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ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF PUBLIC HEALTH
DEPARTMENT OF HEALTH ECONOMICS

**THE FINANCIAL BURDEN OF OUT OF POCKET EXPENDITURE FOR
TREATMENT OF DIABETIC MELLITUS IN ADDIS ABABA**

BY: ASTER EMIYOU

**A THESIS SUBMITTED TO ADDIS ABABA UNIVERSITY, DEPARTMENT OF HEALTH
ECONOMICS, SCHOOL OF PUBLIC HEALTH, COLLEGE OF HEALTH SCIENCES IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR MASTER'S DEGREE IN
PUBLIC HEALTH**

**ADVISORS: BERHAN TASSEW
ADIAM NEGA
TAMIRU DEMEKE**

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DECLARATION

I declare that the thesis entitled “The financial burden of out of pocket expenditure for treatment of diabetic mellitus in addis ababa” is my original work; which as not been presented for degree in AAU and/or another university. I also declare that all the sources of material used for this thesis have been fully acknowledge.

NAME: ASTER EMIYOU TESEMMA

Signature _____ Date _____

Approval of the primary Advisor

Name of the primary advisor: BERHAN TASSEW (Mrs)

Date _____ Signature _____

Addis Ababa University School of Public Health

This is certifying that the thesis prepared Aster Emiyou entitled: The financial burden of out of pocket expenditure for treatment of diabetic mellitus in Addis Ababa and submitted in fulfillment of the requirements for the degree Masters of Science in Complies with the regulations of the University and meets the accepted standards with respect to originability and quality

Signed by the examining committee

ADVISOR

SIGNATURE

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ABBREVIATIONS

AAHBS:	Addis Ababa Health Bureau
COI:	Cost of Illness
CHE:	Catastrophic health expenditure
DKA:	Diabetic ketoacidosis
DM :	Diabetic Mellitus
HHK:	hyperosmolar hyperglycemic state
IDF:	International Diabetes Federation
NCDs:	Non Communicable diseases
OOPE:	Out of Pocket Expenditure
SSA:	Sub-Saharan Africa
WHO:	World Health Organization

ABSTRACT

Background: Diabetes Mellitus is a chronic disease. Worldwide it exerts a huge toll on suffer financially and emotionally. The chronicity and complexity of the disease leads to diverse financial and psychological stress especially at the household level that exposes household for catastrophic expenditure.

Objective: The objective of this study was to assess the financial burden of out of pocket expenditure for treatment of diabetic mellitus in Addis Ababa.

Methods: A total of 434 Diabetic Mellitus patients who were living in Addis Ababa and getting health care service in public hospitals were selected using systematic random sampling technique. Data was collected using structured questionnaire and processed using STATA software.

Results: The study found that the average out-of-pocket expenditure for treatment of diabetic mellitus patients to be Birr 662 per month. As far as the overshoot catastrophic expenditure is concerned, amongst the very low-income respondents, 54% of them spent 40% or more their total expenditure on DM management. Also, on the other hand, amongst the very high income respondents, 24% of them spent 40% or more their total expenditure on DM management. Thus, the extent of catastrophic diabetic payment at low income households was 94%. The regression results also indicate that as level of education increase, respondents are less likely to encounter a catastrophic DM expenditure compare to Basic and Elementary education. From the results, it became clear that household with large households family size are less likely to encounter catastrophic DM expenditure compared to their small family size counterparts. As the patient/household member become educated, the possibility of being engaged in high income generating occupation will increase and thus, the family members tend to support each other financially. This shows that both the descriptive statistics and regression analysis produced similar results.

Conclusion: It would appear that the OOP for DM management negatively affected the financial burden of the respondents. This will however be improved when the patients and/or the household member become educated, engaged in high income generating occupation and the family members are supported each other financially.

CHAPTER 1: INTRODUCTION

1.1 Background

Diabetes mellitus is a disease caused by an absolute or relative insulin deficiency resulting in hyperglycemias. The function of insulin is to facilitate uptake of glucose from the bloodstream into various types of tissue throughout the body muscle, brain, and liver, fat where the glucose can then be converted into energy (1, 2).

Diabetic Mellitus (DM) imposes a considerable impact on health systems and societies, leading to a variety of disabling, life-threatening and expensive complications such as cardiovascular disease, retinopathy, neuropathy, and nephropathy. On the other hand, the cost implications of DM for patient perspectives are multi-level: direct medical costs and direct non-medical cost for people with DM and to the Diabetics patients (3)

The prevalence of diabetic disease rising worldwide, by the year 2030 the number of people with diabetes reach over 415 million, more than three times the value of the year 2015 (4) and also the fourth cause of death globally. The overall risk of dying among people with diabetes at young age is double compared with those without diabetes. The overall diabetes-related death is 4.9 million per year worldwide. About eight every ten people with diabetes (77%) live in low- and middle-income countries (5).

According to estimates the prevalence of DM will continue rising by 98% during the next 20 years in Africa, with dramatic implications for public health and national budgets of the poorest countries (6, 7). On the top of this, Africa has the highest percentage (62%) of undiagnosed people, who are at higher risk of developing harmful and costly complications (8).

In developing countries like Ethiopia most health-care costs must be paid by patients out-of-pocket (OOP), the cost of health care for DMs creates significant strain/load on household budgets, particularly for lower-income families (9-12).

According to WHO, catastrophic healthcare expenditure refers to situations where households make OOP payments for healthcare above a reasonable proportion (greater than or equal to 40%) of their income one of the consequences of which is decreased spending on food and other essentials. In a study which described the magnitude and distribution of OOP payments and

catastrophic expenditures in Asia, China and India were identified as relying heavily on OOP payments and having a high incidence of catastrophic payments for healthcare (13).

Studies done on Ethiopian on the perception of DM patients on anti-diabetes medication reported that direct hospital costs for patients with diabetes was significantly higher compared to controls and that substantial part of the cost related to treatment for diabetes-related complications (14). Even though there are studies conducted in Ethiopia regarding DM related cost but there is no study looking at the level of out of pocket expenditure that affects household income which may leads to catastrophic expenditure for treatment diabetic mellitus. Therefore, the aim of this study is to estimate the effect of out of pocket expenditure for treatment of diabetes mellitus on household income in Addis Ababa.

1.2 Statement of the problem

There is an increased focus on ensuring that people are protected against financial risks due to accessing care. The World Health Organization report of 2010, entitled “Health Systems Financing, the path to Universal Coverage” showed that over a billion people are unable to use the Health services they need, while a 100 million people are pushed in to poverty and 150 million people face financial hardship because they have to pay directly from their out of pocket for the health services they use as the point of delivery (15). Sub Saharan Africa (where most of the countries are in the low- and middle income levels) bears of economic burden as result of diabetes patients (16).

Diabetic was accounted 20% of the cases among patients admitted in Hospitals located in Addis Ababa, Ethiopia, which is the second most common non-communicable disease (NCD) (17) .To treat the disease about 612.2 billion US dollars were used in 2014, which represent 11% of worldwide health care expenditure. This healthcare expenditure is expected to rise by 627.3 billion in 2035. Africa allocates the lowest diabetes-related expenditure, 1% of worldwide total. About US \$ 4.5 billion, healthcare expenditure was used in 2014 and this cost is expected to rise to 6.4 billion in 2035. Ethiopia is allocating about US \$ 32.7 per person (18). So out of pocket expenditure for health care is high specially treatment of chronic disease like diabetes may be leading to catastrophic.

Studies shows that diabetes mellitus was an expensive illness to treat and manage individuals who had low income. And also evident that the largest share of costs was being borne by patients and their families. In Ethiopia there are some studies conduct related to DM patient cost that is economic burden of DM patients by Samson (2015) and direct cost of hospitalization for DM patient studied by Feleke and Enekuselassie (2007) and other related researches. However, there is no as such a notable research regarding the financial burden of out of pocket expenditure for treatment of diabetic mellitus and the extent of catastrophic OOP expenditure that may lead to impoverishment

1.3 Significance of the study

People living with diabetes mellitus together with their family commonly encounter physical, psychosocial and emotional crisis once too often as a result of spending high treatment cost. So this research will try to show the exceeding out of pocket expenditure that encounter to the patient and the findings of this report will highlight that greater focus is needed on ensuring equity and expanding financial protection measures in order to take action on providing affordable care and treatment of DM.

The evidence will also provide information how DM treatment cost affects household income that can aid decision making on resource allocation to diabetes diseases, prioritizing research funding. It can also form an empowering instrument for the diabetic patients to pool their resources together, form strong support groups and ask for government support in terms of subsidy for treatment, exemption or securing insurance policy for diabetes as a social responsibility.

