulfillment of the requirements for the Degree of Master of Science in Pharmacoepidemiology and Social Pharmacy complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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## List Abbreviations and Acronyms

| | |
|---|---|
| AACR | Addis Ababa city Cancer Registry |
| AAU | Addis Ababa University |
| CBHI | Community Based Health Insurance |
| CHE | Catastrophic Health Expenditure |
| CNCD | Chronic Non-Communicable Disease |
| CVD | Cardiovascular Disease |
| ETB | Ethiopian Birr |
| FDRE | Federal and Democratic Republic of Ethiopia |
| FMOH | Federal Ministry of Health |
| IPD | Inpatient Department |
| NGOs | Non-Governmental Organizations |
| OOP | Out of Pocket |
| OPD | Outpatient Department |
| SAGE | Study of Global AGEing and Adult Health |
| SHI | Social Health Insurance |
| TASH | Tikur Anbessa Specialized Hospital |
| UHC | Universal Health Coverage |
| US | United States |
| WHO | World Health Organization |

## Abstract

**Background:** With the rapid increase in magnitude and mortality of cancer, which is costly disease to manage, several patients particularly in developing countries are facing a huge financial burden. However, there is limited evidence about the level of catastrophic health expenditure (CHE) in Ethiopia.

**Objectives:** To examine the level of CHE, identify associated factors and coping strategies among patients attending cancer treatment services in Addis Ababa, Ethiopia.

**Method:** A hospital based cross-sectional survey of patients with cancer was conducted in one public and three private hospitals between January and March 2018. Patients who received at least one of oncology treatment alternatives were enrolled and data was collected using SAGE (study on Study of Global AGEing and Adult Health) adopted pre-tested interviewer-administered questionnaire. All direct medical and nonmedical expenditures were measured and values are reported as expenditure (US$) per patient (1US$ equivalent to 23.41 Ethiopian Birr). CHE was estimated using a threshold of 10% of annual household income. Description of variables was made using mean, median and frequency. Multivariable logistic regression was used to explore factors associated with CHE. Patients' household strategies used to cope for the financial constraints of cancer care were also explored. Data was analyzed using STATA version 13.

**Results**: A total of 352 (response rate of 87.1%) participants were interviewed. Majority (73.3%) of the respondents were females; most (94%) from public hospitals and their mean age was 48 years (SD=13.2). Breast (37%) and cervical (16.5%) cancers accounted the largest proportion. Vast majority (74.4%) of patients experienced CHE with mean overall expenditure of $2366 per patient (median: $1708). Medical expenditure accounted the highest percentage (83.6%) with mean medical and nonmedical costs of $1978 (median: $1394) and $388 (median: $222), respectively. Average (median) outpatient and inpatient expenditure were: $782 ($557) and $1584 ($1067) respectively. Patients who took greater than six cycles of chemotherapy (AOR: 3.64; 95% CI: 1.11-11.92), and age (AOR: 1.03; 95% CI: 1.01-1.06) were factors significantly associated with CHE. Household savings (85.5%) followed by financial support (43.0%) were the main coping strategies used to cover the health payment.

**Conclusion**: A substantial number of patients with cancer are exposed to CHE with considerable medical expenditure and household saving was the main means of coping strategy. Hence, mobilizing the health insurance scheme is urgently needed to ensure financial risk protection and realize universal health coverage particularly for patients with Cancer.

**Keywords:** Cancer, catastrophic healthcare expenditure, coping strategy, out-of-pocket expenditure, medical expenditure, non-medical expenditure, cost, Ethiopia

# 1. Introduction

## 1.1. Background

Catastrophic health expenditure (CHE) is defined as health care spending that exceeds some specified critical level of tolerance or threshold from the household total income in a given specified period (Wagstaff and Van Doorslaer, 2003; Xu *et al*., 2003; WHO, 2005; Naga and Lamiraud, 2011; Puteh and Almualm, 2017). According to Wagstaff and Van Doorslaer the incidence of CHE is estimated from the fraction of out of pocket (OOP) payment, which exceeds a certain threshold usually 10% of total household annual income, usually for one-year interval (Wagstaff and Van Doorslaer, 2003).

CHE occurs when the available health service is mainly dependent on OOP payment, households have low capacity to pay, and if there is no prepayment (Xu *et al.*, 2003; WHO, 2005). Predominantly, OOP health care financing leaves households exposed to the risk of unanticipated catastrophic financial expenditures that absorb a large share of the household budget (O'Donnell *et al*., 2005).

This catastrophic level of health care associated payment is highly pronounced when the diseased household member is at productive age and when the individual is the main source of household income (Buigut *et al.*, 2015). Ignoring health payments leads to underestimation of poverty by 7–8% points among hospitalized households in which 80% of this adjustment is hidden poverty due to coping (Flores *et al*., 2008).

Cancer is one of the chronic non-communicable diseases (CNCD) with high likelihood of imposing catastrophic healthcare expenditure (Engelgau *et al*., 2012). It is a collection of diseases in which cells change, multiply and metastasize out of control in the body. Lung, cervical, prostate, stomach, colorectal, liver and breast are among the most prevalent cancer types in the world (DeSantis *et al.*, 2013).

Based on the WHO global cancer report, about 14.1 million new cancer cases and 8.2 million deaths occurred in 2012 worldwide. The overall burden of cancer in the world is projected to

continue particularly in developing countries. It is projected to increase to 19.3 million new cancer cases per year by 2025 worldwide (WHO, 2013**)**.

Epidemiology of major non-communicable diseases in Ethiopia including hospital-based cancer prevalence were 0.3% and the impact of cancer causes 10% of deaths in the urban settings and 2% deaths in rural settings. The impact of cancer on hospital admissions accounts for 1.1%-2.8% of morbidity (Misganaw *et al.,* 2014). The trend of cancer increased which might be due to awareness of diagnosis and increasing prevalence of known risk factors (Bray and Moller, 2006; Abate *et al.*, 2016). According to the Addis Ababa city Cancer Registry (AACR) 2014 report of 5701 cancer cases, breast cancer (33%) and cervix (17%) were the most prevalent cancer types among females. While colorectal cancer (19%) and leukemia (18%) were the most prevalent cancer types for males. Two-third of these cancer cases were from females (AACR, 2014).

There are large disparities in the financial resources available for health in countries across the globe (Institute for Health Metrics and Evaluation, 2017) In the case of Ethiopian health care financing, it is highly dependent on clients out of pocket expense and volunteer participation of organizational funders (World Bank, 2016).

Based on the Federal Ministry of Health (FMOH) 2015/16 household health service utilization and expenditure survey report household contribution to health spending was about 21.7 billion Ethiopian birr (ETB); of which 18.2 billion ETB was in the form of OOP payment, 2.87 billion ETB was in the form of community contribution to health system strengthening and another 620 million ETB was for premium contributions to insurance (FMOH, 2017).

## 1.2. Statements of the problem

To share financial risks across the population the FMOH of the Ethiopia had developed a strategic plan for establishment and expansion of health insurance (FMOH, 2008) and this was ratified for implementation by proclamation no. 690/2010 (FDRE, 2010). But, health insurance coverage remains very low and at its piloting stage (USAID, 2015) and majority of the populations are still dependent on OOP payment for health care service.

Implementing health insurance are reported as the most important mechanism to share risks and reduce impoverishment due to CHE and improving access to health care and over dependence on OOP payment (USAID, 2015). Other studies also underlined that prepayment mechanisms are the key to reduce financial catastrophe that could be imposed for a given patient/household or population (Xu *et al*., 2007).

According to the retrospective observational study report done on progress of catastrophic health spending in 133 countries, the global incidence of CHE was estimated to be 9.7% in 2000, 11.4% in 2005, and 11.7% in 2010 at 10% threshold increasing gradually. About 808 million people in 2010 were incurred catastrophic health spending worldwide (Wagstaff *et al.,* 2017).

Every year, more than 150 million individuals in 44 million households face financial catastrophe as a direct result of having to pay for health care outlining the circumstances in which this occurs and what policy makers need to consider in seeking to protect populations (WHO, 2005).

Cancer imposes the most devastating economic challenge for individuals, households and the society as whole in the world ( John and Ross, 2010; Choi *et al.,* 2014). Due to the premature death and disability of cancer a $895 billion of economic impact was debited in 2008 globally without including the direct medical cost which could further increase the economic cost (John and Ross, 2010).

In Ethiopia, about 80% of reported cases of cancer are diagnosed at advanced stages, in which very little can be done to treat but when it becomes financially difficult to treat upon its other disease related physical and psychological pain toward these patients and their households (FMOH, 2015)

Similar to any other countries especially low-middle-income countries (Torre *et al*., 2016), in Ethiopia with the rapid increase in magnitude and mortality of the disease which is costly to manage several patients are facing a huge financial burden. However**,** there is limited evidence about the level of CHE and OOP health care expenditure for the diagnosis and treatment of cancer in Ethiopia. This could also be another obstacle in mobilizing and strengthening financial risk preventing policies in the country. Moreover, this might result in a gap for decision making,

enforcing, developing and implementing policies and strategies on further prevention and minimizing risk factors.

### 1.3. Significance of the study

Cancer imposes the most devastating economic impact in the world (John and Ross, 2010). This economic impression of cancer relay at different population groups needs further investigation to reveal the level of economic impact for health policy decision making.

In Ethiopia, there is no comprehensive study conducted on patients with cancer which broadly estimate the level of CHE of cancer care, associated factors and coping mechanism except some cancer specific cost of illness studies which might have resulted a profound overlook for those specific cancers decision making (Hailu and Haile-Mariam, 2013, Mamo *et al*., 2017). Therefore, this study has examined the incidence level of CHE of cancer care, estimate the financial expenditure, explored the associated factors and the most common coping strategies which gives a special insight to responsible bodies to investigate and strengthen in full mobilization of the risk sharing and pooling schemes and/or to develop other possible polices.

In addition, the study could also give a way for other studies to be conducted which can disclose the cost effectiveness of the current interventions and another prevention strategy bearing in mind the financial burden of the disease particularly for the household and the society at large.

## 2. Literature review

Health related problems particularly those of CNCD results not only disease related physical and psychological sufferings but also disease related catastrophic financial distresses. Substantial cost burden placed by CNCD on patients living in low and middle-income countries were significant, with most of it heavily concentrated among low socioeconomic status groups (Goryakin and Suhrcke, 2014; Zafar, 2015).

