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College of Natural and Computational Science
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**The prevalence of non-communicable diseases among patients
attending care at Tirunesh Beijing General Hospital**

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Declaration

I declare that this thesis is the result of my own work and all materials were fully acknowledged. This thesis is submitted for partial fulfillment of the requirements of MSc Degree in Biology within the College of Natural and Computational Sciences at Addis Ababa University, on the prevalence of non-communicable diseases among patients attending Tirunesh Beijing General Hospital from 2015- 2017 Ethiopian calendar.

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Abbreviations

CKD	Chronic Kidney Disease
CNCD	Chronic Non-Communicable Disease
CVD	Cardio Vascular Disease
GBD	Global Burden of Disease
LIC	Low Income Country
MIC	Middle Income Country
NCD	Non-Communicable Disease
OPD	Out Patient Department
SSA	Sub-Saharan Africa
TBGH	Tirunesh Beijing General Hospital
WHO	World Health Organization

Abstract

Non-communicable diseases (NCDs) are illnesses that are not contagious and cannot be passed from person to person. Non communicable disease kills 41 million people each year, which is equivalent to 71 percent of all death globally. The prevalence of NCDs appears to be high and increasing in Ethiopia, but comprehensive and regular surveillance data is lacking. The main objective of this study was to assess the prevalence of non-communicable diseases among patients attending care at Tirunesh Beijing General Hospital which is found in Addis Ababa Akaki Kality sub city woreda 01. The interview- administered questionnaires technique was used to collect the secondary data from the outpatient department of Trunesh Beijing General Hospital. Accordingly, a total of 7620 patients information were sampled by systematic random sampling technique and the data were analyzed with descriptive statistical method. From the total of 7620 NCD patients, 54% (4116) were male and 46% (3504) were female. Among the total NCD patients, 23% (1752) were diagnosed with hypertensive, 21% (1596) were diagnosed with cardiovascular disease. 10.76% (820) were diagnosed with diabetes mellitus. 14.8% (1130) diagnosed for different cancer. 9% (686) accounted for chronic respiratory disease (asthma and chronic obstructive pulmonary disease), 7.6% (580) accounted for chronic kidney disease and the left were diagnosed for different NCDs. This study found that the magnitude of different NCDs in the study area was very high. Hypertension was one of the most prevalent diseases among the NCDs patients registered at Tirunesh Beijing General Hospital.

Keywords: *non-communicable disease, hypertension, cardiovascular disease, diabetes mellitus, prevalence*

1. Introduction

1.1. Back ground of the study

Non-communicable diseases (NCDs) are illnesses that are not spread through infection but are typically caused by a combination of genetic, environmental, and behavioral factors (WHO, 2024). They are the leading cause of death worldwide and present a huge threat to health and development, particularly in low and middle income countries including Ethiopia (Tesfaye *et al.*, 2022; and WHO, 2023). Non-communicable diseases (NCDs) are diseases or conditions which are usually of chronic nature, with slow onset, lengthy progression for which there are no known causative agents, and generally are not transmitted from one person to another.

NCDs are the primary causes of disease and death globally killing more people each year than all other causes combined (Tewdros Yoseph, 2020). Non communicable disease kills 41 million people each year, which is equivalent to 71% of all death globally (Tesfaye *et al.*, 2022). The four main groups of NCDs (cardiovascular disease, cancer, respiratory disease and diabetes) account for over 80% of all premature NCDs deaths (WHO, 2024).

Regarding the burden of disease NCDs are killing people at their productive ages when they can be most useful for the society. The epidemiological shift from infectious diseases to the NCDs in low and middle income countries are suffering from 80% fatalities due to these diseases (WHO, 2021). Cardiovascular diseases account for most NCD deaths, or at least 19 million deaths in 2021, followed by cancers (10 million), chronic respiratory diseases (4 million), and diabetes , over 2 million including kidney disease deaths caused by diabetes(GBD, 2023). WHO estimates yearly premature deaths from all NCDs increase to 3.8 million in 2030, or 51 % of premature mortality, in sub-Saharan Africa alone (GBD, 2024).

The burden of non-communicable chronic diseases (NCDs) is rising rapidly and has now become a major challenge to global development (Abebe *et al.*, 2017). Globally; it is the leading cause of death, killing more people than all other causes each year. Low-income and middle-income countries are also disproportionately suffering from the consequences of these diseases (Miranda *et al.*, 2008). There are significant social, economic and health losses as a result of the increasing prevalence of NCDs. Even though crises due to NCDs can be deterred through cost-

effective and feasible interventions, around 80% of the deaths in these countries are caused by these diseases (Kankeu *et al.*, 2013).

Non-communicable diseases have not received equal attention with communicable diseases in middle-income and low-income countries (Boutayeb, 2006). There is inadequate information with regard to the epidemiology of NCDs in developing countries for governments to develop NCD-related action plans, leaving major policy gaps for intervention. In our country Ethiopia the prevalence of NCD is very high. World Health Organization (WHO) estimated in 2011 that 34% of Ethiopian population is dying from non-communicable diseases, with a national cardiovascular disease prevalence of 15%, cancer and chronic obstructive pulmonary disease prevalence of 4% each, and diabetes mellitus prevalence of 2 % (WHO, 2011)

Global Burden of Disease (GBD) studies estimated age-standardized death rates of 800 per 100,000 populations for non-communicable diseases in Ethiopia, of which higher death rates (approximately 450 per 100,000) were attributed to cardiovascular disease and diabetes, 150 per 100,000 attributed to cancer, and 100 per 100,000 to chronic obstructive pulmonary disease (Abe gunde *et al.*, 2007). These estimations were much higher than in many developed countries. Although these estimates of cardiovascular disease, cancer, diabetes mellitus, and chronic obstructive pulmonary disease look higher in Ethiopia, estimations by WHO and GBD studies are highly uncertain because the causes of deaths were predicted using cause-of-death models due to lack of information on the level of mortality or cause of death at the country level, which should be substantiated by national evidences

A reviewed literature on non-communicable diseases (NCDs) in SSA showed that the prevalence of stroke ranged from 0.07 to 0.3%, diabetes mellitus from 0 to 16%, hypertension 6 to 48% and current smoking from 0.4 to 71% (Dalal *et al.*, 2011).