CHAPTER 2: LITERATURE REVIEW

2.1 Theoretical reviews

2.1.1 Overview of Diabetic

Diabetes mellitus is a group of chronic metabolic disorders in which the body either does not produce enough or does not properly respond to insulin; a hormone produced by the beta cells in the islets of Langerhans of the pancreas. Insulin enables cells to absorb glucose in order to turn it into energy. American Diabetic Association describes diabetes as a group of metabolic disorder characterized by increased level of glucose in the blood as a result of defect in insulin secretion or improper insulin action often due to autoimmune reaction. Where there is absolute or relative insulin deficiency accumulation of glucose in the blood results (19).

Diabetes mellitus leads to acute and chronic complications. The acute complications include diabetic ketoacidosis (DKA), hyperosmolar hyperglycemic state (HHS) and hypoglycemia during treatment. While chronic complications include neuropathy, nephropathy, retinopathy, ischemic heart disease, myocardial infarction, stroke, peripheral arterial disease and impotence. Diabetes mellitus is a leading cause of blindness, end stage renal disease and stroke (20).

Globally, about 285 million people had DM in 2010, projected to double by 2030 .Diabetes is the third cause of death from disease and complications, second killer non-communicable disease, and has five fold risks of cardiovascular diseases and three fold of stroke (19).

According to the 2011 report of the International Diabetes Federation (IDF), the number of adults living with diabetes in Ethiopia was 3.5% .On the other hand, a study which is conducted in Della Referral Hospital, Ethiopian the prevalence of diabetic mellitus in 2015 showed that the estimated prevalence of DM in adult population of Ethiopia is 1.9%. Furthermore the prevalence of diabetes among older subjects in Ethiopian (age>40 years) was higher 2.4 % (21).

2.1.2 Out of pocket expenditure (OOPE)

The economic cost of diabetes can be estimated based on cost of individual units of services performed or received. It uses average cost of service estimate and applies the data to the total number of healthcare encounter related to diabetes to arrive at an estimate of cost of diabetes Generally the economic burden of diabetes comprises of direct costs, indirect costs and intangible

costs. And it imposes large economic burdens on national health care systems whereas out of pocket comprises only direct cost and both (economic burden and out of pocket) affects individuals and their family's economies

Direct cost for treatment of DM: Direct costs are those generated by the resources used in treating or coping with the condition. Direct costs are often easily measured by survey. This measurement could assume to be individual based approach (Bottom-up). Direct cost includes direct medical cost and direct non medical cost.

Direct costs components, diagnostic tests, medicines (insulin, oral drugs) and syringes, the out of-pocket expenses borne by the patients and their families, including health service provider consultation fees, medicines, tests and transport (22).

Catastrophic: Catastrophic Healthcare expenditure is very high health care spending in relation to one's income beyond which an individual begins to sacrifice consumption of basic needs and use payment coping mechanisms (interim measures to meet up with payment but in the long run increase the total cost). World Health organization suggested that 40 % and above of non-subsistence income consumption (nonfood consumption expenditure); that is income available after basic needs have been met but countries could set their thresholds based on their peculiarities.

On the other hand, non-food consumption expenditure is used as proxy to income because it is sensitive; availability of cash and income information are not easily and accurately declared in African countries (19). If health care expenditure by a household is 10 percent of total expenditure, that might be considered catastrophic, but 10 percent of nonfood expenditure probably would not (23). Hence 10 percent is commonly used as the threshold when defining catastrophic expenditure using health expenditure as a share of total expenditure. However, when using health expenditure as a share of nonfood expenditure, the common threshold is 40 percent (23-25). The rationale is that health expenditure beyond those thresholds would force households to sacrifice consumption of other basic needs, sell assets, borrow, or become impoverished (26).

Theory of Income Income is the consumption and savings opportunity gained by an entity within a specified time frame which is generally expressed in monetary terms. For the case of households

and individuals, income is the sum of all the wages, salaries, profits, interest payments, rents and other forms of earnings received within a given period of time.

2.2 Conceptual Framework

The conceptual framework depicts the relationship between independent variables, which include out of pocket expenditure, socio demographic and socio economics characteristics, and the dependent variable, which in this case is catastrophic share OOP diabetic expenditure. Figure 1 below shows the conceptual framework which will be relied upon in this study

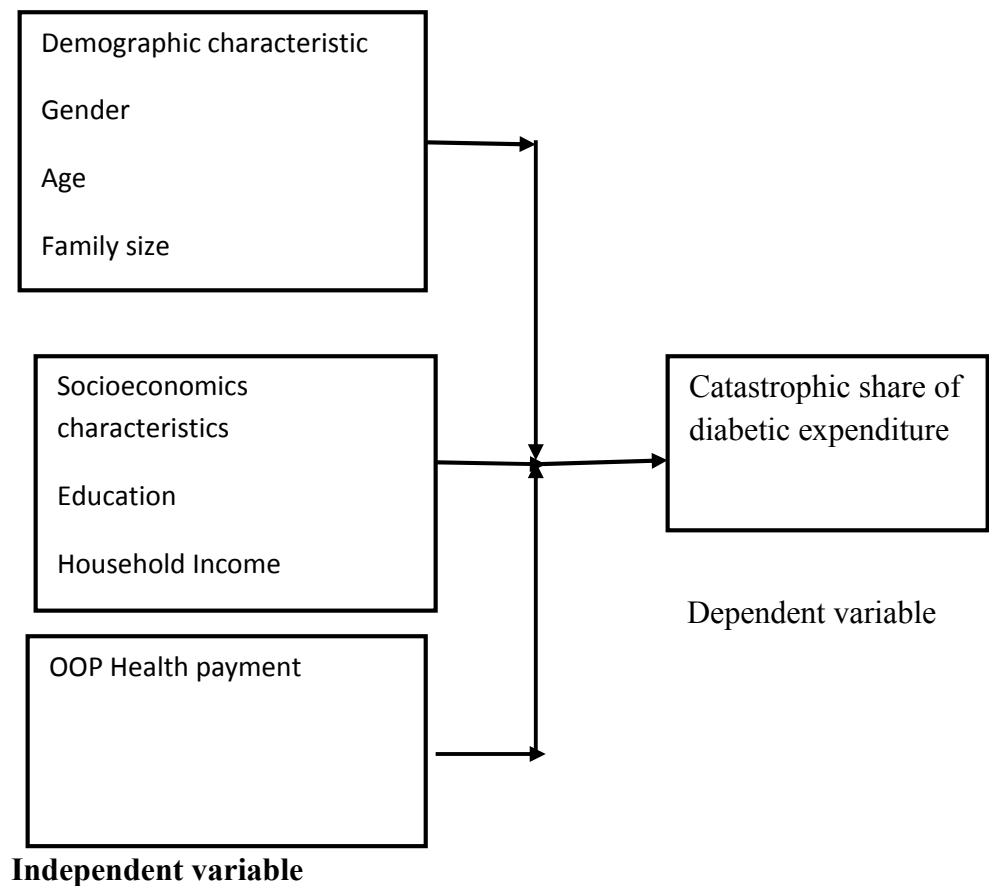


Figure 1, of conceptual framework. International Journal of Scientific and Research Publications, Volume 5, Issue 6, June 2015 ISSN 2250-3153

2.2.1 Income Levels of Individual/ Household head

Out of pocket medical expenditure may reach a non-minor share of overall expenditures; especially for low-income families. In short, medical out of pocket expenditure has been observed to lower family resources such that available income for food and shelter decreases –namely, these components used to measure poverty status decrease as medical out of pocket expenditures rise (27).

2.2.2 Socio-demographic and socio-economic characteristics

- a) **Sex:** this characteristic is needed to be considered in this study as it can have an impact on the individual's expenditure.
- b) **Age:** this characteristic is needed to be considered as it can have impact on the individual's income at different age.
- c) **Occupation:** this characteristic gives information about the social status of an individual and related income. Provides information about working conditions and hazards. Information on occupation is available in many routine data collections - Not useful with unpaid, household, informal and illegal work; the unemployed, retired and students (28).
- d) **Family size:** this characteristic is needed to be considered as it can have impact on the national economy of the country in general, and the individual household income in particular.
- e) **Education:** this characteristic is considered in this study as it can have impact on the individual household's expenditure.

2.3 Empirical Review

A study done on effect of out-of-pocket health expense on the per capita income of households revealed that out-of-pocket health expense (OOP) have a significant negative effect on income of households in the study area at 10% statistical level of significance. This implies that households, which spend more on health related issues, tend to realize lower amount of income. It also showed household size had a significant relationship with household per capita income at 1% level of significance. However, gender of household head, age of household head, access to credit, and total asset of household were found to be insignificant variables to the per capita income of households in the study area (29).

Study conducted in Brazil revealed that the greatest portion of direct costs was attributed to medication that accounts 48% (30). Similar study which is conducted in the US showed that, the largest Component of medical expenditure for diabetic patients was hospital admitted inpatient care, accounting for 43% of the total medical costs (31).