### 2.1. Catastrophic healthcare expenditure and its associated factors.

Health care expenditures made by OOP method represent a significant burden for breast cancer survivors (Pisu *et al.*, 2010). A study conducted in US in 2009 shown that, illness and medical bills contribute to a large and increasing share of US bankruptcies. About 62.1% of all bankruptcies have a medical cause (Himmelstein *et al*., 2009).

A cancer care payment is very large and increasing over time compared to another CNCD. For example, a study conducted among Indian patients with CNCDs, revealed that share of OOP health expenses incurred by households increased over time from 31.6 % in 1995-96 to 47.3 % in 2004. The odds of CHE for cancer was nearly 170% greater compared to other NCDs showing it disease imposes a highest level of financial suffering (Engelgau *et al*., 2012).

Association between chronic disease and CHE in Korea was studied and resulted, about 3.5% of households experienced CHE at a threshold of ≥40 %. Low economic status, elderly households, and households with a member who suffered from a chronic disease were more likely to experience CHE. However, households headed by females and middle-aged individuals (40–59 years) had significantly lower CHE rates than those headed by males and younger/older individuals (Choi *et al*., 2015).

A survey conducted in Bangladesh focused on health-related financial catastrophe and inequality in chronic illness based on capacity to pay approach (CHE at a threshold of ≥40 %) revealed, on average households spent 11% of their total budgets on health and nearly 9% of households faced financial catastrophe. Household economic status, presence of chronic illness in the household,

and illness among children and adults were other determinants of OOP payments of catastrophic cost (Rahman *et al*., 2013).

The incidence CHE were relatively high among elderly households with chronic disease among Chinese patients. Household size, having members > 65 years, having members with ≥ 2 chronic diseases, per capita income, and elderly household members demonstrating healthcare-seeking behaviors were the major and positive contributors to CHE inequality (Wang *et al*., 2015 (a)).

In India, the median expenditure of hospitalization for cardiovascular disease (CVD) including cancer was USD $149 per episode of hospitalization. There was a significantly higher prevalence of catastrophic expenditure among the poorest quintile; the highest was for cancers (85%). Mean private sector OOP hospitalization expenditure was also nearly five times higher than that in the public sector (Tripathy *et al*., 2016).

In rural Malawi, the poorer the household the higher proportion of their monthly per capita household expenditure spent on CNCDs. Being female, being alone, being household head, longer duration of disease, CNCDs targeted through active screening programs, higher socio-economic status, household head being literate, using formal care, and fewer household members living with a CNCD within a household were positively associated with the amount of OOP expenditure. Generally, OOP payments impose a considerable financial burden on rural households, especially among the poorest showing the existence of important gaps in financial protection in the health coverage policy (Wang *et al.,* 2015 (b)).

A study conducted in Kenyan slum communities indicated that the proportion of households facing CHE varies widely between 1.52% and 28.38% depending on the type of method used and the thresholds. Incurring CHE was lower with the number of working adults in a household and membership in a social safety net program although seeking care in hospital increases the risk. The study also reflected a substantial proportion of residents of informal settlements in Kenya faced CHE (Buigut *et al*., 2015)

A study done in Iran showed that 67.9% of households of cancer patients faced CHE based on the capacity to pay approach. There was a significant relationship between facing these costs and type

of insurance, residence, use of outpatient services, type of treatment, and other family members who refrained from using healthcare services (Delavari *et al*., 2014).

Among South east Asia cancer patients 48% of the respondents experienced financial catastrophe at a threshold of ≥30%. The risk of facing catastrophic payments was associated with a more advanced disease stage at diagnosis, and socioeconomic status at pre-diagnosis. The odds of financial catastrophe were also associated with participants in low income category and with those without insurance coverage within each country (Action Study Group, 2015).

At cut-off points of 20%, 30%, 40%, and 50% household's income, Vietnam cancer patient households were exposed to CHE at a rate of 82.6%, 73.7%, 64.7%, and 56.9% respectively. Lots of households were pushed into poverty due to their expenditure on cancer care (Hoang *et al*., 2017).

Among Korean households of cancer patients, 39.8% experienced CHE at a threshold of >10%. There was significant difference in the proportion of number of family members experiencing CHE. Economic status, and households with patients having lived with cancer for one or two years were more likely to incur catastrophic medical costs (Choi *et al.*, 2014).

According to a study conducted on Iranian cancer patients average OOP costs for patients among different cancer types revealed; Colon/Rectum $1306, Stomach $713, and Head and Neck $431in US dollars showing the treatment cost for colorectal cancer was high compared to other cancer types (Pourreza *et al*., 2017).

A US study undergone from 2001 to 2008 in a nationally representative sample of US population revealed, age from 55 to 64 years, never married or widowed, one child or no children, unemployed, lower income, lower education level, and having other chronic conditions were associated with higher OOP burdens among non-elderly adult with cancer (Bernard *et al*., 2011).

Among households of breast cancer patients in India, 84% of the households had experienced CHE at a threshold of ≥40%. The direct cost contributed 79% toward the total cost of illness. The cost of treatment was associated with type of facility used, stage of cancer and age at the time of diagnosis (Jain and Mukherjee, 2016).

Overall cost of Florida breast cancer patients was statistically associated with the time spent and travel distance. Personal cash payments for detection, diagnosis, and treatment were statistically significantly lower among women whose breast problems were detected by screening than among women whose breast problems were detected because of symptoms: $453 versus $749) (Secker-Walker *et al.,* 1999).

A financial distress was imposed for patients with cardiovascular diseases conditions as reported from a study conducted in Addis Ababa Ethiopia, where individuals who sought CVD care in selected hospitals were about 27% of the households experienced CHE at a threshold of >10%. Low income, residence outside Addis Ababa and hospitalization increased the likelihood of experiencing CHE (Tolla *et al.,* 2017).

Ethiopian cervical cancer patients attending at TASH estimated with a mean outpatient cost of $407.2 (Median = $206.9) per patient, showing that direct outpatient cost (Mean = $334.2) were sharing the largest cost compared with the indirect cost (mean: $150). The mean inpatient cost for hospitalized patients was $404.4 which was slightly lower than the mean outpatient cost. The average direct inpatient cost was $329 (74% medical costs and 26% non-medical costs) (Hailu and Haile-Mariam, 2013).

Another study on cost of illness of breast cancer patients taking chemotherapy at TASH showed average outpatient direct cost of $1188.26, comprising direct medical cost as the largest part (mean: $893.02) (Mamo *et al*., 2017).

## 2.2. Coping strategies of patient households for catastrophic healthcare expenditure

A study conducted in forty low and middle-income countries on the frequency of borrowing money or selling assets to buy health services revealed, on average, 25.9% of households borrowed money or sold items to pay for health care (Kruk *et al*., 2009).

In South Korea study on patterns of CHE and household incomes showed that earned, business, and property incomes were significantly lower, but transfer and loan incomes were significantly higher in households with CHE than in those without such health expenditures (Kim and Yang, 2011).

In India, households with CNCD conditions used own savings and income as the most important source of financing, typically between 40-60% of all spending, whereas 30-35% was from borrowing (Engelgau *et al*., 2012).

Another study from among India breast cancer patients' household reported, personal saving, borrowing at low rate of interest, social nets, and selling financial assets as main financial coping strategies (Jain and Mukherjee, 2016)

Fifty three percent of Iran cancer patients borrowed from their family members, relatives, banks, charities, or other available sources for their treatment with the average amount borrowed being $734 (Pourreza *et al*., 2017).

A study conducted in fifteen African countries on coping strategies of households revealed that, borrowing and selling assets were the major coping strategies. It ranges from 23% of households in Zambia to 68% in Burkina Faso. The highest income groups were less likely to borrow and sell assets, but coping mechanisms did not differ strongly among lower income quintiles. Households with higher inpatient expenses were significantly more likely to borrow and deplete assets compared to those financing outpatient care or routine medical expenses, except in some countries (Leive and Xu, 2008).

A study conducted in a coffee-growing rural district of Ethiopia on costs of illness and coping strategies revealed that the main strategies to cope with the financial costs of illness were waiver privileges, selling household assets, and using savings. The findings of the study also indicated that financial and time costs of illness seem to significantly contribute to the impoverishment of rural households (Bogale *et al*., 2005). Other cross-sectional cohort study conducted in Addis Ababa Ethiopia on CVD patients resulted family support and saving was the most common coping mechanisms (Tolla *et al.,* 2017).

## 3. Conceptual frame work

The incidence of CHE was defined as; when patients' household cancer care OOP expenditure exceeds ten percent of annual household income (Wagstaff and Van Doorslaer, 2003). Therefore, households experienced catastrophic level of cancer care expenditure was assumed as head counts who encountered a CHE. Factors associated with catastrophic level of cancer care expenditure were examined (Rahman *et al*., 2013; Delavari *et al*., 2014; Buigut *et al*., 2015; Choi *et al*., 2015; Wang *et al*., 2015 (b); Pourreza *et al*., 2017). Coping strategies used for the financial burden imposed cancer care were also explored (Bogale *et al*., 2005; Leive & Xu, 2008; Kruk *et al*., 2009; Engelgau *et al*., 2012; Tolla *et al*., 2017) (Figure 1).