The major modifiable risk factors are classified in to two major categories namely behavioral risk factors and biological risk factors. The behavioral risk factors include physical inactivity, unhealthy diet, tobacco use, and harmful alcohol consumption whereas the biological risk factors include high blood cholesterol, high blood pressure, and overweight/obesity. Regular and repeated intake of Chat, also, has recently been reported to be associated with increased risk of

high blood pressure (Daar, *et al.*, 2007 as cited by Yarinbab, and Alemseged, 2017; Kebede *et al.*, 2005).

Hence, country-specific epidemiological and experimental studies are required for a better understanding of the burden and causes of such particular NCDs, as diabetes mellitus, cardiovascular diseases, hypertension, cancers and chronic respiratory diseases.

In general recent evidence describing the prevalence of NCD morbidity and mortality in Ethiopia is fragmented and inconsistent, with some reporting a relatively higher prevalence of NCDs (34.5%)(Abera *et al.*, 2017), while others reported this to be very low at 1.7% (Abebe *et al.*, 2017). Hence, this study was aimed to conduct an updated review of the literature on the prevalence of NCDs in Addis Ababa, Akaki Kaliti sub city of Tirunesh Beijing General Hospital.

1.2. Statement of the problem

The prevalence of NCDs appears to be high and increasing in Ethiopia, but there are a lot of gaps on the evidence that describing the prevalence of NCDs at the study area. Given the heterogeneous nature of the available prevalence studies and the epidemiological transition that is taking place, it is essential that the establishment of a national NCD mortality and morbidity surveillance system is prioritized and implemented in Ethiopia. This will be essential to inform policy and practice to reduce the current and future burden of NCDs in Ethiopia. As a result current data that gives well information is necessary to create awareness among the communities concerning the raised problem.

In addition, recent evidence describing the prevalence of NCD morbidity and mortality in Ethiopia is fragmented and inconsistent, with some reporting a relatively higher prevalence of NCDs (34.5%) whilst others reported this to be very low at 1.7%. Hence, we aimed to conduct an updated systematic review of the literature and retrospective cross sectional of the prevalence of NCDs at Akaki Kality sub city of Addis Ababa from Hospital based studies.

1.3. Significance of the study

The output of this study will create awareness on the prevalence of non-communicable disease and its predisposing factors. It will also open the way for those who are interested in the subject matter and it provides basic line information for future studies. Moreover, data that describes about prevalence and risk factors related to non-communicable diseases was generated as a result.

1.4. Limitations of the study.

This study does not include the primary data from individual patients; rather it depends on the information gathered from the hospital record. Collecting self- reported data may be important for gate the real information and identifying the all predisposing factors linked with the disease of the patients.

1.5. Objectives

1.5.1. General objective

- ❖ The main objective of this study was to assess the prevalence of non-communicable diseases among the patients attending care at Tirunesh Beijing General Hospital

1.5.2. Specific objectives

- ❖ To investigate the most prevalent non-communicable disease at the study area.
- ❖ To determine the magnitude and the mortality rate of NCDs over the last three years in the this Hospital

2. Literature review

2.1. Non-communicable disease

Non-communicable diseases (NCDs), also known as chronic diseases, tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behavioral factors (WHO, 2024). Non-communicable diseases such as cardiovascular, chronic respiratory disease, cancer, and diabetes mellitus are a leading global burden of deaths which kills, 41 million people each year, equivalent to 71% of all death globally (Tesfaye *et al.*, 2022).

Non-communicable diseases (NCDs) are a huge group of illnesses that comprise chronic respiratory illnesses (asthma, COPD), malignant growth, diabetes, and cardiovascular ailments including stroke and respiratory failures. The mortality rate of NCDs is considerably higher in low-income and middle-income countries (LICs and MICs), which makes NCDs a tremendous barrier to reducing developing and developed nations' health disparities (Ezzati *et al.*, 2018).

2.2. The most Prevalent non- communicable disease in Ethiopia

The magnitude of recent deaths from NCD sources alone is exceeding all other causes combined. They are anticipated to rise from 38 million in 2012 to 52 million by 2030 (WHO, 2014). The number of these deaths in low- and middle income countries accounts for 80% and more than 90% of early deaths (deaths before the age of 70 years) happened in these countries (WHO, 2018). The prevalence of NCDs has increased gradually from time to time, which causes about 60% of disability-adjusted life years (DALYs) and 39.8 million deaths in 2015 alone universally (Wekesah *et al.*, 2018).

The non-communicable diseases in the GBD study were classified into twelve categories, including cardiovascular diseases, neoplasms, chronic respiratory diseases, digestive diseases, neurological disorders, mental disorders, substance use disorders, diabetes and chronic kidney diseases, skin and subcutaneous tissue disorders, sense organ diseases, musculoskeletal disorders, and other non-communicable diseases. The latter category encompasses congenital anomalies, genitourinary and male infertility, blood disorders, and oral disorders. Each category is further subdivided into specific non-communicable disease types.