A study conducted in Spain on sample of 517 patients from endocrinology clinics, suffering type 2 DM, showed an annual cost of EUR 4,278 per patient. Direct costs, accounted for 58 % of the total costs and were appreciably higher than indirect costs, including temporary or permanent disability and working hours lost (32). A study conducted in Ghana on analysis of the financial cost of Diabetes Mellitus showed that the mean service cost constituted 22%, direct medical cost constituted 78% of the mean financial cost and drug cost was 71% of the financial cost, representing the highest cost component of diabetes management to the clinics (33). A study done in Australia on diabetic patients revealed that overall average OOPE increased by around 30% between 2007 and 2010 that accounts for almost a quarter of total healthcare costs (34). Similar study shows that observed out of pocket spending ranged from less than 6% in Namibia to over 60% in Cote d'Ivoire with an average of 40% in West African countries.(35)

A study done in Nigerian indicated that the direct cost of diabetes care per patient per month estimated mean direct cost (OOPE) was 10,950 Naira/73 USD per patient per month, with insulin about 51.1% of this direct cost, Syringes 21.9%, Consultations 3.2%, Transportation 5.5%, Self monitoring of blood glucose (SMBG):-Test strips 11.0%, laboratory investigations 4.6% and Miscellaneous (cotton wool) 2.7%. About 50% of the parents spent the least cost between 60,000 and 70,000 Naira during the initial hospitalization at the time of diagnosis of diabetes. (US Dollar = 150 Naira) (36). A study done in South-Eastern part of Ethiopia showed that almost all diabetic patients stated that drugs for DM treatment are not affordable. Due to frequent stock out of DM medication in public health facility, patients are obliged to buy costly drugs from private retail pharmacies. Most of the DM patients are poor and do not afford to pay the full cost of the prescribed medications ,due to this explanation the effect of out of pocket expenditure to be raised (33).

2.4 Research Questions

- What is out of pocket expenditure of treating diabetic patients?
- What is the financial burden of out of pocket expenditure for treatment of DM?
- What is the extent of catastrophic out of pocket spending for treatment of diabetic?

CHAPTER 3: OBJECTIVES OF THE STUDY

3.1 General Objective

To assess the financial burden of out of pocket expenditure for treatment of diabetic mellitus in Addis Ababa

3.2 Specific objectives

The objectives of this study were to:

- Estimate out of pocket expenditure for treatment of diabetic patients
- Determine the effect of out of pocket expenditure on household income.
- To examine the extent of catastrophic out of pocket spending for diabetic patients

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Study Area and period

Addis Ababa is the capital city of Ethiopia and located in the central part of the country. It is the largest as well as the dominant political, economic, cultural and historical city of the country established in 1887 by emperor Menilik II. It has the status of both a city and a state. The city consists of ten sub-cities, which is the second administrative units next to city administration. The sub-cities are categorized in to 10 woredas, which are the smallest administrative unit in the city. There are 116 Woredas in the city administration. The population of Addis Ababa according to Central Statistics Authority (CSA) Urban Employment Unemployment survey study of 2007 there were a total of 3,384,569 populations in the town. There are 11 hospitals and more than 90 health centers in Addis Ababa (FMOH, 2016/17) providing DMs treatment services. The study was conducted in three public hospitals, namely Ras Desta Damtew Memorial hospital, Yekatit 12 hospital and Tikur Anbessa Specialized Hospital. The study period was from February 30 to April 30, 2018. Selecteing the aforementioned hospitals could represent the remaining public hospitals in Addis Ababa

4.2 Research Design

An institutional based cross sectional quantitative study was employed to assess the financial burden of out of pocket expenditure incurred for treatment of diabetic mellitus in Addis Ababa from February 30 to April 30, 2018.

4.3 Population

4.3.1 Target Population

All outpatient diabetics' receiving services in all public hospitals of Addis Ababa were to be units of analysis.

4.3.2 Study population

Outpatient diabetes patients receiving services in three public hospitals of Addis Ababa were considered for this study. The names of these hospitals are Ras Desta Damtew Memorial, Yekatit 12 and Tikur Anbessa specialised hospitals.

4.3.3 Eligible criteria

Inclusion criteria: Diabetes patients/clients who attend in selected public hospitals of Addis Ababa and have follow up in health facilities for the last 12 months and more.

Exclusion criteria: Client of pregnant women who acquired diabetes, inpatient diabetic patients, diabetic patient whose treatment's cost is covered by insurance, critical clients (not able to talk), patients' younger than 18 years were either excluded from this study and Fee waiver beneficiaries patients are not included in this study.

4.4 Sample Size Determination

In this study, sample size was determined using single population mean formula. Taking standard deviation $\delta = \$25$ (511 birr). The base of this is from the previous research conducted by Samson (2015). Because no thesis was done on the same topic in the area of economic need analysis study. since my study is under going on effect as expressed in monetary value. For the case of monetary data, Samson is the first and should be utilized to determine sample size.

The final sample size is adjusted for a non response rate of 5% and the total sample is

$$n = \frac{(z)^2 \times \delta^2}{d^2}$$

Where, n = sample size

z = reliability coefficient for 95% confidence level (1.96)

δ = population standard deviation (511 birr)

d = Marginal error (49 birr) also called confidence interval, tells one how much one can expect the survey results to reflect the views from the overall population.

Accordingly, the number of samples were:

$$n = \frac{(z)^2 \times \delta^2}{d^2} = \frac{1.96^2 \times 511^2}{49^2} = 434$$

4.5 Sampling Techniques and procedure

The number of sample for each Selected hospital namely Ras Desta, Yekatit 12 and Tikure Anbessa specialized hospitals were proportionally allocated based on the number of patients on

treatment which obtained data from Addis Ababa Health Bureau (AAHB) is 5735, 1065 and 12949 respectively. The number of study unit from each hospital was determined based on systematic random sampling by obtaining the K value by using the number of patients coming per month as shown in figure 2.

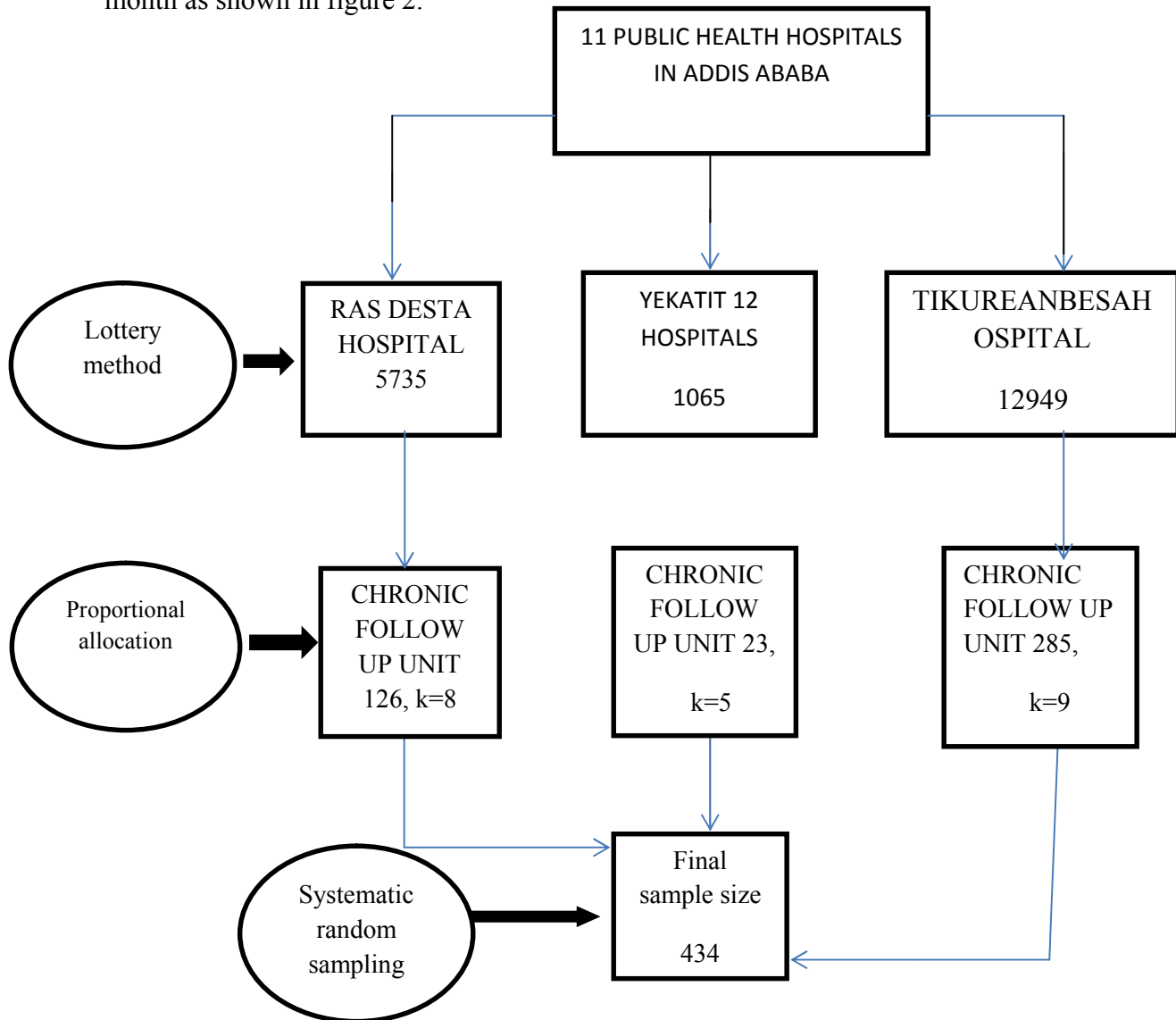


FIGURE 2: Schematic presentation of sampling techniques used to select study subjects from public health hospitals in Addis Ababa, 2017