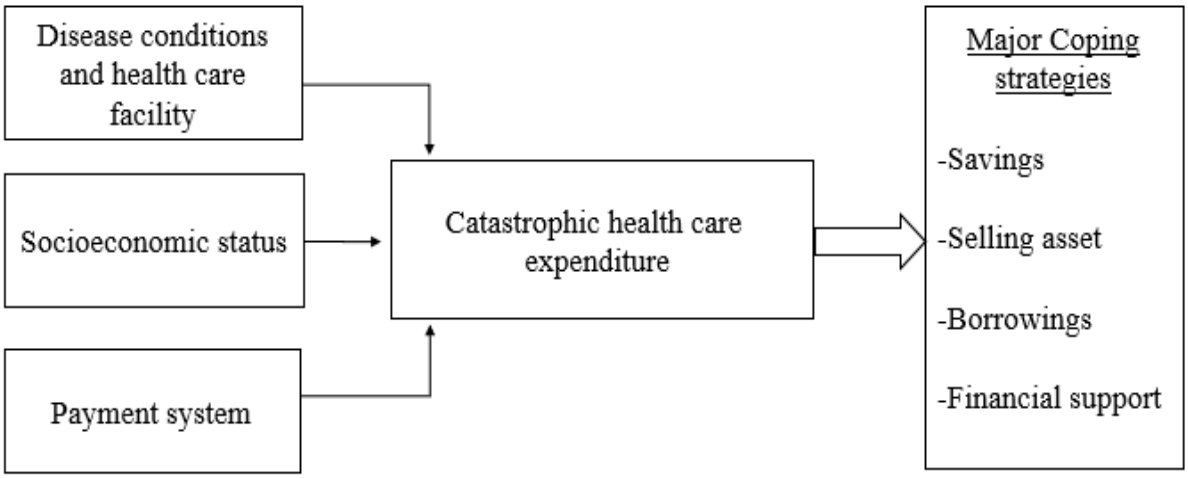


Figure 1: - Conceptual frame work representation for the magnitude of CHE of cancer care, majorly associated factors, and coping strategies

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# 4. Objectives

## 4.1. General objective

- To examine the level of catastrophic health expenditure, associated factors and coping strategies among patients attending cancer treatment services in Addis Ababa, Ethiopia.

## 4.2. Specific objectives

- To determine the level of catastrophic health expenditure among patients attending cancer treatment services in Addis Ababa, Ethiopia.
- To identify factors associated with catastrophic health expenditure among patients attending cancer treatment services in Addis Ababa, Ethiopia.
- To explore coping strategies used by patients' household for the financial constraints among patients attending cancer treatment services in Addis Ababa, Ethiopia.

# 5. Method

## 5.1. Study area, settings and period

The study was conducted in Addis Ababa, the capital city of Ethiopia (the second most populous country in Africa) and the headquarter of African Union (World population review, 2018). Addis Ababa has 13 public hospitals, 32 private hospitals and 93 health centers (FMHACA, 2017). About 150-200 new case of cancer are registered monthly which is compiled from ten cancer diagnostic and treatment service providing hospitals. About 1200 cancer patients visit these health facilities either for follow up or treatment monthly. From the public hospitals, Tikur Anbessa Specialized Hospital (TASH) is the largest teaching and referral public hospital with the highest number (about 40-50 patients per day) of cancer patients load (AACR, 2017). The oncology unit has many health professionals including medical oncologists, pathologists, radiotherapists, surgical oncologists, oncology nurses and pharmacists. It has also 19 beds and provides chemotherapy, radiation therapy, palliative care and supportive treatment services. Although some other new centers are providing limited service, it is still the main center for cancer registry, early detection, prevention, treatment in Ethiopia. Among the private hospitals, seven of them provide oncology treatment service. Chemotherapy, surgical treatment, palliative care and supportive treatment services are cancer care services provided at these private health facilities. The study was conducted in TASH and three private hospitals between January and March 2018.

## 5.2. Study design

A hospital based observational type of analytical cross-sectional study design was employed.

## 5.3. Source population and Study population

The source population was all cancer patients seeking treatment service in Addis Ababa Health Care Facilities. All inpatient and outpatient cancer patients attending at the oncology clinics of the selected hospitals at the time of data collection period and who fulfill the eligibility criteria were the study population.

## 5.4. Eligibility criteria

- ❖ All patients with cancer confirmed on histological and/or pathological exam and took at least one of the oncologic treatment options (either chemotherapy, radiotherapy or hormonal/others).
- ❖ All patients with cancer with regular follow up for the last one year.
- ❖ Served in direct charge of payment.
- ❖ Participants who volunteered to participate and had no comorbid conditions.

## 5.5. Sample size determination and sampling technique

The sample size was determined using single proportion population formula (Daniel, 2009). Since there was no similar study in Ethiopia and with the intention of getting maximum sample size, we assume a 50% of cancer patients had experienced a CHE.

$$n = \frac{(Za/2)^2 xp(1-p)}{d^2} = \frac{(1.96(^2 x0.5(1-0.5)}{0.05^2} = 384 \text{ ----------(1)}$$

Where:

n = the desirable sample size

$Z_{(\alpha/2)}$ = the critical value at 95% level of significance (1.96)

p = proportion of patients with catastrophic health expenditure (0.5)

d = precision of measurement (acceptable marginal error) (0.05)

A total number of 404 participants was estimated to be included for the study upon adding 5% contingency (5% non-response rate =0.05x384= 20).

One government hospital (TASH) and three private hospitals were purposively selected for the study. TASH was included as it is the only largest hospital with high number of cancer patients and the only hospital providing cancer treatment referral service. On the other hand, the private hospitals were selected based on their patients load and their voluntariness to be enrolled in the study. Due to few numbers of eligible attendants in each site, participants were recruited based on

consecutive sampling technique and data collection continued until the required sample size was obtained. Participants were recruited from each study areas based on proportion to patient load.

## 5.6. Study variables

### 5.6.1. Dependent variable

- Catastrophic health expenditure

### 5.6.2. Independent variables

- Patient socio-demographic characteristics (age, gender, education level, occupation, marital status, and residence)
- Patient medical condition (type of hospital, type of cancer, type of treatment, treatment cycle, and visit history of private health facility).
- Household essential consumption and income status (household annual income, household annual expenditure).

## 5.7. Data collection process and questionnaire content

A questionnaire was adopted based on appropriate modification of WHO SAGE study (study on Study of Global AGEing and Adult Health) (WHO, 2006) and other relevant literatures (Hailu and Haile-Mariam, 2013; Tolla *et al*., 2017; Huang *et al*., 2017). This structured questionnaire prepared in English was translated to Amharic (national language) and back translated to English to ensure consistency. Prior to the actual study, a pretest of the questionnaire was done and necessary modification was made accordingly.

The pretested standardized structured data collection tool consisted of six parts. Part one: patient socio-demographic characteristics (age. gender, occupation, marital status, education level and household size), part two: patient medical information (type of cancer, time diagnosed and treatment initiated, type of treatment taken and private health facility visit history), part three and four: OPD and IPD service expenditures including (consultation cost, investigation/laboratory cost, medicine cost and other relevant expenditures), part five: patients' household essential consumption and income (weekly food and others spending, monthly house rent, cloths, transport

and other cost, annual education payment, durable materials (e.g., television, phone, furniture, vehicles), ceremonies and others spending's, overall household annual expenditure and income and patient income if available) and part six: Households financial situation outlook (rate of financial burden, coping mechanisms taken and its amount). Data was collected by eight trained data collectors in a face-to-face exit interview with study participants (patients and/or care givers). In addition, patient medical chart was reviewed to collect clinical information of patients which also helped in estimating patient treatment/diagnostic expenditure.

### 5.8. Data quality assurance

A two-day training was given to all data collectors and daily supervision was conducted by the principal investigator to guide and correct any ambiguity occurred during the data collection process. Data was also checked every day for its completion.

### 5.9. Data analysis and interpretation

Data was coded, entered into and analyzed using STATA version 13. A statistical software (http://www.stata.com) descriptive analysis (mean, median, and frequencies) was computed to present the data. Multivariable logistic regression was employed to explore the relationship between CHE and the independent variables.

### 5.10. Measurements

Magnitude of CHE was estimated using Wagstaff and Van Doorslaer approach and was considered catastrophic when a one-year patient households OOP expenditure for cancer care exceeded 10% of total annual household income. Therefore, these households incurred a catastrophic expenditure assumed as catastrophic payment head counts ($H_{cat}$) (Wagstaff and Van Doorslaer, 2003).

$$\frac{Ti}{Xi} > \text{Zcat} \quad \text{----------(2)}$$

$$\text{Ei=1 if } \frac{Ti}{Xi} > Z_{cat} \text{ and Ei=o when, } \frac{Ti}{Xi} < Z_{cat} \quad \text{----------(3)}$$

$$H_{cat} = \frac{1}{n}\sum_{i=1}^{n} \text{Ei} = \mu_E \quad \text{----------(4)}$$

Where:

$T_i$ = overall OOP expenditure

$X_i$ = household income

$Z_{cat}$ = threshold used to define CHE

$H_{cat}$ = proportion of households (head counts) with a catastrophic payment

n = total sample size

E = status of CHE

Health care service OOP expenditure is direct payment made to health-care providers on receiving a service excluding prepayment, reimbursement, and other sources of payment mechanisms (Wagstaff and Van Doorslaer, 2003; Xu *et al*., 2003; Xu *et al*., 2007). However, households can use deferent mechanisms of compensation strategies to solve their financial burden. These households were used different coping strategies and were classified into two as expenditure covered by themselves and by other mechanisms to figure out the overall expense covered by the household themselves only and to estimate the CHE level of cancer care.

To see households subjective rate of self-reported financial burden, respondents were asked to rate their current household economic situation outlook due to cancer care imposed financial burden up on the household compared to the past; as very good, good, medium/similar, bad and very bad. Later, it was classified as manageable for very good, good and medium/similar and unmanageable for those rated it as bad and very bad.

Expenditure was estimated as all expenditures spent for cancer care prior to the interview time in the last year of medical service upon possible probing approaches to minimize recall bias. This expenditure includes both medical and nonmedical expenditure. Medical expenditure were all expenditures related to consultation, investigation, medicine, bed and traditional medicine expenditure. On the other hand, nonmedical expenditure includes transportation, food, and other accommodation expenditures associated with the disease care. This was also presented as, outpatient (consultation, investigation, medicine, and other spending associated with outpatient care), and inpatient (consultation, investigation, medicine, bed and other expenditure associated

with inpatient care) expenditures. There are controversies on estimating cost data especially when the data have a skewness nature. Some studies report mean is a reasonable choice although it could be affected by skewed distribution of cost in order to inform health care policy decisions (Barber, 2000; White, 2003). Others studies report it to be reported using median since it is not affected by skewness although it only shows the position of the distribution (Manikandan, 2011). However, we used both mean and median measurements to provide a full picture of the estimation which might help in the health policy decision making and resource allocation.