2.2.1. Prevalence of diabetes mellitus

Diabetes mellitus, commonly known as diabetes, is a group of metabolic disorders characterized by high blood sugar levels. This occurs either because the pancreas doesn't produce enough insulin, or because the body can't effectively use the insulin it produces. Insulin is a hormone that regulates blood glucose. Hyper glycaemia, also called raised blood glucose or raised blood sugar, is a common effect of uncontrolled diabetes and over time leads to serious damage to many of the body's systems, especially the nerves and blood vessels (Habtewold *et al.*, 2016).

There are two types of diabetes mellitus. Those are type 1 diabetes and type 2 diabetes. In addition there is also gestational diabetes. Type 1 diabetes (previously known as insulin-dependent, juvenile or childhood-onset) is characterized by deficient insulin production and requires daily administration of insulin. In 2017 there were 9 million people with type 1 diabetes; the majority of them live in high-income countries. Neither its cause nor the means to prevent it are known (WHO, 2024). Type 2 diabetes affects how your body uses sugar (glucose) for energy. It stops the body from using insulin properly, which can lead to high levels of blood sugar if not treated. Over time, type 2 diabetes can cause serious damage to the body, especially nerves and blood vessels. Type 2 diabetes is often preventable. Factors that contribute to developing type 2 diabetes include being overweight, not getting enough exercise, and genetics (Taimur *et al.*, 2024).

Early diagnosis is important to prevent the worst effects of type 2 diabetes. The best way to detect diabetes early is to get regular check-ups and blood tests with a healthcare provider. Symptoms of type 2 diabetes can be mild. They may take several years to be noticed. Symptoms may be similar to those of type 1 diabetes but are often less marked. As a result, the disease may be diagnosed several years after onset, after complications have already arisen. More than 95% of people with diabetes have type 2 diabetes. Type 2 diabetes was formerly called non-insulin dependent or adult onset. Until recently, this type of diabetes was seen only in adults but it is now also occurring increasingly frequently in children (Taimur *et al.*, 2024).

Gestational diabetes is hyperglycemia with blood glucose values above normal but below those diagnostic of diabetes. Gestational diabetes occurs during pregnancy. Women with gestational

diabetes are at an increased risk of complications during pregnancy and at delivery. These women and possibly their children are also at increased risk of type 2 diabetes in the future.

The prevalence of diabetes mellitus is increasing across the world, with 438 million people expected to have the disease by 2030. Over 70% of morbidity and 88% of mortality because of diabetes occur in low and middle-income countries (American diabetes association, 2018). Because of the differences in the study period and area, the frequency of diabetes mellitus in Ethiopia was ranging from 0.34 to 5.0% (Habtewold *et al.*, 2016). World Health Organization (WHO) estimated that the number of patients with diabetes in Ethiopia is expected to be 1.8 million by 2030. The changes in lifestyle have led to the emerging of non-communicable chronic diseases (Habtewold *et al.*, 2016). The reason of increasing diabetes mellitus in Ethiopia is thought to be limited medical supplies and shortage of skilled human resource. In addition, the major focus of the country is on combating infectious diseases (Aynalem and Zeleke, 2018).

Diabetes mellitus is one of the four most common non-communicable diseases (NCDs) causing death world-wide. It is recognized as a vital cause of premature death (deaths occurring before the age of 70) and disability in the twenty-first century (WHO, 2023). The International Diabetes Federation estimated that more than half a billion adults aged 20 to 79 world-wide (10.5% of all adults in this age group) have Diabetes (IDF, 2021). Diabetes was the direct cause of 1.5 million deaths in 2019, with 48% of all deaths under the age of 70 attributable to Diabetes. It was also the world's seventh leading cause of mortality and disability combined (IDF, 2021).

2.2.2. Prevalence of cardiovascular disease

Cardiovascular diseases (CVDs) are the leading cause of death globally. An estimated 17.9 million people died from CVDs in 2019, representing 32% of all global deaths. Of these deaths, 85% were due to heart attack and stroke. Over three quarters of CVD deaths take place in low- and middle-income countries. Out of the 17 million premature deaths (under the age of 70) due to non-communicable diseases in 2019, 38% were caused by CVDs (WHO, 2020).

The prevalence of CVD is notoriously difficult to estimate in a population because it requires information about those who do not visit the health facility. Estimating the global prevalence of CVD is challenging due to multiple countries that are reporting the prevalence ascertained with a varying methodology which renders interpretation difficult (Angaw *et al.*, 2021). Likewise,

estimating the burden of CVD is a challenging task in sub-Saharan Africa countries including Ethiopia (Gemechu *et al.*, 2017). In 2014, the World Health Organization reported that around 30% of the Ethiopian population died due to non-communicable diseases, of which, CVD contributes 9% (WHO, 2014).

The most important behavioral risk factors of heart disease and stroke are unhealthy diet, physical inactivity, tobacco use and harmful use of alcohol. Amongst environmental risk factors, air pollution is an important factor. The effects of behavioral risk factors may show up in individuals as raised blood pressure, raised blood glucose, raised blood lipids, and overweight and obesity. These “intermediate risks factors” can be measured in primary care facilities and indicate an increased risk of heart attack, stroke, heart failure and other complications (WHO, 2024).