Formula of number of DM patients will take from each hospitals is, $n_i = n/N * N_i$;

Where: n_i = is required sample in each categories'

, N_i = is total required sample in study,

n = assumed number of patients in each group and

Accordingly, numbers of samples in each respective hospital are depicted as seen here below.

a) Ras Desta hospital n_i

$$N_i = \frac{5735 \cdot 434}{19749} = n_{i1} = 126 \text{ is required sample from each selected hospital}$$

$$K_1 = 1 + 3.322(\log n_i) =$$

$$K_1 = 1 + 3.322(\log 126) = 8 \text{ (will take } D_m \text{ patients by 8 patient interval)}$$

$$2) \text{ Yekatit hospital, } n_{i2} = \frac{1065 \cdot 434}{19749} = n_{i2} = 23$$

$$K_2 = 1 + 3.322(\log 23), K_2 = 5$$

$$3) \text{ Tikur Anbessa hospital, } n_{i3} = \frac{12949 \cdot 434}{19749} = n_{i3} = 285$$

$$K_3 = 1 + 3.322(\log 285), k_3 = 9$$

4.6 Data Collection Instruments

The questionnaire (contains both closed and open ended questions) was translated into the local language, Amharic, in order to make greater in the response rate. The local language was then retranslated into English to cross-check whether there were any differences in translation. This was to improve the quality of the data.

The questions were in line with the study objectives as well as the research questions. The questions were adapted from tool estimate patient cost of Tuberculosis Coalition for Technical Assistance. The questionnaire incorporates: general socio-demographic and socio-economic characteristics of households in the study area such as age of household patient, gender of household head or patient, household family size, etc. Also, information was collected on the monthly out of pocket expenditure for DM patients (costs of anti-diabetic medications, laboratory diagnostics, registration, consultations and transportation costs), income and food consumption of households.

4.7 Data collection procedure

The draft questionnaire was subjected to pilot testing with a total of 22 diabetic patients (i.e 5% of the sample size) who are receiving services in Zewditu memorial hospital prior to the data

collection. The participants in this pilot study were not involved in the later data collection of this study.

The modified questionnaire was personally delivered to the respondents, in order to avoid possible problems with the distribution. The questionnaire was distributed and collected by trained data collectors (BSC Nurses trained for two days), closely monitored by the researcher.

The data collectors also helped to read and filled out the questionnaire for patient respondents who could not read and write. This was done either in the waiting area or in their ward.

The aim of the study was explained to the participants attending the clinic. A printed consent form was read out to the study participants and those who only agreed were interviewed.

4.8 Data Processing and Analysis

The collected data were entered into the statistical package for the social sciences (SPSS) or STATA and verifying whether there are incorrect entries and missing data. A two-step data analysis was used in this study.

Data was checked, coded and entered in to SPSS or Excel into the computer using STATA statistical software. The statistical software was aided the study in analysing both descriptive and inferential statistics.

A variety of descriptive statistics such as mean, standard deviations, medians and inter-quartile ranges were calculated before proceeding to further analysis. Descriptive statistics was used to describe distributions of scores, measurements and statistics. Descriptive statistics such as Measures of central tendency (eg Mean, Median) and Measures of variability (range, standard deviation, frequency distribution, percentages and relationships) were used in analyzing the data.

Correlation tests and logistic regression tests were used as inferential statistic parameters to make inference about the population based on the sample result. Correlation was used to see whether the independent variables have relationships among themselves. The main advantage of using correlation test was that it is concerned in describing the strength of the relationship between two variables by measuring the degree of association of the data values. The Logistic regression was used to test the the predictive power: the independent variables, namely: age, sex, family size, occupation and education on the dependent variable, i.e. Catastrophic out-of-pocket expenditure

To estimate the household income the researcher used standardized measures of income, such as average wage rates, per capita, and income levels. These standardized measures are usually obtained through household surveys or data supplied by UNDP, the World Bank¹, UNICEF², DHS³ or the WHO⁴. However, these databases do not provide up-to-date income data on all countries. Because of this reason, this study used the average income or consumption expenditures of respondents.

Measuring catastrophic health expenditure (CHE)

A logistic regression was used to analyse determinants of catastrophic expenditure for diabetics' treatment. Various methods have been used to evaluate the importance of health expenditure with respect to the total household income, household expenditure, household consumption, and household expenditure net of spending on necessities (37). In this study; the researcher used food expenditure at subsistence level as a proxy for basic necessities. Two indicators were used: the catastrophic payment headcount (incidence) and the catastrophic payment gap (intensity). The catastrophic payment gap captures the average severity of payment above the catastrophic threshold (38).

The Wagstaff and van Doorslaer Methodology

This methodology was used to describe the three measures of catastrophic payments indicators i.e. catastrophic expenditure head count, catastrophic expenditure overshoot and catastrophic expenditure mean positive overshoot. Calculating the three measures requires setting a poverty line and assessing the extent to which health care payments push households below the poverty line.

To determine the burden of OOP for health care, especially DM, catastrophic health expenditure occurs when a household's total OOP for DM is equal to or exceeds 40 percent of the household's regular monthly income. Based on this understanding, catastrophic health expenditure for DM is constructed as a dummy variable with value 1 indicating a household with catastrophic expenditure, and 0 without catastrophic expenditure.

$$Cata_h = 1 \text{ if } OOP_h / THHE \geq 40\%$$

$$Cata_h = 0 \text{ if } OOP_h / THHE < 40\%$$

To calculate catastrophic expenditure headcount ratio which is the percentage of households incurring catastrophic expenditures, OOP_i is defined as Out of pocket health expenditures for household i , $THHE_i$ total expenditure for household i . A household is said to have incurred catastrophic payments if $OOP_i/THHE_i$, exceeds a specified threshold, z . The headcount is then given by:-

$$H = \frac{1}{N} \sum_{i=1}^N E_i$$

Where N is the sample size and

E_i , equals 1 if $OOP_i/THHE_i > z$ and zero otherwise.

The headcount ratio does not reflect the amount by which households exceed the threshold. Catastrophic expenditure overshoot, which captures the average degree by which health expenditures (as a proportion of total expenditure or non-food expenditure) exceed the threshold z is therefore used. The overall overshoot O is given by:

$$O = \frac{1}{N} \sum_{i=1}^N O_i$$

Where $O = E_i((OOP_i/THHE_i) - Z)$

The incidence and the intensity of catastrophic expenditures are related through the mean positive overshoot (MPO), which captures the intensity of occurrence of catastrophic expenditures defined as:

$MPO = \frac{O}{H} \quad \rightarrow \quad O = H \times MPO$

Explanatory variables chosen

In this study, the explanatory variables used were gender, household size, age of head of household, Education level and out of pocket expenditure to treat diabetic Mellitus. We expected the Outpatient department used cares and health status of household members (chronic illness) to be positively correlated with catastrophic expenditure. We assumed that households facing

catastrophic expenditure are affected by type/place of treatment they receive [39, 40, 41]. Moreover, we hypothesized that household size and age of head of household affect positively CHE. Studies have shown that, in Burkina Faso, only household size, among households' characteristics had a positive association with CHE at 30% and 40% threshold level [40].

4.9 Data Quality Assurance

In order to enhance the quality of the data, the data collectors were trained for two days on the objective and methodology of the research, data collection approach.

The questionnaire was translated into the local language, Amharic, in order to make greater in the response rate. The local language was then retranslated into English to cross-check whether there were any differences in translation. This was to improve the quality of the data.