Household income and expenditure were measured based on respondents' self-reported daily or monthly income and expenditure, respectively. This was then converted to annual household income and expenditure. Participants with in-kind incomes were approached for their type of income and amount. This was changed to monetary value based on the time of its exchange when it is supplied to the local market. Participants were also informed to include any type of income. All expenditures were measured and values are reported as expenditure (US$) per patient (1US$ equivalent to 23.41 Ethiopian Birr).

## 5.11. Ethical considerations

Ethical clearance was obtained from Ethical Review Committee of School of Pharmacy, Addis Ababa University (Ref No.: ERB/SOP/01/10/2018) and permission was also sought from all study hospitals. Written consent form was provided before the beginning of the interview (Annex) and they were informed about the purpose of the study and verbal consent was obtained continuing with the interview. Participants were also informed they are free to stop the interview at any time if they didn't want to continue. Anonymity and confidentiality of patient information was assured. Information was only shared with the study team; collected data are stored in a lockable cabinet and row data in entered to STATA are secured by password.

## 5.12. Operational definitions

Catastrophic healthcare expenditure: Out-of-pocket payments for cancer care that exceeds 10% of total annual household income.

Out-of-pocket expenditure: Direct payment made to health-care providers by patient or patient's household at the time of service use, i.e. excluding prepayment for health services and other payment mechanisms.

# 6. Results

## 6.1. Socio-Demographic Characteristics of Study Participants

A total of 404 participants were approached and 352 study participants were interviewed, with a response rate of 87.1%. A higher non-response rate was found to be from participants attending at private hospitals. The majority of respondents were from the public hospital. Majority 258 (73.3%) of the respondents were females and 285 (81.0%) of them were married. The mean age was 48 years (SD = 13.2) ranging from 19-87 years old. More than three-fourth 282 (80.0%) of the study participants were in the productive age category (18-64) years. About two-third (59.4%) of these study participants were resided out of Addis Ababa (Table 1).

Table 1:- Socio-demographic and economic characteristics among patients attending cancer treatment services in Addis Ababa, Ethiopia 2018.

| Characteristics | Frequency (N) | Percentage (%) |
|---|---|---|
| Type of health facility | | |
| Public | 331 | 94.0 |
| Private | 21 | 6.0 |
| Gender | | |
| Female | 258 | 73.3 |
| Male | 94 | 26.7 |
| Ethnicity | | |
| Amhara | 126 | 35.8 |
| Oromo | 120 | 34.1 |
| Tigray | 33 | 9.4 |
| Gurage | 25 | 7.1 |
| Others | 48 | 13.6 |
| Religion | | |
| Orthodox | 255 | 72.4 |
| Muslim | 69 | 19.6 |
| Protestant | 26 | 7.4 |
| Catholic | 2 | 0.6 |
| Marital status | | |
| Married | 285 | 81.0 |
| Single | 34 | 9.6 |
| Divorced | 19 | 5.4 |

| | | |
|---|---|---|
| Widowed | 14 | 4.0 |
| Residence | | |
| Out of Addis Ababa | 209 | 59.4 |
| Addis Ababa | 143 | 40.6 |
| Education | | |
| No formal education[a] | 127 | 36.1 |
| College/certificate and above | 122 | 34.6 |
| Grade 9-12 | 69 | 19.6 |
| Grade 1-8 | 34 | 9.7 |
| Occupation | | |
| Housewife/Husband | 139 | 39.5 |
| Employed (private/government) | 102 | 29.0 |
| Own private business | 49 | 13.9 |
| Retired | 36 | 10.2 |
| Others[b] | 26 | 7.4 |
| Household economic income quintile | | |
| Lowest | 74 | 21.0 |
| Second | 74 | 21.0 |
| Middle | 64 | 18.2 |
| Fourth | 71 | 20.2 |
| Highest | 69 | 19.6 |
| Household economic expenditure quintile | | |
| Lowest | 71 | 20.2 |
| Second | 70 | 19.9 |
| Middle | 72 | 20.5 |
| Fourth | 85 | 24.1 |
| Highest | 54 | 15.3 |

[a]: include illiterates and individuals able to read and write due to informal education

[b]: include individuals with no work/stopped to work.

## 6.2. Clinical Information of Study Participants

About 130 (36.9%) of the study participants were breast cancer patients followed by cervical cancer 58 (16.5%) and colorectal cancer 46 (13.1%). All patients have used supportive treatments. Majority of patients 313 (89.0%) have taken chemotherapy on their treatment course and 155 (44.0%) of them were on 4-6 cycles of chemotherapy. Majority 223 (63.4%) of respondents had history of visit at private health facility during the course of the disease (Table 2).

Table 2: - Clinical information of patients attending cancer treatment services in Addis Ababa, Ethiopia 2018.

| Clinical variables | N (%) |
|---|---|
| Type of cancer | |
| Breast cancer | 130 (36.9) |
| Cervical cancer | 58 (16.5) |
| Colorectal cancer | 46 (13.1) |
| NPC[a] | 13 (3.7) |
| Others[b] | 105 (29.8) |
| Type of treatments taken[c] | |
| Supportive treatment | 352 (100) |
| Chemotherapy | 313(89.0) |
| Surgery | 201 (57.1) |
| Radiotherapy | 176(50.0) |
| Hormonal | 80 (22.7) |
| Cycle of treatment taken | |
| 4-6 cycles | 155 (44.0) |
| 1-3 cycles | 97 (27.6) |
| >6 cycles | 61 (17.3) |
| On other treatment options | 39 (11.1) |
| Private health facility visit history | |
| Yes | 223 (63.4) |
| No | 129 (36.6) |

[a]: NPC = Nasopharyngeal cancer,

[b]: Other cancer types including (skin, oral, lung, liver, esophageal, bone, Hodgkin lymphoma, non-Hodgkin lymphoma, thyroid and other unspecified but pathologically and clinically confirmed tumors).

[C]: Frequencies and percentage will not be added up because multiple responses were possible.

### 6.3. Overall, Outpatient and Inpatient Service Expenditure.

The overall, outpatient and inpatient cancer diagnostic and treatment service expenditures of the last twelve months were estimated. The average overall expenditure was estimated to be $2366 (SD: $4262), median: $1709 (IQR: $1153--2424) and for inpatient services accounted two-third of the expenditure with mean of $1584 (SD: $4002), median: $1067 (IQR: $641-1580). The remaining expenditure was spent for outpatient service with mean of $782 (SD: $1468), median: $557 (IQR: $256-940). The average duration in months since disease diagnosed was estimated to be 28 months (SD: 28) and average treatment initiated since confirmation was 25 months (SD: 27) with average (median) total outpatient and inpatient visit of 15 (SD:14) and 5 (SD: 4) times respectively.

Table 3:- Mean overall expenditure per patient by different subgroups among patients attending cancer treatment services in Addis Ababa, Ethiopia 2018.

| Subgroup variables | Mean overall expenditure ($) per patient |
|---|---|
| By type of cancer | |
| Breast cancer | 2325 |
| Cervical cancer | 1308 |
| Colorectal cancer | 2931 |
| NPC | 1652 |
| Others | 2842 |
| By type of health facility | |
| Private | 5341 |
| Government | 2177 |
| By history of visit at private health facility | |
| Visited | 2870 |
| Not visited | 1494 |
| No history of visit at private health facility by type of cancer | |
| Breast cancer | 1658 |
| Cervical cancer | 1074 |
| Colorectal cancer | 2144 |
| NPC | --- |
| Others | 1446 |
| Have a history of visit at private health facility by type of cancer | |
| Breast cancer | 2799 |
| Cervical cancer | 1616 |

| | |
|---|---|
| Colorectal cancer | 3150 |
| NPC | 1652 |
| Others | 3454 |
| By their catastrophic level | |
| Not catastrophic | 1990 |
| Catastrophic | 2495 |
| By gender | |
| Male | 2704 |
| Female | 2243 |
| By marital status | |
| Single | 3751 |
| Divorced | 2598 |
| Married | 2244 |
| Widowed | 1174 |
| By residence | |
| Addis Ababa | 2223 |
| Out of Addis Ababa | 2464 |
| By educational level | |
| No formal education | 1674 |
| Grade 1-8 | 1685 |
| Grade 9-12 | 2306 |
| College/certificate and above | 3310 |
| By occupational status | |
| Retired | 3229 |
| Employed (private/government) | 2455 |
| Own private business | 2396 |
| Housewife/Husband | 2164 |
| Others | 1842 |

Patients with colorectal cancer, patients who attend at private health facilities, patients who have previous history of visit at private health facilities, patients who live out of Addis Ababa, spent higher mean of overall cancer care expenditure compared to their counterparts (Table 3).

### 6.4. Medical and Non-medical Expenditure

The direct mean and median medical expenditures were estimated to be $1978 (SD: $3554) and $1394 (IQR: $917-1982), per patient respectively. On the other hand, the patients had a mean and median non-medical expenditures of $388 (SD: $993) and $222 (IQR: $122-461), respectively. The medical expenditure constituted the highest expenditure (83.6%), taking the huge share of the overall expenditure per patient for cancer. The mean expenditure on traditional medicines was also estimated to be $7 (SD: $65).

### 6.5. Magnitude of Catastrophic Health Expenditure for the Diagnosis and Treatment of Cancer

The average headcount adult equivalent income and expenditure was found to be $1821 (median: $1220) and $1111 (median: $949), respectively. Moreover, the mean of annual unadjusted household income and expenditure was estimated to be $4997 (median: $3076) and $3006 (median: $2563), respectively. The magnitude of CHE of cancer care was found to be 74.4% (95% CI: 69.6-78.7). Patients in the fourth income quintile faced higher CHE. While, substantial CHE was observed for patients in the middle expenditure quantile (Table 4).

Table 4:- CHE by household income and expenditure quintiles among patients attending cancer treatment services in Addis Ababa, Ethiopia 2018.

| Quintile | Proportion (%) | Std. Err. | [95% Conf. Interval] |
|---|---|---|---|
| **Household income quintile** | | | |
| Lowest | 66.2 | 5.5 | 54.6-76.1 |
| Second | 78.4 | 4.8 | 67.4-86.4 |
| Middle | 78.1 | 5.2 | 66.2-86.7 |
| Fourth | 84.5 | 4.3 | 74.0-91.2 |
| Highest | 65.2 | 5.8 | 53.2-75.6 |
| **Household expenditure quintile** | | | |
| Lowest | 67.6 | 5.6 | 55.8-77.5 |
| Second | 72.8 | 5.3 | 61.2-82.1 |
| Middle | 86.1 | 4.1 | 75.9-92.4 |
| Fourth | 78.8 | 4.4 | 68.7-86.3 |
| Highest | 63.0 | 6.6 | 49.3-74.8 |
| **Overall** | **74.4** | **2.3** | **69.6-78.7** |

Based on participants self-report, it was estimated that 69.0% (95% CI: 64.0-73.7) of participants' household were faced with unmanageable financial burden which leads to a financial crisis in the household. In counterpart, 31% (95% CI: 26.3-36.0) of patients' household faced with a manageable financial burden.