2.2.3. Prevalence of hypertension

Hypertension is a common disease characterized by a persistently elevated blood pressure or prolonged increase in systolic or diastolic blood pressure over normal (Dagnaw *et al.*, 2016). It greatly raises the risk of heart, brain, and renal illness and is one of the top causes of mortality and disease globally. According to a WHO research, hypertension affects estimated 1.28 billion individuals aged 30–79 years globally, with the majority (two-thirds) residing in low- and middle-income countries (LMIC). Non-communicable diseases (NCDs) cause 41 million deaths globally each year, with LMICs, including sub-Saharan Africa, accounting for nearly 75% of these deaths. Hypertension is leading to CVD responsible for over 17 million deaths each year (WHO, 2021)

Hypertension is a major contributor to CVD such as stroke and heart diseases, causing 45% of heart disease-related deaths and 51% of deaths attributed to stroke worldwide (WHO, 2013). Out of 17.9 million total deaths due to CVDs in 2019, more than half (10.8 million) were from hypertension complications (GBD Risk Factors Collaborators, 2020; WHO, 2021a).

The global burden of hypertension is increasing drastically. In 2010, an estimated 1.39 billion adults, equivalent to a prevalence of 31.1% had hypertension worldwide. The magnitude is increasing in LMIC (1.04 billion), largely due to economic growth, dietary change, and an aging population, while remaining stable or decreasing in high-income countries (HIC) (349 million

people) (Mills *et al.*, 2020). The swift epidemiological change in LMIC from communicable to NCDs in the past few decades is largely attributable to four major modifiable risk factors like tobacco use, physical inactivity, alcohol, and unhealthy diet (WHO, 2021b). Similar to other LMICs, Ethiopia is also undergoing an epidemiological transition shifting the causes of mortality from infectious diseases to NCD. In particular, hypertension incidence is increasing at an unprecedented rate (Mills *et al.*, 2020; Tesfa and Demeke, 2021).

2.2.4. Prevalence of Respiratory disease

Chronic respiratory diseases are diseases of the airways and other structures of the lung and are among the leading causes of morbidity and mortality worldwide. Some of the most common chronic respiratory diseases are asthma, chronic obstructive pulmonary disease (COPD), and occupational lung diseases. These disease entities are important contributors to the rising burden of non-communicable diseases (NCDs) globally (GBD, 2017). In 2019, chronic respiratory diseases were the third-leading cause of death, responsible for 4.0 million deaths with a prevalence of 454.6 million cases globally.

Chronic respiratory diseases affect more than 1 billion people worldwide, with asthma and chronic obstructive pulmonary disease (COPD) being the most prevalent: about 300 million people have asthma and 200 million have COPD (GBD, 2017). The greatest burden of CRDs occurs in low- and middle-income countries (LMICs): almost 90% of COPD deaths and 80% of asthma deaths occur in LMICs, where they have been linked with poverty, poor access to healthcare and limited health service resources (WHO, 2021). Capacity for CRD diagnosis and management, such as spirometer and inhaled therapies, are not generally available in primary health care in public health services (WHO, 2021).

2.2.5. Prevalence of cancer

Cancer is a newly evolved non-communicable global disease burden that accounts for a significant portion of global morbidity, mortality, and economic loss. Cancer is the first or second leading cause of premature death in 134 of the world's 183 countries, and it ranks third or fourth in 45 more for people under the age of 70 (WHO, 2020). According to WHO, cancer caused 4.5 million 29.8% of the 15.2 million premature deaths from non-communicable diseases worldwide in 2016, while cardiovascular diseases caused 6.2 million (40.8%).

Cancer caused approximately 24 million new cases, 10.0 million deaths, and 250 million DALYs globally in 2019 (Kocarnik, *et al.*, 2022). Because of demographics, epidemiological transitions, advanced diagnostic tools, and screening programs, these global records revealed that the burden of cancer is increasing while the burden of infectious diseases is decreasing. Because of the rapid rise in cancer cases, the United Nations (UN) Sustainable Development Goals (SDGs) include cancer burden reduction as a goal. According to (UN) (SDG, 2021) non-communicable disease premature mortality should have been reduced by one-third through prevention and treatment, as well as promotion of mental health and well-being.

2.2.6. Prevalence of chronic kidney disease

Kidney disease (CKD) is defined as a reduction in glomerular filtration rate below 60 ml/min and the presence of albuminuria over a period of time or an indication of abnormalities in the kidney structure or function (Ali *et al.*, 2023).

In diseases of the kidney characterized by irreversible injury, it appears that once a critical level of renal functional deterioration is reached, progression to end stage disease invariably occurs even if the initiating event or condition is resolved or eradicated. Immunopathogenetic mechanisms probably account for most forms of primary glomerular disease in humans. Although immunologic events and the mediators of glomerular damage that they induce might be responsible for initiating most glomerular diseases.

Certain clinical and experimental observations suggest that the rate of progression of these diseases is influenced by several non-immunologic factors. In certain diseases, such as proliferative glomerulonephritis, the relentless decrease in renal function is due very likely to the initial underlying process; in other entities characterized mainly by interstitial scarring and glomerular sclerosis, the cause of progressive loss of renal function is less apparent. Recent experimental evidence suggests that dietary manipulations, such as reductions in protein and/or phosphate intake, can halt or attenuate the progression of chronic renal insufficiency in experimental animal models (kidney international, 1983).

In low- and middle-income countries, the burden of chronic kidney disease (CKD) is rising due to poor access to early detection and management services. In Ethiopia, little is known about the context-specific risk factors and their magnitude, particularly the dietary habit of patients is not

studied. Therefore, this study aimed to identify the dietary pattern and other risk factors of kidney disease in Ethiopia.