The draft questionnaire was subjected to pilot testing with a total of 22 diabetic patients (i.e 5% of the sample size) who are receiving services in Zewditu memorial hospital prior to the data collection. Each questionnaire was given a unique identification number to identify whether it has any miss information in it and simplify data entry.

The data collection instrument was assessed for completeness, consistency, and applicability and was ratified accordingly. The study procedures were protected the patient's privacy by allowing anonymous and voluntary participation.

4.10 Operational Definition

Out-of-pocket health expenditure: refers Payments (OOPs) are defined as direct payments made by DM patients to health care providers at the time of service use.

Direct costs: cost or expenditures in Ethiopian birr born by patients in order to diagnosis and treatment of diabetic mellitus. E.g. cost of prescribed drugs, investigations etc. It includes direct medical and direct non medical costs used by patients and their caregiver.

Catastrophic expenditure: Spending a high share of household income out of pocket health costs (> 40% catastrophic threshold both total household expenditure and nonfood expenditure).

Catastrophic headcount ratio: is the percentage of households incurring catastrophic expenditures Out of pocket DM expenditures for exceeds a specified threshold, z , from their income

Catastrophic expenditure overshoot: refers the average degree by which total household OOP healthcare payments as a proportion of household income exceed the threshold z

Catastrophic expenditure of mean positive overshoot (MPO): refers to the incidence and the intensity of catastrophic expenditures, which captures the intensity of occurrence of catastrophic expenditures and also measuring extent of catastrophic OOP diabetic Expenditure

4.11 Ethical Considerations

Prior to the data collection, the researcher applied for ethics clearance. The ethical clearance committee for this study was two committee, namely, the school of public health (SPH), College of Health Science, Addis Ababa University (Tikure Anbessa) research and ethics committee and Addis Ababa Health Bureau.

The research-ethics clearance was granted by the said committee. The researcher then delivered the ethics clearance (a formal letter) of Addis Ababa Health Bureau to each respective hospitals (i.e Zewuditu and Yekatit hospitals) and Tikur Anbessa's to its DM unit, with which to gain access to the research participants (outpatients).

After identifying the participants, trained data collectors and the researcher familiarised the respondents with the purpose of the study. Also, the data collectors obtained the consent of candidates for participating in the survey. Then it was time to collect data. Confidentiality of information was kept with no personal identification. In this study there was no procedure and questions that could harm or discomfort participants filling. The participation was based on voluntary.

CHAPTER 5: RESULTS

5.1 Socio-demography and Socio-economic Characteristics

Out of the total patients who were attending chronic follow up units of public health hospitals during the study period, 434 clients were eligible and included in the study. Analysis was made based on the 434 completed questionnaires. Socio demography and socio economic of respondents were compared by gender (Table5.1). In this study, more than half of the respondents (53%) were females. Regarding educational status, out of the total respondents, nearly 71% of them were below 12th grade while only 29% of them completed or currently attending College/ University respectively. Regarding age, 97(48.0%) male 102(44.0%) females were above the age of 50. Concerning occupation of respondents, most of them 77(17.7%) were government employees followed by retirees 65(15.0%) and private employee 45 (10.4%). In terms of family size in the households Female respondents have large number of family compared to male respondents. Out of the total respondents, 106 (24.4%), 107 (24.8%) and 122 (28.1%) respondents had annual households income Birr 50,000-74100, 25000-49100 and above 100000 respectively.

Table 5.1: Socio demographic and socioeconomic characteristics of respondents attending diabetics follow up units of public health hospitals, Addis Ababa, Ethiopia, 2018 (n=434)

Variable	Male %	Female %	Total
Sex	202(46.5%)	232(53.5%)	434 (100%)
Education			
Illiterate	7(3.5%)	32(13.8%)	39(9.0%)
Read and write only	8(4.0%)	23(9.9%)	31(7.1%)
1-8 grade	38(18.8%)	58(25.0%)	96(22.1%)
9-12 grade	68(33.7%)	71(30.6%)	139(32.0%)
College or University	79(39.1%)	48(20.7%)	127(29.3%)
Other	2(1.0%)	-	2(0.5%)
Age			
19-30	23(11.4%)	29(12.5%)	52(12.0%)
31-50	82(40.6%)	101(43.5%)	183(42.2%)
Above 50	97(48.0%)	102(44.0%)	199(45.8%)
Occupation			
Farmer	7(3.5%)	2(0.86%)	9(2.7%)
Government employer	50(24.8%)	27(11.6%)	77(17.7%)
NGO	19(9.4%)	12(5.2%)	31(7.1%)
Private employer	32(15.8%)	13(5.6%)	45(10.4%)
Merchant	21(10.4%)	13(5.6%)	34(7.8%)
Student	7(3.5%)	11(4.7%)	18(4.1%)

Daily Labour	18(8.9%)	10(4.3%)	28(6.5%)
Un employer	6(3.0%)	15(6.5%)	21(4.8%)
Retired	40(19.8%)	25(10.8%)	65(15.0%)
Other	1(0.5%)	4(1.7%)	5(1.2%)
Number of families in household			
<5	96(47.5%)	125(53.9%)	221(50.9%)
5-10	104(51.5%)	104(44.8%)	208(47.9%)
Above 10 families	2(1.0%)	3(1.3%)	5(1.2%)
Annual household income (in Birr)			
Lessthan 24100	20(9.9%)	24(10.3%)	44(10.1%)
25,000-49,100	34(16.8%)	73(31.5%)	107(24.8%)
50,000-74,100	64(31.7%)	42(18.1%)	106(24.4%)
75,000-99,100	47(23.3%)	8(3.4%)	55(12.6%)
Above 100,000	37(18.3%)	85(36.7%)	122(28.1%)

Source: Survey (2018) done by the researcher, based on STATA outputs

To determine the direct costs (OOPE) borne by diabetic patients attending the outpatient Department of public hospitals

In this study, predictors of households' health care expenditures statistical analysis were performed using STAT 16.0 Version. As indicated in Table 5.2 respondents expended on average Birr nearly 8000 annually from OOP. Of this expenditure, the highest expenditure was medication which nearly birr 4000 followed by glucometer expense Birr above 1800. The lowest expenditure was medical card/folder expenses for which respondents expended on average birr 32 only.

5.2 To determine the direct costs (OOPE) borne by diabetic patients attending the outpatient Department of public hospitals

Variable	Respondents	Mean	Std. Dev	Min	Max
Transport Expense	402	229.00	606.68	6	8400
Medical card/folder Expense	433	32.00	57.71	10	1000
Non-Medical Expense/food,drink	387	201.00	439.00	8	8000
Laboratory Expense	434	1898.00	1413.39	72	10,000
Medications Expense	434	3759.00	2168.00	90	18,000
Glucometer Expense	246	1812.00	1417.40	1	9000
OOPE/Medical and nonmedical expenditures/	434	7946.00	4452.00	808	34364

Source: Survey (2018) done by the researcher, based on STATA output

5.3. General results of the catastrophic of diabetic payment headcount (incidence) and the catastrophic payment gap (intensity).

The results for incidence and intensity of catastrophic diabetic expenditures are presented in Table 5.3. They are expressed for treatment of diabetic mellitus expenditure as very low monthly income, low monthly income, middle monthly income, high monthly income and very high monthly income households. For all the households' income categories, the threshold is raised from 15% to 50% from their total household income. Regarding for the very low household's income the estimate of the incidence of catastrophic payments remains constant. The average overshoot and mean positive overshoot (MPO) are dropped in the same numbers i.e from 57 percent of expenditure to only 22 percent. The estimate of the catastrophic payments incidence for middle household income falls from 100 percent to 77 percent, and the average overshoot drops from 44 percent of expenditure to only 11 percent. The mean positive overshoot (MPO) also declined from 44 percent to 14 percent. On the other hand households with very high monthly income, if the catastrophic threshold level increases from 15% to 50% catastrophic payments declined from 100% to 76%. The average overshoot drops from 40% to 8% whereas the mean positive overshoot (MPO) drops from 40 percent of expenditure to only 10 percent. From this the average incidence of interviewed patients, 95% of the patients' OOP for DM took more than 40% of their total health expenditure to be catastrophic.

5.4 To examine the extent and intensity of catastrophic out of pocket spending for diabetic patients.

Beside catastrophic payments head count, another significant issue in the underlying context is the intensity of catastrophic payments, defined as the amount of excess payments (or overshoot) by which households exceeds catastrophic threshold z . The results given in Tables 5.3 or the headcount do not provide any idea about the amount paid in excess to z or intensity of overshoot occurring in our sample. A measure, known in the literature as catastrophic payment overshoot has therefore been used to obtain the average degree by which health payments (as proportion of total Consumption exceed 40% the threshold z).