## 6.6. Factors Associated with Catastrophic Health Expenditure of Cancer Diagnosis and Treatment.

The multivariate logistic regression analysis revealed that patients who took greater than six cycles of chemotherapy (AOR: 3.64; 95% CI: 1.11-11.92), and age (AOR: 1.03; 95% CI: 1.01-1.06) were factors statistically associated with CHE of cancer diagnosis and treatment (Table 5).

Table 5:- Factors associated with CHE and proportion of CHE among subgroups of patients attending cancer treatment services in Addis Ababa, Ethiopia 2018.

| Variables | Proportion of CHE N (%) | COR (95%CI) | AOR (95%CI) |
|---|---|---|---|
| Type of Health Facility | | | |
| Private | 16 (76.1) | 1.11 (0.39-3.11) | 1.29 (0.38-4.40) |
| Public | 246 (74.3) | 1.00 | 1.00 |
| Type of cancer | | | |
| Breast cancer | 94 (72.3) | 1.10 (0.55-2.14) | 0.72 (0.31-1.66) |
| Colorectal cancer | 32 (69.6) | 0.95 (0.41-2.21) | 0.68 (0.22-2.10) |
| NPC | 11 (84.6) | 2.28 (0.46-11.40) | 2.92 (0.41-20.7) |
| Others | 84 (80.0) | 1.66 (0.79-3.48) | 1.33 (0.52-3.43) |
| Cervical cancer | 41 (70.7) | 1.00 | 1.00 |
| Cycles of chemotherapy taken | | | |
| ≤ 3 cycles | 71 (73.2) | 1.21 (0.54-2.74) | 1.25 (0.47-3.35) |
| 4-6 cycles | 113 (72.9) | 1.20 (0.55-2.57) | 1.31 (0.52-3.43) |
| > 6 cycles | 51 (83.6) | 2.27 (0.87-5.92) | 3.64 (1.11-11.92) |
| On other treatment options | 27 (69.2) | 1.00 | 1.00 |
| Private health facility visit | | | |
| No | 97 (75.2) | 1.06 (0.65-1.75) | 1.19 (0.66-2.13) |
| Yes | 165(74.0) | 1.00 | 1.00 |
| Age | --- | 1.01 (0.99-1.03) | 1.03 (1.01-1.06) |
| Household size | --- | 0.95 (0.87-1.04) | 0.95 (0.85-1.07) |
| Gender | | | |
| Male | 72 (76.6) | 1.17 (0.67-2.03) | 1.01 (0.41-2.46) |
| Female | 190 (73.6) | 1.00 | 1.00 |
| Marital status | | | |

| | | | |
|---|---|---|---|
| Single | 26 (76.5) | 1.14 (0.50-2.63) | 1.91 (0.60-6.13) |
| Divorced | 14 (73.7) | 0.98 (0.34-2.82) | 1.20 (0.34-4.20) |
| Widowed | 11 (78.6) | 1.29 (0.35-4.74) | 1.48 (0.31-6.96) |
| Married | 211 (74.0) | 1.00 | 1.00 |
| Residence | | | |
| Out of Addis Ababa | 158 (75.6) | 1.16 (0.72-1.89) | 1.07 (0.61-1.86) |
| In Addis Ababa | 104 (72.7) | 1.00 | 1.00 |
| Level of Education | | | |
| No formal education | 93 (73.2) | 0.93 (0.53-1.64) | 0.47 (0.18-1.26) |
| Grade 1-8 | 28 (82.4) | 1.59 (0.60-4.20) | 0.99 (0.30-3.26) |
| Grade 9-12 | 50 (72.5) | 0.89 (0.46-1.75) | 0.59 (0.25-1.42) |
| College and above | 91 (74.6) | 1.00 | 1.00 |
| Occupation | | | |
| Own private business | 39 (79.6) | 1.40 (0.62-3.20) | 2.21 (0.79-6.17) |
| Housewife/Husband | 107 (77.0) | 1.21 (0.67-2.17) | 2.30 (0.87-6.01) |
| Retired | 22 (61.1) | 0.56 (0.25-1.26) | 0.48 (0.17-1.33) |
| Others | 19 (73.1) | 0.98 (0.37-2.58) | 1.17 (0.30-4.55) |
| Employed private/government | 75 (73.5) | 1.00 | 1.00 |
| Income quintile | | | |
| Lowest | 49 (66.2) | 1.04 (0.52-2.09) | 0.85 (0.18-3.86) |
| Second | 58 (78.4) | 1.93 (0.92-4.06) | 1.30 (0.38-4.38) |
| Middle | 50 (78.1) | 1.91 (0.88-4.12) | 1.21 (0.41-3.57) |
| Fourth | 60 (84.5) | 2.91 (1.29-6.55) | 2.66 (0.97-7.29) |
| Highest | 45 (65.2) | 1.00 | 1.00 |
| Expenditure quintile | | | |
| Lowest | 48 (67.6) | 1.27 (0.58-2.58) | 1.49 (0.30-7.34) |
| Second | 51 (72.8) | 1.58 (0.74-3.38) | 1.52 (0.42-5.50) |
| Middle | 62 (86.1) | 3.65 (1.53-8.68) | 3.04 (0.91-10.17) |
| Fourth | 67 (78.8) | 2.19 (1.02-4.67) | 1.49 (0.52-4.33) |
| Highest | 34 (63.0) | 1.00 | 1.00 |

## 6.7. Financial Burden Coping strategies

Majority of households had used their own household savings (85.5%) for health payment. However, a considerable percentage of households had got a substantial financial support from their relatives, religious and other nongovernmental organizations to cover for the financial burden imposed to the household. The remaining expenditure was covered by selling assets and borrowings as illustrated in the table below (Table 6).

Table 6:- Patients' household coping strategies used for financial constraints of cancer care in Addis Ababa, Ethiopia 2018.

| Coping strategies | Frequency (n) | Percentage (%) |
|---|---|---|
| Savings* | 301 | 85.5 |
| Financial support** | 151 | 43.0 |
| Selling assets *** | 42 | 12.0 |
| Borrowings **** | 30 | 8.5 |

*: It includes any method of household savings and sources from the household member (including Eqqub and iddir).

**: Financial source from relatives, NGOs, religious organization and others source of payment which are nonrefundable.

***: Any means of payment made by selling any household assets like land, property, livestock, jewellery and other household items

****: Any types of borrowing from financial institutions taken as a debt including from individuals

NB: Frequencies and percentage will not be added up because multiple responses were possible.

## 7. Discussions

This study is the first of its kind to assess the magnitude of CHE, factors associated with CHE, and its coping strategies for cancer care in Ethiopia. The average overall cancer care expenditure was half of the average unadjusted household annual income and nearly three-fourth of the average unadjusted household annual expenditure which is higher compared to Australian patients (Newton *et al*., 2018). This was however lower than the findings of other studies in which patients spent 59.9% of household annual income (Huang *et al*., 2017). When the overall expenditure is compared to the per capital income of the population (World Bank, 2018), it was very high which could be an indicative of the fact that uncountable number of patients are at home and are dying without getting any treatment and diagnostic services because of the catastrophic expenditure.

A large proportion of patients had visited private health care facilities which might be due high and rapidly increasing prevalence of the disease and limited availability of public treatment/diagnostic centers. Patients who had a history of private health facilities' visit were exposed to a doubled OOP expenditure as compared to those with no history of visit. A study by Tripathy *et al*., (2016) documented a similar finding.

Concur to other study (Pourreza *et al*., 2017), the present study also showed that the average overall expenditure of colorectal cancer patients was higher than in other cancer types This might be due to the extended duration of treatment days and multiple combination regimen of treatment used which could result higher OOP expenditure (Stintzing, 2014).

Furthermore, although it is not statistically significant the variation of mean overall expenditure could be due to the varied payment system among those health facilities, income status of households, disease types, intervention options and accessibility of those health facilities. For instance, patients residing out of Addis Ababa have incurred higher OOP expenditure compared to patients residing in Addis Ababa. This was consistent to others studies where higher OOP expenditure was observed among patients coming from outside of areas where medical service centers were located (Tolla *et al*., 2017; Newton *et al*., 2018). The contributing factors could be the additional expenditures spent for non-medical services like transportation and other side costs.

The present study revealed that the magnitude of CHE of cancer care among patients in Ethiopia was found to be 74.4%, This was found to be very high as compared to study conducted in Korean (39.8%) (Choi *et al.*, 2014). Although direct comparison seems infeasible because of the deferent threshold level of CHE, it was higher as compared to other Asian countries (47.8%-67.9%) (Delavari *et al*., 2014; Action Study Group, 2015; Azzani *et al*., 2017). But, this was lower compared to Indian breast cancer patients (84%) (Jain and Mukherjee, 2016). This high CHE might be due to the limited number of treatment/diagnostic centers which can increase its side expenditures and frequent stock out of prescribed medicines. A higher level of CHE was documented when compared to the CHE among cardiovascular patients in Ethiopia (27%) (Tolla *et al*., 2017). Limited geographic access to cancer care centers, and higher cost of medicines are reasons for such deference. The government is providing those oncology medicines in a fifty percent subsidized price. However, due to the rapid increase of the disease burden and limited availability of health facilities, there is imbalance between the supply and demand of those pharmaceutical products. This might result patients' household to face to other intolerable financial burden.

The level of CHE also showed variation among income quintiles although it was not statistically significant. Other studies revealed that the lowest income category was highly associated with catastrophic expenditure (Bernard *et al*., 2011; Action Study Group, 2015; Tripathy *et al*., 2016). However, in the present study the fourth income strata were highly faced with CHE than the others. This could be due to patients with lower income status might not visit and purchase for expensive services not available with affordable price although the disease condition gets complicated but these fourth income quintiles might pay while facing catastrophic expenditure.