The prevalence of chronic kidney disease (CKD) is high and it is gradually increasing. Persons with CKD should introduce appropriate measures to hamper the progression of kidney function deterioration as well as to prevent the development or progression of CKD-related diseases. Current guidelines for CKD management recommend dietary and lifestyle modifications, however, they have largely been based on general population studies (Kramer, 2017)

2.3. Predisposing factors of non-communicable disease

The major identified risk factors for most CNCs include tobacco use, alcoholism, high blood pressure, high blood glucose, serum lipid abnormalities, obesity, low fruit and vegetable intake, physical inactivity and biological factors. Studies have indicated that these risk factors are widespread globally (Ezzati *et al.*, 2006). On the other hand it is shown that level of education, occupation and income affect tobacco use, physical activity and dietary habit which further influence Body Mass Index (BMI), blood pressure, and cholesterol level. Khat chewing was shown to be associated with mental disorders, increased blood pressure, palpitation and myocardial infarction (Ermias and Samuel, 2006) in Ethiopia.

Overweight and obesity are components of a defined cluster of risk factors for non-communicable diseases, once problems for only the high-income countries, in recent days became rampant in developing countries. Major co-morbidities associated with these conditions include cardiovascular disease (CVD), cerebrovascular disease, type 2 diabetes mellitus (DM), atherogenic dyslipidemia and certain types of cancer (WHO, 2000). Globally, 44% of DM, 23% of ischemic heart disease and 7–41% of certain cancers are attributable to overweight and obesity.

The major modifiable risk factors are classified in to two major categories namely behavioral risk factors and biological risk factors. The behavioral risk factors include physical inactivity, unhealthy diet, tobacco use, and harmful alcohol consumption whereas the biological risk factors include high blood cholesterol, high blood pressure, and overweight/obesity. Regular and repeated intake of Chat, also, has recently been reported to be associated with increased risk of high blood pressure (Daar, *et al.*, 2007 as cited by Yarinbab & Alemseged, 2017)

2.4. Conceptual frame work

The non- communicable disease and its predisposing factors in this study were based on the world health organization (WHO) steps and its more prevalence in the society. The steps frame works first level of risk assessment involves secondary data from the hospital record. The data collected comprised the independent(predictor) variables that will measured in the study namely, age, sex, marital status, educational status, monthly income and the outcome(dependent) variables comprised the behavioral risk factors namely, smoking cigarettes, chewing chats, drinking alcohol, and physical activity. The interaction of both variables may lead to the development of non-communicable disease in the study area. Therefore inadequate counseling of patients on health promoting behaviors was the focus of the study.

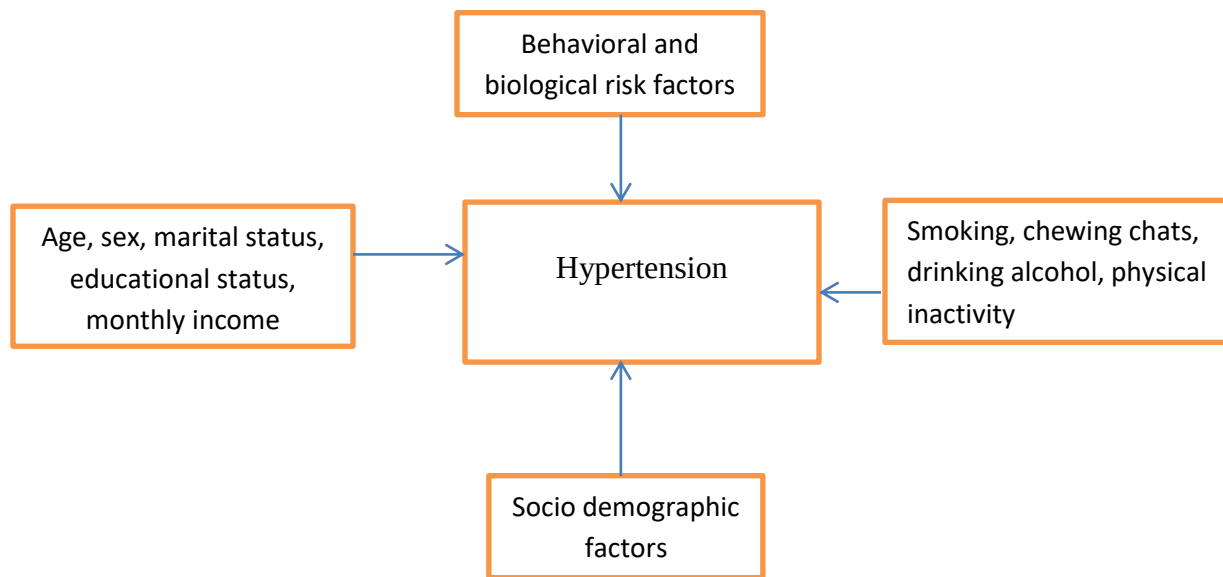


Figure 1: Conceptual frame work

3. Materials and methods

3.1. Description of the study area

The study was conducted to assess the prevalence of non-communicable disease and its predisposing factors at Tirunesh Beijing general hospital. The hospital is specialized public hospital located in akaki kality sub city woreda 01 in Addis Ababa Ethiopia.