The result of Intensity of catastrophic Diabetic OOP payment in table 5.3 stands the households in lower economic strata experienced higher magnitude of CHE and suffered a more intense degree of CHE. The share of OOP payments relative to households' income increased as we go down

income strata. Among households that faced CHE, the bottom two-income levels overshoot the CHE threshold on average by 54% and 35% of households' income compared with an overshoot of only 24% for the richest level (table 5.3). In other words, the mean positive overshoot over 40% that determined the households that extent of catastrophic diabetic expenditures in very low monthly income spent 94% (54%+40%) of households' income on average for diabetic care compared with a share of 69 % among those in very high monthly income level. This indicates a more intense financial risk among the economically disadvantaged group.

Table 5.3 Incidence and Intensity of Catastrophic Health Expenditures

Catastrophic payment measures	Threshold budget share z			
	15%	25%	40%	50%
OOP expenditure as share of total expenditure	15%	25%	40%	50%
Very low monthly income household				
Headcount (%)	100%	100%	100%	100%
Overshoot (%)	57%	47%	32%	22%
Mean Positive Overshoot (%)	57%	47%	32%	22%
Low monthly income household				
Headcount (%)	95%	95%	92%	84%
Overshoot (%)	45%	36%	22%	13%
Mean Positive Overshoot (%)	48%	38%	24%	16%
Middle monthly Income household				
Headcount (%)	100%	99%	96%	77%
Overshoot (%)	44%	34%	19%	11%
Mean Positive Overshoot (%)	44%	35%	20%	14%
High monthly income				
Headcount (%)	99%	99%	94%	77%
Overshoot (%)	41%	31%	17%	8%
Mean Positive Overshoot (%)	42%	32%	18%	11%
Very high monthly income				
Headcount (%)	100%	98%	91%	76%
Overshoot (%)	40%	30%	16%	8%
Mean Positive Overshoot (%)	40%	31%	18%	10%

Source: Survey (2018) done by the researcher, based on STATA outputs

5.5 Effect of OOP expenditures for treatment of diabetic mellitus

In Tabel 5.4, the logit results for determinants of catastrophic diabetic expenditures are presented. From the table, it is clear that family size, level of education, and Out of pocket expenditure for treatment of DM are statistically significant ($p < 0.05$). Other variables, namely: Age, Sex, and Occupation are not statistically significant. Accordingly, respondents within the group of Basic

education and Elementary education were more likely (OR =0.084 and 0.102; 95%) to be exposed to catastrophic out-of-pocket expenditure for treatment of diabetic compared to the reference of secondary and above secondary education. Furthermore, households having family size with large households are less likely (OR=0.74; 95%) to be exposed to catastrophic out-of-pocket expenditure for treatment diabetic compared to their small family size counterparts. As far as OOP is concerned, a unit change in OOP health expenditure can result in increase in the risk of catastrophic DM expenditure which can lead to impoverishment

Table 5.4: Correlates of Catastrophic OOP diabetic Expenditure by using Logit Results: Dependent Variable is Catastrophic Expenditure Dummy (N=434), Prob>chi²=0.0000

Catastrophic	B(Std.error)	OR	Sig.
Sex	-0.598(0.987)	0.550	0.544
Age Cat;reference group =age>79 years			
Age <19	4.647(25787)	104.299	1.000
Age 20-49	19.859(13462.7)	421404	0.999
Age 50-79	23.057(13462.7)	10318615	0.999
Family size	-0.291(0.106)	0.747	0.006
Education level,reference group =Illiterate persons			
Basic education	-2.284(1.151)	0.102	0.047
Elementary education	-2.483(0.956)	0.084	0.009
OOP	0.000(0.000)	1.000	0.000
Occupation categories, Others like merchant			
Unemployed	0.559(0.992)	1.750	0.573
Administration & professional (employed)	-1.124(1.304)	0.325	0.388
Constant	-4.667(2.227)	0.009	0.036

CHAPTER 6: DISCUSSION

This study was aimed to assess the effect financial burden of out of pocket expenditure incurred for treatment of diabetic mellitus in Addis Ababa. The mean age of the respondents in this study was 49 years (SD=14.3) and nearly 46% of the respondents were above 50 years old. Whereas 12.0% and 42.0% were between 19-31 and 31-50 respectively which is lower than from study conducted in Ghana on economic burden of diabetes mellitus and its socio-economic impact on household expenditure which is 53 years (42).

Regarding the mean out of pocket expenditure in the treatment of DM is 662 ETB per month which is a bit higher than the mean direct cost (OOP) on cost of illness of diabetes care in health facilities of Addis Ababa (630 ETB) in a study conducted (43). The high DM spending might be due to the incremental cost of diabetic treatment from time to time as well as the increment of diabetic complication. The largest component of diabetic care cost was accounted for medications. In this study, the cost of treatment diabetic mellitus for three public health institutions constituted 48% ETB per year which is similar to the study conducted in Brazil direct costs was attributed to medication which accounts 48% (30). In same manner, a study conducted in the US showed that the largest component of medication expenditure for diabetic patients was accounting for 43% of the total medical costs (31). The results of both are near or equal to the results of this study. The probability of the highest expenditure incurred for medications might be due to the following reason: they might purchase brand medication as they forced to buy such due to stock out of the hospital they are receiving the services.

The analysis of the household size is statistical significant at p value 5% of the relation. An increase in household size was associated with less likely (0.26) a significant decrease in the cost of treating diabetes mellitus (42) which is similar to a study conducted in Ghana showing a cost less likely decreased by 32%. The increasing family size leads to lower OOP is due to the fact that families under the households can get income that can support to the family total health expense.

A research conducted by Samson (2015) studied the economic burden of DM on the patients and their families. This study however goes further and looked at the magnitude and intensity of CHE, as well as the effect of catastrophic OOP expenditure on income relating to seeking diabetic patients care in Addis Ababa. The analysis revealed seeking diabetic care at hospitals in Addis Ababa exposes households to substantial financial risk, with about 94% of those that do so face

catastrophic diabetic expenditures. Poorest households suffered greater intensity of CHE (94%) compared with the richest (69%). The magnitude of catastrophic diabetic's expenditure in this study was higher than others who reported in various low-income and middle-income settings although direct comparison is not straightforward due to differences in study populations and criteria for CHE. For instance, a study conducted in India which is "Out of pocket expenditure" towards treatment of DM was borne by 72.5 % of the participants from this was Catastrophic expenditure (i.e. expenditure exceeding 40% of house hold expenditure) was borne by 5.8 %. (44).

In all household income levels, as out of pocket expenditure or total income catastrophic threshold levels exceeds from 15% to 50%, the catastrophic expenditure of incidence, overshoot and mean positive overshoot decrease.

CHAPTER 7: STRENGTH AND LIMITATION OF THE STUDY

7.1 strengths

- The reliability of the data was maintained by prior training for data collectors and regular supervision by principal investigator.
- The study may be used as baseline information for other researchers.
- The study subjects were selected randomly

7.2 Limitations

- The use of cross-sectional data might make it difficult to establish causality.
- All measures were self-reported which were highly dependent on the participant's memory, honesty and truthfulness in answering the questions. This could make some sort of biasedness in getting real data.

CHAPTER 8: CONCLUSION AND RECOMMENDATION

8.1 Conclusion

Having discussed the general introduction to the study in chapter 1, the literatures review, objectives of the study, and the research methodology used were addressed in Chapters 2, 3 and 4 respectively. Other aspects addressed include: study results (chapter 5), Discussions (chapter 6), and in chapter 7, strengths and limitations. Finally, in Chapter 8, Conclusions and recommendations of the study were looked at.

In this chapter 8, the following conclusions were made.

Diabetic melltes is a life treaning disease and leads to other complication, the management are expensive, and the cost affects individuals, families, society, and nations at large. In order to prevent this disease, diabetic patients need to pay to get proper treatment. The major alternative to cover the payment is out-of-pocket expenditure.

This expenditure is however the highest challenge for diabetic mellitus health care in this study. Out-of-pocket expenditures cause financial catastrophe to households especially to the poorest households. The intensity of catastrophic OOP expenditure is relatively lower in households with larger family size and those educated. In general, the study shows that in very low income level of households 94% spent from their total expenditure for diabetic treatment.

8.2 Recommendations

- In the long-run, an effort should be made to produce DM medications within Ethiopia in order to increase the availability, accessibility and affordability of the medicine and Laboratory reagents
- Pharmaceuticals fund and supply agency should work on the availability of medicines and laboratory reagents in public hospitals
- Department head should establish separate diabetic laboratory room in order to reduce expense of DM patients.
- Medical care fee exemption or heavier subsidy should be there for low income households
- Policy makers should give priorities to DM patient who are identified poor
- For DM patient Glucometer machine with kits should be delivered from Diabetic association and NGO's and other private organization
- Health Insurance system should be established to give financial protection to cover catastrophic OOP expenditure by sharing risk among the insurance members

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ANNEX

Annex 1

QUESTIONNAIRE

Addis Abeba Universtiy College of Health Sciences School of Public Health Questionnaire to estimate effect of out of pocket expenditure for the treatment of diabetes mellitus on household income in selected public hospitals of Addis Ababa.