The level of CHE and self-reported financial pressure was simultaneously high and approximately parallel. This self-reported unmanageable rate of financial burden was lower compared to what was documented in China (75%) (Huang *et al*., 2017). But, this was higher as compared to the finding of US which showed an overall financial distress level of 47% (Meisenberg *et al*., 2015). The presence of financial sharing policy and difference in income status of the population would influence the level of financial distress across countries, indicating the need to institute risk pooling and sharing mechanisms.

Similar to another studies age of patients was among the predicting factors for CHE (Mamo *et al*., 2017; Newton *et al*., 2018). The reasons for increasing CHE with age increases could be attributed to disease complication and income sources (as majority of participants are in the productive age). Patients who took more than six cycles of chemotherapy were significantly associated with CHE. This could be due to the stage of the disease and treatment failure which would enforces them to incur another additional re-treatment phase apparently increasing the burden of financial expenditure due additional medical expenditures (Kutikova, 2005; Blumen, 2016; Kakushadze, 2017).

Similar to other studies, patient' households use more than one coping strategies to overcome their financial distress with the most prevalent being borrowing, selling assets, spending savings and financial aids (Chakrabarty *et al*., 2017). Among those, household saving was the main coping strategy used in this study which was similar to other studies (Bogale *et al*., 2005; Engelgau *et al*., 2012; Tolla *et a*l., 2017). However, some other studies indicated that borrowing and selling assets were the major coping strategies (Bogale *et al*., 2005; Leive and Xu, 2008; Kruk et al., 2009; Pourreza *et al*., 2017). This could be due to the varied economic income status and saving culture of households which can affect the coping mechanism of patients' family (Mirach and Hailu, 2014; Zwane, 2016).

## 8. Limitations of the study

This study obtained the required data. it collected disease course duration of illness, treatment taken since initiated, number of outpatient visit and inpatient hospitalization, monthly and yearly cost of diagnostic and treatment services, yearly household income and expenditure, and compensation strategies which a given patient household could use.

However, the survey was not without limitations. Due to the nature of data collection recall bias is one of the problem. Getting reliable information on the household annual income and expenditure was also another problem.

Since the study design was hospital based in which much number of population could not access because of affordability and limited availability most patients' households were more likely with relatively higher income status.

## 9. Conclusion

A substantial number of cancer patients incurred a catastrophic level of cancer care expenditure. About 74.4% of patients with cancer experienced CHE with a mean of overall cancer expenditure $2366 per patient (median: $1708). Medical expenditure accounted the highest percentage (83.6%) with mean medical and nonmedical expenditures of $1978 (median: $1394) and $388 (median: $222) per patient, respectively. The inpatient service constituted two-third of the overall expenditure. Patients who took greater than six cycles of chemotherapy and age were statistically associated factors with CHE. Household savings was the main coping strategy followed financial support, selling asset, and borrowing in descending order.

## 10. Recommendations

Based on the findings of the study the following recommendations could be pointed out: -

- Although a large proportion of participants used to cover their financial expenditure by themselves, indispensable number of participants sold their assets and get borrowed, which underline a large number of population is exposed to financial catastrophe and also confirm the need of financial risk preventing mechanism. Thus, all-encompassing and momentarily mobilizing of the health insurance scheme is urgently needed to ensure financial protection and realize universal health coverage.
- A comparative analysis should be employed between the current intervention mechanism and other prevention strategies like risk minimizing, vaccination and screening programs. Based on this, proper policies should be developed and enforced with appropriate decision making and implementation strategies.
- An adequate amount of medicines, medical equipment and supplies should be available in a sustainable way at those available treatment centers which can prevent patients from intolerable financial burden.
- Other centers should be constructed and expanded to secure the accessibility and availability of cancer diagnostic and treatment centers across the country.
- Nationwide studies should be conducted that can include a large population and different study groups to answer what proportion of patients get to the level of impoverishment because of these disease conditions to magnify the catastrophic level and for proper decision making. Within this, the overall annual household income and expenditure should be clearly documented.

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## Annexes

Annex I: Participant information and consent form (English version)

Hello, Dear participant! My name is _____. I am representing the School of Pharmacy, Addis Ababa University. I am here to collect data for a research entitled "Catastrophic Healthcare Expenditure and Coping Strategies among Patients Attending Cancer Treatment Services in Addis Ababa, Ethiopia: A Hospital-Based Cross-Sectional Study". The research investigator is **Gebremicheal Gebreslassie,** a Masters student in Pharmacoepidemiology and Social Pharmacy at Addis Ababa University, School of Pharmacy. It is a hospital based cross sectional study to be conducted at public and private hospitals providing cancer treatment and diagnostic services. The purpose of this study is to determine the catastrophic health expenditure and its impact on patient' households due to cancer patient living with them. In addition, this will explore the associated factors contributing to the catastrophic level of expenditure of the disease and the coping strategies.

Hence, conducting this study will be used as a basic input to policy makers and other responsible bodies of the country which could be an input for strengthening the risk pooling and payment mechanisms and other prevention strategies development which will prevent a catastrophic level of financial expense and maintain the health states of cancer patients.

Becoming part of study will not have any payment you gain but the study finding will give an insight for policy makers that might have an influence on the current health care practice. It might take you 25-30 minutes to finish the interview. You are being part of the study by chance and you will not got any harm because of participating in the study. Your participation in this study is completely voluntary. You have the right to withdraw from the study in any time if you want. We reassure all your responses will remain strictly confidential and will be handled in secured manner. The information you provide will be used only for the purpose of the study stated above. Therefore, I would like to confirm your consent to be part of the study.

Do you agree to be part of the study?

**Agree** ☐ **Disagree** ☐

Thank you very much to be part of the study.

If you have any concerns you can contact the following bodies;

- ✓ Research investigator:
    - Name: Gebremicheal Gebreslassie
    - Phone number: +251 909 270 062
    - E-mail: gebremicheal.kassahun@gmail.com
- ✓ Research Advisors:
    - Name: Dr. Teferi Gedif
    - E-mail: tgedif@gmail.com or
    - Name: Gebremedhin Beedemariam
    - E-mail: gebremedhin.beedemariam@aau.edu.et

Annex II: Data collection tool in English version

Catastrophic Healthcare Expenditure and Coping Strategies among Patients Attending Cancer Treatment Services in Addis Ababa, Ethiopia: A Hospital-Based Cross-Sectional Study, Interview questionnaire Addis Ababa, Ethiopia 2018.

| | |
|---|---|
| Name of the health facility: _____<br>Type of health Facility: □ Public □ Private<br>Interviewer's name: _____<br>Interviewer's signature: _____ | Code no: _____<br>Date of the interview: ____/___/___<br>Interview time began: _____<br>Interview time taken: _____Minutes |

**I: Socio-demographic characteristics of the patient**

| S.no | Questions | Respondent response |
|---|---|---|
| 100 | How old are you? | _____years/_____E.c |
| 101 | What is your gender? | □1Male □2Femle |
| 102 | What is your ethnicity? | □1Oromia □2Amhara □3Tigray □4Gurage □5Others (specify) _____ |
| 103 | What is your religion? | □1Orthodox □2Muslim □3Protestant □4Catholic □5Others (specify) _____ |
| 104 | What is your marital status? | □1Single □2Married □3Divorced □4Widowed |
| 105 | Where is your residence area? | □1Addis Ababa □2Out of Addis Ababa |
| 106 | What is your level of education? | □1No formal education □21-8 Grade □39-12 Grade □4College and above |
| 107 | What is your current occupation? | □1Farmer □2Government employee □3Private employee □4Own private business □5Retired □6Housewife/Husband □7Student □8Others (specify)_____ |
| 108 | What is the household composition? | Total household size _____<br>1Children (<16years old) _____<br>2Adult (17-64 years old) _____<br>3Geratrics (>65years old) _____ |

**II: Medical information of the patient**

| | | |
|---|---|---|
| 200 | Which type of cancer was you diagnosed? | □1Breast cancer □2Cervical cancer<br>□3 Colorectal Cancer □4Prostate cancer<br>□5Others (please specify) _____ |
| 201 | When was your case confirmed? | ___/____/___ E.C or _____months before |
| 202 | What was the stage of your disease? | _____ stage |
| 203 | When did the treatment protocol initiated? | _____ months/_____days before<br>□2on the day disease confirmed |
| 204 | Which did you receive so far?<br><br>(multiple answers possible) | □1Chemotherapy □2Radiotherapy<br>□3Surgery □Hormonal<br>□Supportive treatment<br>□6Others (specify)_____ |
| 205 | On which treatment cycle are you now/ was you? | _____cycle (for chemotherapy)<br>□2 on other treatment options |
| 206 | Did you ever visit private health facilities before? | □1Yes □2No |