The hospital was constructed by the cooperation of Ethiopian and Chinese governments in Addis Ababa City Administration. The construction and major medical equipment and furniture costs are covered by the Chinese government and the Addis Ababa City Administration. This hospital was built and named for the commemoration of the event when Tirunesh Dibaba won double gold medals in 5000 and 10,000 meters long distance competition in 2008th Beijing Olympic.

Akaki Kality is one of the ten urban zones of Addis Ababa. It is located in the southern part of the city, 20 km from the city center. It has an estimated population of 220,740 (114,095 females and 106,645 males). The residents of Akaki-Kality work for very low wages. They are factory workers, day laborers, farm workers, low-level civil servants, military personnel, sex trade workers and unemployed youth, women and men. Of these groups, factory workers constitute the majority of the population. (Emanuel Development Association, 2024)

3.2. Study design and period

Hospital based retrospective cross sectional study was conducted from March to June, 2017 E.C at Tirunesh Beijing General Hospital Akaki Kality sub city Addis Ababa Ethiopia.

3.3. Populations

The patients that registered at the outpatients department of Tirunesh Beijing General Hospital for the case of non-communicable disease (NCD) from 2015 to 2017 E.C were the source population. Those patients whose their demographic and medical information well registered at the hospital record were the study population.

3.4. Inclusion criteria

The NCDs patients whose demographic and medical information registered well at the Tirunesh Beijing General Hospital record office were all included in the study.

3.5. Exclusion criteria

Those NCDs patients who are their demographic and medical information were not well registered at the hospital record office were excluded from the study.

3.6. Data collection method

The medical record reviewing technique was used to collect the secondary data from the outpatient department of Tirunesh Beijing General Hospital (TBGH). The questionnaires were prepared after revising related literature, reviewing the hospital record office, electronic medical record and it is composed of socio-demographic status, lifestyle factor and medical (NCD) information of the patients. The questionnaires were designed by English and translated to Amharic which is the local language around the study area and to clarify the questions for data collectors and back translated to English and vice versa. Three data collectors from the staff members of TBGH participated and collected the total data of 7620 patient's information from the three years registered data.

3.7. Data analysis

Data was analyzed with descriptive statistical methods and expressed with frequency distribution, percentage, in addition flow chart and table will be used to summarize the data of the prevalence of NCDs and its predisposing factors among patients attending in Tirunesh Beijing general hospital

3.8. Operational definitions

Non-communicable disease: are chronic diseases that tend to be long duration, non-transmittable from person to person, and caused by physiological, behavioral, genetic, and environmental factors (WHO, 2020).

Prevalence: this is a measure of the frequency of how common specific disease is within a population at a particular point in time.

Predisposing factors: factors that increase an individual's risk of developing the non-communicable disease

Biological risk factor: are the physiological conditions or traits that increase an individual's susceptibility to develop non-communicable disease. Examples: blood pressure, cholesterol, body mass index (Daar *et al.*, 2007 as cited by Yarinbab and Alemseged, 2017).

Behavioral risk factors: are actions or habits that increase a person's likelihood of developing non-communicable disease. Examples: tobacco use, physical inactivity, unhealthy diet, harmful use of alcohol. (Yarinbab and Alemseged, 2017)

3.9. Ethical consideration

The letter of permission was written from Addis Ababa university department of zoological science to Addis Ababa health office for the purpose of data collection on the current study and Addis Ababa health office ethical committee also approved the study proposal and wrote a letter to Trunesh Beijing General Hospital. The hospital research team and other concerned body (the outpatient department and record office) will participated by giving information according to the questionnaires and interview prepared for data collection.

4. Result

4.1. Socio-demographic characteristics of the patients

From 7620 three year total admission of NCDs patients at Tirunesh Beijing General Hospital 54% were male and 46% were female. The majority of the patients (52%) were found between the age group of (48-78). 49% of the patients were married and most of them (33.3%) have no formal education. 57% of the patients have the family history related to NCDs and most of diagnosed patients (51.1%) were governmental and non- governmental employer.

Table 1: Socio-demographic characteristics of the patients (n=7620)

No	Variables	Categories	Frequency	Percent (%)
1	Sex	M	4116	54
		F	3504	46
2	Age	Below 18	814	10.7
		18-48	2478	32.5
		48-78	3201	52
		Above 78	1127	14.8
3	Marital status	Single	1670	22
		Married	3743	49
		Separated/divorced/widowed	2207	29
4	Educational level	No formal education	2540	33.33
		Elementary	2164	28.4
		secondary school	1648	21.63
		Higher education	1268	16.64
5.	Family history related to NCD	Yes	4340	57
		No	3280	43
6	Occupation	Employer: governmental/ non-governmental	3897	51.1
		Farmer	593	7.8
		Self- employed	2628	34.5
		No formal occupation	502	6.6

4.2. Prevalence of non -communicable diseases at the study area

Among the total NCD patients registered at the outpatient department of TBGH, 23% were hypertensive, 21% were caused by cardiovascular disease. 14.82% were diagnosed for different cancer, 10.76% were diagnosed for diabetes mellitus. 9% accounts for chronic respiratory disease (asthma and chronic obstructive pulmonary disease), 7.6% accounts for chronic kidney disease and 4.5% diagnosed for epilepsy.