Hello. My name is Aster Emiyou. I am a postgraduate student from Addis Ababa University, College of Health Sciences, and school of public health and department of Health economics. I am conducting a study on the effect of out of pocket expenditure for the treatment of diabetes mellitus on household income in selected public hospitals of Addis Ababa. Your cooperation and willingness for the interview is very helpful in identifying the problems related to the issue. Your name should not be written in the form and I assure you that all information that you give will be kept strictly confidential. Your participation is voluntary and you are not obliged to answer any question you do not wish to answer. If you assume answering the question will harm you please leave it. There will no be special benefit to you in participating in this study. The time required to respond on the questionnaire will take about 10 to 20 minutes.

For more information and question you may contact the researcher using: Aster Emiyou: 0911997388 **or** asteremiyou@gmail.com

Questionnaire

Patient code _____ Health facility name _____

Date of interview _____

Interviewer name _____ signature _____

Checked by: Name of supervisor/investigator _____ Signature _____

Section A: Socio demographic and economic status of the respondent

No.	Question	Answer	Skip
101	Respondent's sex?	1. Male 2. Female	
102	What is your age?	3. ___ __ years	
103	What is the highest level of school you completed?	1. Illiterate 2. Informal (Basic Edu/Religious Edu.) 3. Primary Edu (1-8 Grade) 4. Secondary Edu. (9-12 Grade) 5. College/diploma /TVET 99. Other _____	
104	What is your main current occupation?	1. Farmer 2. House wife 3. Employee (Gov't/private/NGO) 4. Petty trader 5. Merchant 6. Self employed 7. Student 8. Daily laborer 9. Unemployed 10. Retired 99. other	

105	What is the your main source of income.(choose more than one.)	<ol style="list-style-type: none"> 1. farming 2. trade 3. production of handy craft 4. daily labor 5. monthly income from employment 6. house rent 7. retired 8.other (specify)_____ 	
106	What is your monthly income?	<ol style="list-style-type: none"> 1.daily.....birr 2.weekly.....birr 3. Monthly....birr. 	
107	Number of people living in your house hold	_____ Number	
108	How many members of the family are employed at moment?	_____ number	
109	Who is the primary income earner in the household?	<ol style="list-style-type: none"> 1. Patient_____ 2. Other than patients_____ 	
110	What is the main source of income for the house hold (choose more than one)	<ol style="list-style-type: none"> 1. farming 2. trade 3. production of handy craft 4. daily labor 5. monthly income from employment 6. house rent 7. retired 8. other(specify)_____ 	
111.	What is average monthly income of the household?	<ol style="list-style-type: none"> 1.daily.....birr 2.weekly.....birr 3. Monthly....birr. 	

Section B: out of pocket expenditure for DM

201. How frequent per year do you visit the health facility for your diabetic illness?
 _____Times/year

	Cost incurred by patient per visit	Visit 1	Visit 2	Visit 3	Visit 4	Remark
202	What transport modality have you used to travel from home to health facility					1. Walk 2. Bicycle/motor cycle 3. Taxi/City Bus/Light train 4. Long distance bus 5. Own/relative's car 99.Other(jspecify)
203	How much money you spent for transportation when you go from home to health facility and vice versa?					BIRR
204	DO you use private car to come health facilities					_____ km
205	How much do you pay for Folder/Registration fee per your visit?					BIRR
206	How much do you spend per month for food, drink and other service while you go and from to health					BIRR

	facility and waiting your turn for treatment?					
207	How much money you pay for laboratory per your visit?					<p>CODE</p> <p>1.Fasting blood sugar -----birr</p> <p>2. random Blood sugar----- birr</p> <p>3. Glycosylated hemoglobin.....birr</p> <p>99. Others.....birr</p>
208	How much money you pay for purchase of?					<p>1. Insulin inj. _____ birr/month</p> <p>2. Insulinsyringes ____ birr/month</p> <p>3. Oral anti hyperglycemic drugs ____ birr/month</p> <p>4. Other medications ____ birr/month</p> <p>5. I do not know at all</p>

209	Do you have a use personal glucometer at home	1) yes 2) No	
210	If yes, how much do you spend monthly to keep the machine kite for running	1)_____Birr/year 2) I do not use it	
211	Where did you get the money from to cover the above mentioned costs?	1.Own money (salary, savings) 2. I borrow money/loan 3. I sold my assets 4. My family/relatives supported me 99. Others_____	If Choose 1 skip 301. If choose 2 skip 302. If choose 3 skip 306.

Section C: Coping Costs

No	Question	Answer	Skip
301	If you borrowed to cover your medication cost, how much money did you borrow?	Birr _____	
302	From whom did you borrow? Multiple responses allowed	1. Family 2. Neighbors/friends 3. Private bank 4. Cooperative 99. Others	
303	Are you expected to pay the loan(s) back?	1. Yes 2.i am paying right now	

Annex 2

በአዱስ አበባ ዩኒቨርሲቲ ኮሌጅ ኦፍ ጤና ሳይንስ ፕፕሊክ ሄልዝ ትምህርት ቤት

ማንኛውንም ያልገባዎት ሀሳብ ካለ አስቴር እምዖ በአድራሻው፡ በስልክ ቁጥር 0911 997388Email asteremiyou@gmail.com መጠይቅ ይችላሉ።

እኔ አስቴር እምዖ በአዱስ አበባ ዩኒቨርሲቲ በ ሄልዝ ኢኮኖሚክስ ትምህርት ቤት የድህረ ምረቃ ተማሪ ስሆን የመመረቂያ ፅሁፈን ወደ መንግስት ሆስፒታሎች ለስኳር በሽታ ክትትል የሚመጡ ተመላላሽ ታካሚዎች ሊይ ነው።የመጠየቁ ዋና አላማ የስኳር ህመም የሚያመጣውን ከኪስ አወጥተው ህክምናን ለማግኘት ሲሉ የሚመጣቸው የገንዘብ ጫና እና ገቢያቸውን ላይ የሚያመጣውን ውጤት ለማወቅ በተጨማሪም ወደ ድህነት ደረጃ እንደሚያስገባ ለማየት ለህብረተሰብ ጤና ድህረ መመረቂያ ማሟያ ለሚሆን ዳሰሳ ጥናት አገልግሎት የሚውል ነው።ማንኛውም ዓይነት የሚሰጡን መረጃ/ምላሽ በሚስጥር የምንጠብቅ ሲሆን የዚህ ጥናት መሳካት እርሶ በሚሰጡን ትክክለኛ መልስ ላይ የተመሰረተ በመሆኑ እባክዎን ይህንን መጠይቅ በሚገባ ካነበቡ በኋላ በአግባቡ /ትክክለኛውን ምላሽ ይስጡ።

የመጠየቁ ዋና አላማ የስኳር ህመም የሚያመጣውን ከኪስ አወጥተው ህክምናን ለማግኘት ሲሉ የሚመጣቸው የገንዘብ ጫና እና ገቢያቸውን ላይ የሚያመጣውን ውጤት ለማወቅ በተጨማሪም ወደ ድህነት ደረጃ እንደሚያስገባ ለማየት ነው። ጥናቱ የሚካሄደው አዲስአበባ የመንግስት ሆስፒታል ላይ ነው።

መጠይቅ

በጥናቱ ተሳታፊ ግለሰቦች መለያ ክፍል _____

የጤና ተቋሙ ስም _____

ጥያቄው የተጠየቀበት ቀን _____

የጠያቂው ስም _____ ፊርማ _____

የተቆጣጣርው/ዋ ስም _____ ፊርማ _____

ክፍል አንድ: ማህበራዊና እኩኖሚያዊ እና አጠቃሊይ የግለሰብ መረጃ

ተቁ.	ጥያቄ	መልስ	
101	ጾታ	1. ወንድ 2. ሴት	
102	ዕድሜው ስንት ነው	_____ አመት	
103	ያጠናቀቁት የትምህርት ደረጃ ስንት ነው	1. ያልተማረ 2. መፃፍና ማንበብ ብቻ የሚችል 3. ከ1-8 የመጀመሪያ ደረጃ 4. ከ8-12 ሁለተኛ ደረጃ 5. ከሌጅ/ዩኒቨርሲቲ የተመረቀ/ች 99.ሌላ _____	
104	ዋና ስራዎ ምንድን ነው?	1. አርሶ አደር 2. የቤት እመቤት 3. የመንግስት ሰራተኛ, መንግስታዊ ያልሆነ/የግል ድርጅት 4. ጥቃቅን ንግድ 5. ነጋዴ 6. የግሉን ስራ የሚሰራ 7. ተማሪ 8. የቀን ሰራተኛ	