**III: Outpatient department (OPD) care expenditure (skip to part IV if you don't incur for OPD service before)**

| | | |
|---|---|---|
| 300 | Over the last 12 months (total visit), how many times did you visit oncology service providing health facilities for your CA? | _____times |
| 301 | During this month of outpatient visit, how much ETB did you spent for the following services?<br><br>(Please put your answer in ETB) | **Total_____**<br>1Consultation cost_____<br>2Investigation/imaging cost_____<br>3Medicines cost_____<br>4Transportation cost_____<br>5Patient income lost_____<br>6Care giver income lost_____<br>7Food & other related costs _____ |
| 302 | How much was the total OPD expenditure for your cancer in the last 12 months? | _____ETB/12 months |

| | | |
|---|---|---|
| 303 | During the last 12 months, how much did you spend for traditional healing/treatment practice? | _____ETB/12 months<br>(If no, skip to part IV) |
| **IV: Inpatient Department (IPD) care expenditure (skip to part V if you don't incur for IPD service before)** | | |
| 400 | Over the last 12 months, how many times did you visit oncology service providing health facilities for your cancer? | _____times |
| 401 | During this month inpatient admission, how much ETB did you spent for the following services:<br>(Please put your answer in ETB) | **Total_____**<br>1Consultation cost_____<br>2Investigation/imaging cost_____<br>3Medicines cost_____<br>4Transportation cost_____<br>5Hospital bed cost _____<br>6Patient income lost_____<br>7Care giver income lost_____<br>8Food & other related costs_____ |
| 402 | How much was the total inpatient admission cost (12 months cost)? | _____ETB /12 months |
| 403 | During the last 12 months, how much did you spend for traditional healing/treatment practice? | _____ETB/12 months<br>(If no, skip to part V) |
| **V: Patient's household essential consumptions and income (Please put your answer in ETB)** | | |
| 500 | On average in the last 7 days, how much does your household spend for food and food items; (staple foods, fruits and vegetables...) | _____ETB/Week |
| 501 | In the last 30 days, what was household expense for: | Total_____/Month<br>1Housing and utilities (Rent, electricity, heating, water, telephone…) _____<br>2Clothing _____<br>3Transportation _____<br>4Household health care cost_____<br>5Recreation and entertainment _____ |

| | | |
|---|---|---|
| | | 6Other goods and services? (specify) _____ |
| 502 | In the last 12 months, how much did your household spend on; | 1Education fees and supplies _____<br>2Durable goods (televisions, phones, furniture, vehicles...) _____<br>3Rituals, gifts or ceremonies (funerals, birthdays, wedding) _____<br>4Health-related items _____<br>5Other goods and services (property, land, livestock, cleaning services, repair services…) _____ |
| 503 | Overall, what was your household's overall expenditure? | _____ETB/1month<br>_____ETB/12 months |
| 504 | How much is the patient's current monthly income? | _____ETB/month<br>(if not, proceed to Question number, 505) |
| 505 | How much is the household total monthly income? | _____ETB/1 month<br>_____ETB/12 months |

**VI: Household financial situation outlook**

| | | |
|---|---|---|
| 600 | How would you rate the financial situation of the household compared before this case occurrence? | □1Very good □2Good □3Average/similar<br>□4Bad □5Very bad |
| 602 | Because of the disease imposed financial difficulty to the HH, which measures have you ever taken? (E.g.; you spent 28,000 ETB for CA Dx & Tx)<br>Multiple answers possible,<br><br>(Please put the amount used to cover in ETB) | 1Current income of any household members _____<br>2Savings _____<br>3Ask relatives, Religious and NGOs organizations _____<br>4Borrow from financial institutions (Banks, microfinance schemes? _____<br>5Payment or reimbursement from a health insurance plan (including private health schemes)? _____<br>6Cut down on food and other HH consumption _____<br>7Sold items (land, property, livestock, jewellery) _____<br>8Withdraw Children from school _____<br>9Reduce Medical visits/treatment _____<br>10Equb/Idir _____ |

| | | |
|---|---|---|
| | | 11Others, (specify) _____ |

Interview time taken: _____ Interview time ended: _____

Thank you very much again for your time and answers!!!

**Annex III: ተሳታፊ በጥናቱ ለመሳተፍ ፍቃደኝነት መጠየቅያ ቅጽ**

ጤና ይስጥልኝ የተከበራችሁ ተሳታፊዎች! ስሜ _____እባላለሁ፡፡ ከአዲስ አበባ ዩኒቨርስቲ ፋርማሲ ት/ቤት እወክላለሁ፡፡ ላሁን እዚህ የተገኘሁት “በኢትዮጵያ፤ በላዲሰ ላበባ ውስጥ የካንሰር ህክምና የሚከታተሉ ታካሚዎች ላሉታዊ የጤና ሽፋን ወጪና የሚጠቀምዋቸው የመከላከያ መንገዶች” በሚል የርዕስ ጥናት ሆስፒታል መሰረት ላድርገን በመንግስት ስር እና በግል በሚገኙ የጤና ተቋማት የሚታከሙ ታካሚዎች የሚሰጡን ዳታ እየሰበሰብን እንገኛለን፡፡ የምርምሩ ላስተባባሪ ገብረሚካኤል ገብረሰላሴ ይባላል፤ በላዲስላበባ ዩንቨርስቲ ፋርማሲ ት/ቤት በፋርማኮ-ኢፒዶሚዮሎጂና ሶሻል ፋርማሲ የማስተርስ ተማሪ ነው፡፡

የጥናቱ አላማ የካንሰር ምርመራና ህክምና ወጪ በታካሚ ቤተሰብ የሚያስከትለው አሉታዊ ተፅእኖ መጠን ለመዳሰስና ለማጥናት ነው፡፡ ከዚህም በተጨማሪ የታካሚ ቤተሰብ የሚጠቀምዋቸው ማገገሚያ ወይም መከላከያ መንገዶችና አጋላጭ ሁኔታዎች ወይም ምክንያቶች ያጠናል፡፡ ስለዚህ በዚህ መሠረት የሚመለከታቸው አካላት የሄን ጥናት መሠረት በማድረግ የሚያስፈልጉ ቅድመ ጥንቃቄዎችና መፍትሔዎች እንዲያስቀምጡ፤ ቤተሰቡ ካልተፈለገ አሉታዊ ኢኮኖሚያዊ ተፅእኖ እንዲታደጉና የተለያዩ ፖሊሶች እንዲያስቀምጡ ይረዳል፡፡

በዚህ ጥናት በመሳተፍዎ የሚያገኙት ክፍያ ላይኖርም ሆኖም ግን የጥናቱ ውጤት ባለው ጤና ላጠባበቅ ልምድ የራሱ ላንደምታ ሊኖሮው ይችላል፡፡ ጥናቱ ለመሳተፍ በራሰዎ ፍቃደኝነት ብቻ ሲሆን ማቃረጥ ከፈለጉ በማንኛው ግዚ የማቃረት መብት ላላቸው፡፡ የጥናቱ ተሳታፊ ለመሆን የተመረጣቹ በላጋጣሚ ሲሆን፤ የጥናቱ ተሳታፊ በመሆንዎ ለማንኛው ላደጋ ላይጋለጡም፡፡ ጥናቱ ለመጨረስ ከ15-20 ደቂቃ ልወሰድዎት ይችላል፡፡ የሚሰጡትን መረጃ ለጥናት ዓላማ ብቻ እንደሚውልና ከዋናው የጥናቱ አስተባባሪ እጅ ብቻ እንደሚቀመጥ እንዲሁም ማንኛው የመረጃ ምስጥር በጥብቅ ይቀመጣል፡፡ ጥናቱ የተሳታፊ ማንነት የሚገልፅ የለውም፡፡ በመጨረሻ ጥናቱ ሚፈለገውን መረጃ ከወሰደ በሃላ የተሰበሰበው የመረጃ ወረቀት ላግባብ ባለው መልኩ ይወገዳል፡፡ በዚህ መሰረት የጥናቱ ተሳታፊ እንድትሆኑ ፈቃደኝታችሁ ማረጋገጥ እፈልጋለሁ፡፡ ጥናቱን ለመቀጠል፡-

እስማማለሁ□ ላልስማማም □

የጥናቱ ተሳታፊ በመሆንዎ እናመሰግናለን፡፡

**ማንኛውም ሃሳብ ካሎት በሚከተሉት መንገዶች እሚመለከታቸው ኣካላት ማግኘት ይችላሉ፡፡**

**የምርምሩ ኣስተባባሪ ስም፡ ገብረሚካኤል ገብረሰላሴ**

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**Annex IV: ቃለ-መጠይቅ በኣማርኛ**

**በኢትዮጵያ፤ በኣዲስ ኣበባ ውስጥ የካንሰር ህክምና የሚከታተሉ ታካሚዎች ኣሉታዊ የጤና ሽፋን ወጪና የሚጠቀምዋቸው የመከላከያ መንገዶች፤ ለመገምገም የተዘጋጀ ቃለ-መጠየቅ: አዲስ አበባ, ኢትዮጵያ 2010 ዓ.ም**

| | |
|---|---|
| የጤና ተቋም ስም: _____ | ኮድ ቁጥር :_____ |
| የጤና ተቋም አይነት: □ የመንግስት □ የግል | ቃለ-መጠየቁ የተደረገበት ቀን: _____ዓ.ም |
| የቃለ መጠየቁ አስተባባሪ ስም:_____ | ቃለ-መጠየቁ የተጀመረበት ስዓት፡ _____ |
| የቃለ መጠየቁ አስተባባሪ ፊርማ:_____ | ቃለ-መጠየቁ የወሰደበት ግዘ፡ _____ደቂቃ |

**ክፍል ኣንድ፡ የታካሚው ማህበራዊና ዲሞግራፊክ መረጃ**

| ኮ.ቁ | ጥያቄዎች | መልስ |
|---|---|---|
| 100 | እባኮን የተወለዱበት ዓ.ም ወይም እድሜዎን ስንት እንደሆነ ይገለጽ? | _____ዓ.ም/_____ዓመት |
| 101 | እባኮን ጾታዎን ይገለጽ? | □1ወንድ □2ሴት |
| 102 | ከየትኛው ብሔር መሆኖን ይጥቀሱ? | □1ኦሮሚያ □2 አማራ □3 ትግራይ □4ጉራጌ □5ሌሎች(ይገለጽ)_____ |
| 103 | የትኛው ሃይማኖት ተከታይ መሆኖ ይጠቀስ; | □1ኦርቶዶክስ □2 ሙስሊም □3 ኘሮቴስታንት □4 ካቶሊክ □5 ሌሎች(ይገለጽ)_____ |
| 104 | የጋብቻ ሁኔታ ይጠቀስ; | □1ያላገባ/ች □2ያገባ/ች □3በፍች የተለያየ/ች □4በሞት የተለየችበት/ባት |
| 105 | የመኖሪያ ቦታ የት መሆኑን ይጠቀስ; | □1አዲስ አበባ □2ከ አዲስ አበባ ውጭ |
| 106 | የትምህርት ደረጃ ይጠቀስ; | □1መደበኛ ትምህርት ኣልተከታተለም/ችም □2ከ1-8 ክፍል □3ከ9-12 ክፍል □4ኮሌጅ/ሰርተፊከት እና ከዚያ በላይ |
| 107 | የአሁኑን የስራ ሁኔታ ይገለጽ; | □1አርሶ አደር □2የመንግስት ሰራተኛ □3የግል መስሪያ ቤት ሰራተኛ □4በራሳ ስራ የተሰማራ/ች □5ጡረታ የወጣች □6የቤት እመቤት/ባል □7ተማሪ □8ሌላ/ይጠቀስ/ |