Table 2: Prevalence of non-communicable diseases at the study area by percentage (n=7620)

N_o	Types on NCD	Frequency	Percent (%)
1.	Hypertension	1752	23
2.	Cardiovascular disease	1596	21
3.	Diabetes mellitus	820	10.76
4	Cancer(breast cancer, cervical cancer and lung cancer	1130	14.8
5	Chronic respiratory disease(asthma and COPD)	686	9
6	Chronic kidney disease	580	7.6
7	Epilepsy	341	4.5
8	Thyrotoxicosis	213	2.8
9	Chronic back pain	163	2.1
10	Alcoholic liver disease	112	1.46
11	Toxic goiter	84	1.1
12	Peripheral neuropathy	76	0.99
13	Car incidence	67	0.87

Regarding the age distribution of the patients at the study area the prevalence of NCDs were higher at the age interval of 48-78 which accounts (42%) than the other age group.

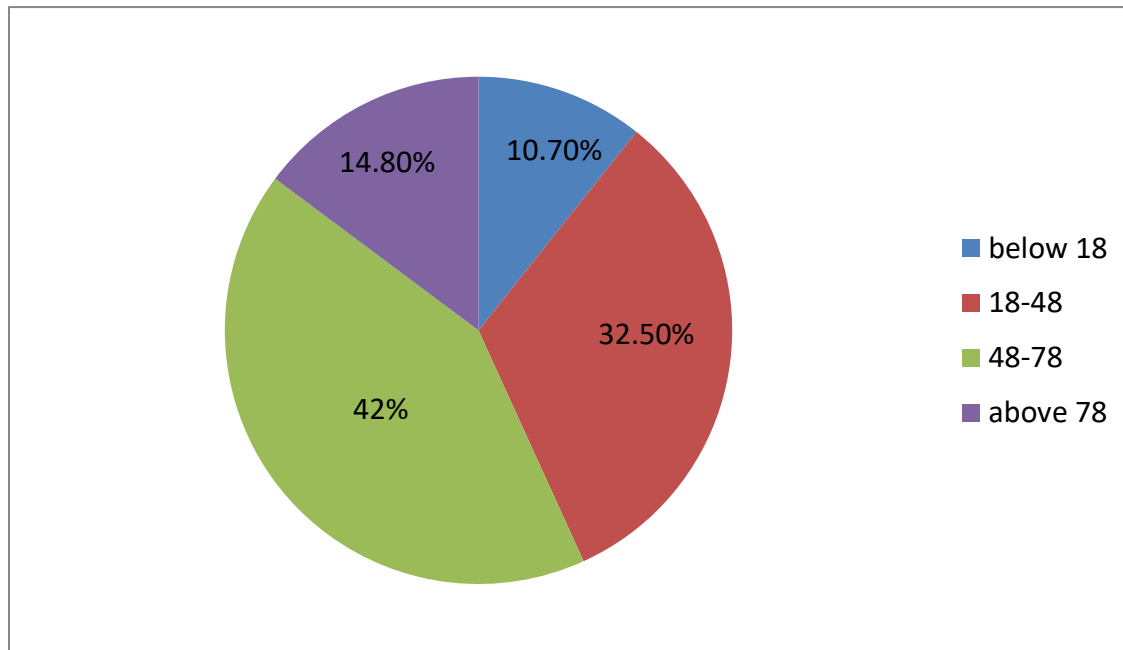


Figure 2: The prevalence of NCD through the age distribution of the patients

In addition, over the last three years the prevalence of NCDs becomes in an increased manner at the study area. The prevalence of hypertension was 6.2% in 2015, 7.8% in 2016 and 9% in 2017 among the total admission of patients. The prevalence of other NCDs over the last three years at the study area was listed in table 3.

Table 3: prevalence of non-communicable disease at TBGH over three years (n=7620)

No	Types on NCD	Prevalence of NCD by Years(E.C)					
		2015	%	2016	%	2017	%
1.	Hypertension	472	6.2	597	7.8	683	9
2.	Cardiovascular disease	498	6.5	536	7.1	562	7.4
3.	Diabetes mellitus	214	2.8	296	3.9	310	4.06
4	Cancer(breast cancer,	360	4.72	376	4.9	394	5.18

	cervical cancer and lung cancer						
5	Chronic respiratory disease(asthma and COPD)	170	2.2	230	3	286	3.8
6	Chronic kidney disease	168	2.2	203	2.66	209	2.74
7	Epilepsy	128	1.7	105	1.37	108	1.4
8	Thyrotoxicosis	62	0.8	69	0.9	82	1.1
9	Chronic back pain	38	0.5	56	0.7	69	0.9
10	Alcoholic liver disease	32	0.41	36	0.47	44	0.57
11	Toxic goiter	34	0.45	26	0.34	24	0.31
12	Peripheral neuropathy	19	0.25	22	0.29	35	0.45
13	Car incidence	16	0.2	19	0.25	32	0.42
	Total	2211	29	2571	34	2838	37

When we compare the prevalence of NCDs at the study area over the last three years, it is more highly prevalent at this year (37%) than the last two years.