		9.ስራ እጥ 10. ጡረተኛ 99.ሌላ?	
105	የገቢ ምንጮቻችን ምን ምን ይሁናሉ? (ከአንድ በላይ መልስ ሊኖር ይችላል)	1. አርሶ አደርነት 2. ንግድ 3. የእጅ ስራ ውጤቶችን ማምረት 4. ጡረታ 5. ተቀጥሮ በሚገኝ ወርሀዊ ደሞዝ 6. የኪራይ ገቢ(የቤት፣ የመሬት፣ ቁሳቁስ የመሳሰሉት) 7. የቀን ስራ 8. ሌላ ካለ ይጠቀስ_____	
106	የእርሶዎ የገቢ መጠን ምን ይህል ነው?	1.በቀን-----ብር 2.በሳምንት-----ብር 3.በወር-----ብር	
107	እርሶ በሚገኙበት ቤተሰብ ውስጥ እርሶን ጨምሮ የቤተሰብ አባላት ብዛት ስንት ነው?	_____ ብዛት	
108	አንድ በላይ ከገለፅናቸው ውስጥ በቤተሰብ ውስጥ ስንቶቹ ስራ አላቸው?	-----ብዛት	
109	በቤተሰብ በዋናነት በገቢ የሚያስተዳድረው የቤተሰብ ኃላፊ ማነው?	1.ታካሚው 2.ከታካሚው ውጭ	
110	የቤተሰብ የገቢ ምንጮች ምን ምን ይሁናሉ? (ከአንድ በላይ መልስ ይቻላል)	1. አርሶ አደርነት 2. ንግድ 3. የእጅ ስራ ውጤቶችን	

		<p>ማምረት</p> <p>4. የቀን ስራ</p> <p>5. ተቀጥሮ በሚገኝ ወርሀዊ ደሞዝ</p> <p>6. የኪራይ ገቢ(የቤት፣ የመሬት፣ ቁሳቁስ የመሳሰሉት)</p> <p>7. ጡረታ</p> <p>8. ሌላካለ ይጥቀሱ_____</p>	
111	አጠቃላይ የቤተሰብ ገቢ ምን ይህል ነው	<p>1.በቀን-----ብር</p> <p>2.በሳምንት-----ብር</p> <p>3. በወር-----ብር</p>	

ክፍል :ሁለት: ከኪስ የሚከፈል የጤና ወጪ

201. በምን ያህል ጊዜ ነው ለጤና ክትትል አገልግሎት የሚመጡት-----ጊዜ/በአመት

	ታካሚው ለህክምና በቀጠሮ ሲመጡ የሚከፍሉት ክፍያ	በአንደኛ ቀጠሮ	በሁለተኛ ቀጠሮ	በሶስተኛ ቀጠሮ	በአራተኛ ቀጠሮ	ማብራሪያ
202	. ክትትል ወደ ሚያደረጉበት የጤና ተቋም ለመሄድ ምን አይነት የመጓጓዣ ዘተዴ ይጠቀማሉ?					<p>1. እግር</p> <p>2. በሳይክል</p> <p>3. ታክስ/በከተማ ባስ</p> <p>4. በረጅም ተጎዥባስ</p> <p>5. 5. በግሌ መኪና</p> <p>99.ሌላ ዘዴ ይጠቀስ</p>
203	የአንድ ጉዞ ደርሶ መልስ የመጓጓዣ ወጪዎች ምን ያህል ነው ?					ብር

204	የግል መኪና የምትጠቀሙ ከሆነ ክትትል ወደ ሚያደረጉበት የጤና ተቋም ለመድረስ በአማካይ ምን ያህል ርቀት ይፈጅብዎታል ?				_____ ከ.ሜ
205	ለህክምና ሲመጡ ለካርድ ምን ያህል ገንዘብ አወጡ				ብር-----
206	ባለፉት ቀጠሮች ውስጥ ለክትትል ጤና ተቋም በሚመላለሱበት ወቅት ለምግብና መስተንግዶ ነገሮች ምን ያህል ወጪ አውጥተው ነበረ				ብር-----
207	ለህክምና ሲመጡ ለላብራቶሪምን ያህል ገንዘብ አወጡ				መለያ 1.ምግብ ሳይበላ የሚወሰድ የስኳር ምርመራ----- ብር 2..ምግብ ተበልቶ የሚወሰድ የስኳር ምርመራ----- ብር 3.ኔሞግሎቢን H1AC ምርመራ.....ብር 99. ሌሎች.....ብር

208	. ምን ዓይነት መድሃኒት ነው የሚወስዱት፣ የህክምናስ ወጪዎች ምን ያህል ነው?				1. ኢኒሱሉን መድኃኒት -----ብር 2. የኢኒሱሉን ሲርንጂ ----- ብር 3. በአፍ የሚወሰድ መድሃኒት ----- ብር 4. ሌላ ካለ ----- ብር 5. በአጠቃላይ - -----ብር
-----	---------------------------------------------------	--	--	--	------------------------------------------------------------------------------------------------------------------------------

209	የስኳር መመርመሪያ መሳሪያው በቤትዎ ውስጥ አለዎት	1) አዎ 2) የለም	
210	መልስዎ አዎን ከሆነ ለኪቱ በመሳሪያዉ ለማሰራት የስኳር ደረጃዉን ለመለካት ስንት ብር አዉጡ	1) _____ ብር/በአመት 2) አልጠቀምበትም	
211	ከላይ ለአዉጡት ህክምና የስኳር በሽታን ለመከላከል ከየት ወጪዉን አዉጡ	1. ከራስ ገንዘብ (ከደሞዝ፣ ከቁጠባ) 2. ገንዘብ ተበድራ/ከብድር 3. ንብረቱን ሸጮ ነው 4. ከቤተሰብ/ከጓደኛ ርዳታ ነው 99. ከሌላ _____	አንደኛውን ምርጫ ከመረጥክ ወደጥያቄ301ተሻገር ሁለተኛውን ምርጫ ከመረጥክ ወደጥያቄ 302ተሻገር ሦስተኛውን ምርጫ ከመረጥክ ወደጥያቄ306ተሻገር

ክፍል 3: የመጋለጥ ወጪ

ተ.ቁ	ጥያቄ	መልስ	
301	ለስኳር በሽታ ህክምና የሚወጣው ገንዘብ ተበድረው ከሆነ ምን ያህል ተበድረዎል	ብር _____	
302	ከማንስ ተበድረዎ ታክምኩ ከአንድ ላይ መመለስ ይችላሉ	1. ከቤተሰብ 2. ከጎረቤት/ከጓደኛ 3. ከግል ባንክ 4. በትብብር የሚደረግ 99. ሌላ	
303	እንደምትመልስ ብድርገን ታስባለን	1. አዎ 2. እየመለስኩ ነው 3. ለመመለስ አስባለሁ 4. አልቻልኩም	
304	መልስዎ አዎ እና እየመለስኩ ከሆነ ስንት ብር ትመልሳለሁ	1. ሙሉ በሙሉ 2. ግማሽ በግማሽ 3. በትንሹ	
305	የሰኳር ህመም ህክምና ወጪን ለመሸፈን የተሸጡ የንብረት አይነቶች ካሉ ለምሳሌ	1. የቤት ዕቃ 2. ወርቅ 3. ተሽከርካሪ /መኪና 4. ቤት 5. መሬት 99. ሌላ	
306	በምን አይነት የገንዘብ ወጪ ለስኳር በሽታው ህክምናዎተዳርገዋል ?	1. በጣም ተፅእኖ አምጥቷል 2. መካከለኛ ተፅእኖ አምጥቷል 3. በትንሹ ተፅእኖ አምጥቷል 4. ምንም ተፅእኖ አላመጣም	

307	<p>በስኳር ህክምና ተፅዕኖ የሚፈጥሩ እና የቤተሰብ ወጪዎች ዋና ዋና የቤትዎ የወር ወጪዎችን ይጥቀሱ?</p>	<ol style="list-style-type: none"> 1. ለምግብ _____ ብር 2. ለቤት ኪራይ _____ ብር 3. ለማንኛኛ (ከህክምና ወጪ ሌላ) _____ ብር 4. ሌላ ለጤና እንክብካቤ -----ብር 5. ለውሃ ብር _____ 6. ለስልክ /ለሞባይል/ ለኢንተርኔት ብር _____ 7. ለመብራት ብር _____ 8. ለትምህርት ወጪ ብር _____ 9. ለሌላ ብር _____ 	
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ስለ ትብብርዎት በጣም አመሰግናለሁ!