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| 108 | የቤተሰብ ይዘቱና ብዛት በሚከተለው መልኩ ይጠቀስ; | አጠቃላይ መጠን_____<br>1ልጆች (ከ16 ዓመት በታች) ___<br>2ኣዋቂ (17-64 ዓመት) ___<br>2ጎልማሳዎች (ከ65 ዓመት በላይ) __ |

**ክፍል ሁለት፡፡- የታካሚው የጤና መረጃ**

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| 200 | የተመረመረከው/ሽው የካንሰር አይነት የትኛው ነበር? | □1 Breast ካንሰር □2Cervical ካንሰር<br>□3 Colorectal ካንሰር □4Prostate ካንሰር<br>□5ከነዚህ ውጪ (ይጠቀስ) _____ |
| 201 | ካንሰር መሆኑን የተረዳጋገጠበት ጊዜ ይጠቀስ? | _____ዓ.ም ወይም ከ_____ወራት በፊት |
| 202 | የህመሙ ደረጃ ምን ደረጃ ላይ ነበር? | _____stage/ደረጃ |
| 203 | የካንሰር ሕክምና የጀመሩበት ጊዜ ይጠቀስ? | ከ_____ወራት/__ቀናት በፊት □2ህመሙ በተረጋገጠበት ጊዜ |
| 204 | እባኮውን ያገኙትን የሕክምና ዓይነት ምልክት ያድርጉ;<br>(ከአንድ በላይ መልስ ማስቀመጥ ይቻላል) | □1ኬሞቴራፒ □2የጨረር ሕክምና<br>□3የቀዶ ሕክምና □4ሆርሞናል<br>□5ምልክቶችን ለማስታገስ የሚሰጥ ሕክምና<br>□6ሌሎች(ይዘርዘር)_ |
| 205 | በዚህ ጊዜ በየትኛው የሕክምናዎ ዙር ይገኛሉ ወይም ጨርሰዋል? | _____ዙር (ለኬሞቴራፒ)<br>□2በለሎች ህክምና ዓይነቶች |
| 206 | ከዚህ በፊት የግል ጤና ተቋም ጎብኝተው ያውቃሉ? | □1አዎ □2አልጎበኘሁም |

**ክፍል ሶስት፡ የተመላላሽ ህክምና (OPD) አገልግሎት ወጪ (እባኮዎን የዚህ አገልግሎት ካልተጠቀሙ ወደ ክፍል አራት ይለፉ)**

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| 300 | በዚህ 12 ወራት ውስጥ በአጠቃላይ ለካንሰርዎ የካንሰር ሕክምና አገልግሎቶችን የሚሰጡ የጤና ተቋማት ስንት ጊዜ ጎብኝተዋል? | _____ጊዜ |

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| 301 | በዚህ አንድ ወር ውስጥ ለተመላላሽ ሕክምና ለሚከተሉት አገልግሎቶችን ያወጡትን ወጪ ያስቀምጡ?<br><br>(እባክዎ በብር መጠን ያስቀምጡ) | ጠቅላላ_____ብር<br>1የምክር/ካርድ ወጪ _____<br>2የምርመራ ወጪ _____<br>3የመድኃኒት ወጪ _____<br>4የትራንስፖርት ወጪ _____<br>5 የጤና ተቋም አልጋ ወጪ _____<br>6የታካሚ ገቢ ወጪ(ኪሳራ)_____<br>7የአስታማሚ ገቢ ወጪ(ኪሳራ) _____<br>8 የምግብና ሌሎች (ይዘርዝር) ---------- |
| 302 | (የ12 ወር አጠቃላይ የተመላላሽ ሕክምና ወጪዎ ይቀመጥ; (የ12 ወር አጠቃላይ ወጪ) | _____ ብር/12 ወር |
| 303 | ለባህላዊ ሕክምና ስንት ወጪ አድርገዋል?<br>(የ12 ወር አጠቃላይ ወጪ) | _____ብር /12 ወር<br>(እባኮዎን ከሌለ ወደ ክፍል አራት ይለፉ) |

ክፍል ኣራት፡ የተኝቶ ታካሚ (IPD) ሕክምና አገልግሎት ወጪ (እባኮዎን የዚህ አገልግሎት ካልተጠቀሙ ወደ ክፍል አምስት ይለፉ)

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| 400 | በለፉ 12 ወራት ውስጥ ለካንሰርዎ የካንሰር ሕክምና አገልግሎቶችን የሚሰጡ የጤና ተቋማት ስንት ጊዜ ጎብኝተዋል? | _____ጊዜ |
| 401 | በዚህ አንድ ወር ውስጥ የተኝቶ ሕክምና ለሚከተሉት አገልግሎቶችን ስንት ወጪ አድርገዎል;<br><br>(እባኮዎ መጠኑን በብር ያስቀምጡ) | ጠቅላላ_____ብር<br>1የምክር/ካርድ ወጪ _____<br>2የምርመራ ወጪ _____<br>3የመድኃኒት ወጪ _____<br>4የትራንስፖርት ወጪ _____<br>5የጤና ተቋም አልጋ ወጪ _____<br>6የታካሚ ገቢ ወጪ(ኪሳራ)_____<br>7የአስታማሚ ገቢ ወጪ(ኪሳራ) _____<br>8 የምግብና ሌሎች (ይዘርዝር) _____ |

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| 402 | አጠቃላይ የ12 ወር የተኝቶ ሕክምና ወጪዎ ይጠቀስ; | _____ ብር/12 ወራት |
| 403 | ለባህላዊ ሕክምና ስንት ወጪ አድርገዋል? (የ12 ወር አጠቃላይ ወጪ) | _____ብር /12 ወራት (እባኮዎን ከሌለ ወደ ክፍል አምስት ይለፉ) |
| ክፍል ኣምስት፡ የታካሚ የቤተሰብ ወጪ/ፍጆታ እና ገቢ በተመለከተ (እባኮውን በብር ያስቀምጡ) | | |
| 500 | በዚህ 7 ቀናት ውስጥ የቤተሰብ የምግብ እና ምግብ ነክ ወጪ ይጠቀስ; | _____ብር/ሳምንት |
| 501 | በዚህ 30 ቀናት ውስጥ የሚከተሉትን የቤተሰብ ወጪ ስንት እንደሆነ በብር ይገለጽ? (እባኮውን በብር ያስቀምጡ) | ጠቅላላ _____ብር/ወር<br>1ለቤት እና ሌሎች (ክራይ፣መብራት፣ውሃና ስልክ)_____ብር<br>2ለልብስ _____ብር<br>3ለትራንስፖርት _____ብር<br>4ጠቅላላ የቤተሰብ የጤና አገልግሎት ወጪ _____<br>5የመዝናናት ወጪ _____<br>6ሌሎች (ይዘርዝር) _____ |
| 502 | በዚህ 12 ወራት የሚከተሉትን የቤተሰብ ወጪ ስንት እንደሆነ በብር ይገለጽ; | ጠቅላላ _____ብር/ወር<br>1 ለትምህርት ጠቅላላ ወጪ _____ብር<br>2 ለቋሚ ንብረት (ቴሌቭዥን፣ስልክ...) _____ብር<br>3 የባህል ወጪ (ስጦታዎች...) _____<br>4 የጤና ነክ ወጪዎች _____<br>5 ሌሎች (መጠገኛ፣ለእንሰሳት፣ዕቃዎች....) _____ |
| 503 | በአጠቃላይ የቤተሰብ ወጪ ስንት እንደሆነ ይገለጽ;- | _____ ብር /1 ወር<br>_____ ብር/12 ወራት |
| 504 | የታካሚ የአሁን ገቢ ስንት እንደሆነ ይገለጽ;- | _____ ብር/ወር (ከሌለ ወደ ጥ.ቁ 505 ይለፉ) |
| 505 | በአጠቃላይ የቤተሰብ ገቢ ስንት እንደሆነ ይገለጽ;- | _____ ብር/1ወር<br>_____ ብር/12 ወራት |
| ክፍል ስድስት፡ የቤተሰብ የገንዘብ (የፋይናንስ) አቅም በተመለከተ | | |

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| 600 | የቤተሰብ የገንዘብ አቅም የአሁን ሁኔታ ከባለፊው ሲነፃፀር እንዴት ያስቀምጡታል? | □1በጣም ጥሩ □2ጥሩ □3መካከለኛ/ተመሳሳይ □4የከፋ □5በጣም የከፋ |
| 601 | የቤተሰብ አባል ሕመሙ ተያይዞ የመጣ የፋይናንስ አሉታዊ ተፅእኖ ቤተሰቡ የትኛውን መፍትሄ ተጠቅመዋል;<br><br>(ለምሳሌ; አጠቃላይ የ12 ወራት የካንሰር የጤና ሽፋን የሕክምናና የምርመራ ወጪ 28,000 ብር ከሆነ)<br><br>(ከአንድ በላይ መልስ ማስቀመጥ ይቻላል)<br><br>(እባኩን መጠንን በብር መጠን ያስቀምጡ) | 1ከጊዜያዊ የቤተሰብ አባል ገቢ: _____<br>2ከቁጠባ (የቤተሰብ): _____<br>3የቅርብ ዘመድ፣ሃይማኖታዊ/መንግስታዊ ያልሆኑ ተቋማት በመጠየቅ _____<br>4ከአበዳሪ ተቋማት መበደር /ከባንኮች፣ከማይክሮ ፋይናንስ ተቋማት/ _____<br>5ከኢንሹራንስ ተቋማት(ማስመለስ/መከፈል)_____<br>6ከምግብና ሌሎች ወጪዎች መቀነስ/ማቋረጥ _____<br>7ዕቃዎችን መሸጥ (መሬት, የቤት እንሰሳት፣ጌጣ ጌጥ)_____<br>8ልጆች ከትምህርት ማቋረጥ _____<br>9የሕክምና ክትትል መቀነስ/ማቋረጥ _____<br>10ከዕቁብ /ዕድር _____<br>11ሌሎች (ይጠቀሱ) _____ |

ቃለ-መጠይቁ የወሰደበት ኣጠቃላይ ግዘ፡_____ ቃለ-መጠይቁ ያለቀበት ስዓት፡ _____

ለጊዜዎትን እና ለሰጡን መልስ በጣም እናመሰግናለን!