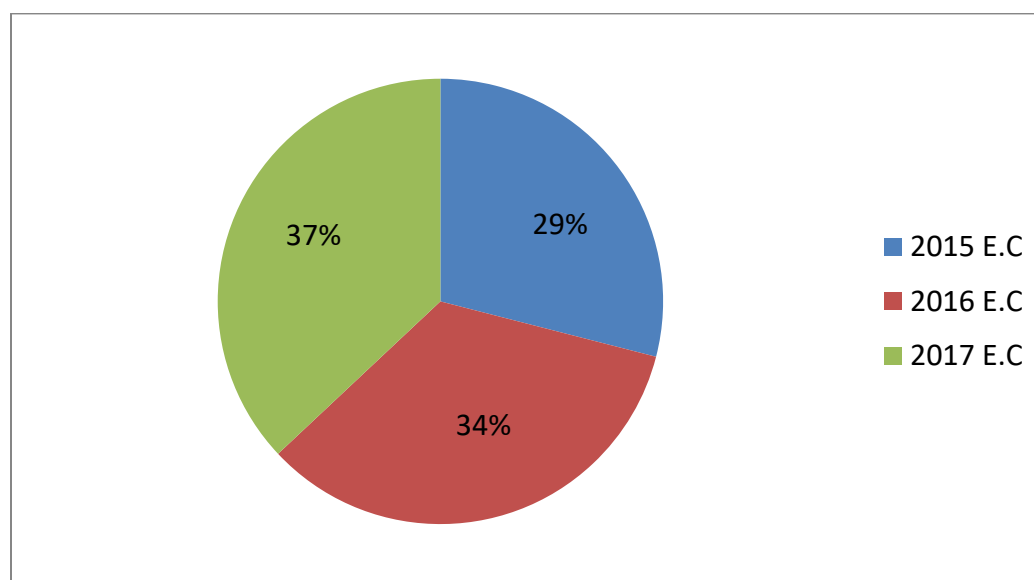


Figure 3: Prevalence of NCDs over the last three years at the study area

4.3. The most prevalent NCDs at the study area

Cardiovascular disease, cancer, hypertension and diabetes mellitus are the most prevalent NCDs at the study area. Among this there are multiple types of cardiovascular disease and cancer disease.

4.3.1. Prevalence of cardiovascular disease

Cardiovascular disease was one of the most prevalent and leading cause of premature death at the study area. The main CVDs that more prevalent at the study area include coronary heart disease which accounts 9.25% (38), stroke 7.79% (32), deep vein thrombosis 3.89% (16) and heart failure 2.68%(11).

Table 4: prevalence of cardiovascular disease

No		Types of disease	Frequency	Percentage (%)
1	Cardiovascular disease	Coronary heart disease	438	5.7
2		Stroke	422	5.5
3		Deep vein thrombosis	386	5
4		Heart failure	350	4.6

4.3.2. Prevalence of cancer

The most prevalent types of cancer at the study area include: breast cancer which accounts 6.7% (512), cervical cancer 4.5% (346) and lung cancer 3.6% (272).

Table 5: prevalence of cancer

No		Types of disease	Frequency	Percentage
1	Cancer	Breast cancer	512	6.7%
2		Cervical cancer	346	4.5%
3		Lung cancer	272	3.6%

5. Discussion

Concerning the sex of the patients, male 4116(54%) was more affected by different NCD than the female 3504 (46%). This is in line with cross sectional study carried out in Mizan Aman Twon Ethiopia (Yiranbab and Alemsegid, 2017). The reasons for the predominance of the male susceptibility to NCD might be attributed to the consumption of excessive alcohol and smoking of cigarette than the female.

With regard to age distribution of the patients, NCD was more prevalent between the age group of 48- 78 which was 3201(42%) than the other age group. This was in line with the study conducted in northwest Ethiopia Dabat health center (Abebe *et al.*, 2017). According to this study more productive age group were more affected by NCDs than the other age group.

Regarding educational status of NCD patients, most of the sampled individuals have no formal education 2540 (33.3%). The prevalence of NCD was more seen with uneducated people and which learned only lower grade level. The study conducted at TBGH in 2020 (Engidaw *et al.*, 2020) also shows that having no any formal education and lack of awareness has its own effect on the prevalence NCD and controlling themselves from such mortal disease.

Regarding the family history, 4340 (57%) patients have the family history of NCD. Similarly the study conducted in Bahir dar (Alamina, *et al.*, 2023), shows that the family history of chronic disease is significantly associated with the prevalence of NCD.

Concerning the marital status, most of the patients attending at TBGH for the case of NCD were married 3743(49%). According to this study the prevalence of NCD was more common among married patients than the other. Different studies also reported similar findings.

Most of the study areas patients' occupation was governmental and private employer 3897(51.1%). Different findings also reveal that being employment at specific area can increase the susceptibility to different risk factors that can increase the prevalence of NCD. This indicates that the job condition of the individual had an effect on increasing the prevalence of NCD

Hypertension is the leading preventable causes of cardiovascular disease, premature death and disability worldwide. The prevalence of hypertension is widely variable and it ranges from 13% to 41% due to the difference of risk factors. According to Tesfa and Demeke (2021), a wider difference in the prevalence of hypertension was observed in different parts of Ethiopia. A lower prevalence (7.7%) of hypertension was reported in the study conducted in the Amhara region (Tadesse and Alemu, 2014) and a higher prevalence (41.9%) of hypertension was observed in the Harari region (Shukuri *et al.*, 2019). This retrospective cross sectional study also reveals the higher prevalence of hypertension (23%) than other NCD. The data gained from this hospital shows that, the prevalence of hypertension become in an increased manner from time to time and over the last three years. In 2015E.C it was about 6.2%, in 2016E.C it was 7.8% and in 2017 E.C it was about 9%. The presence of many predisposing factors and risk factors might be the cause for more prevalence of hypertension at the study area.

According to the WHO, (2020), cardiovascular disease is the leading cause of death globally and it's more prevalent disease. A systematic review and meta-analysis conducted in Ethiopia found that prevalence of CVD that ranged from 7.2 to 24% (Angaw, *et al.*, 2021). In this study also the prevalence of CVD was 21%. This indicates that next to hypertension CVD was the most prevalent NCD in the study area. The main CVDs that more prevalent at the study area include coronary heart disease, congestive heart failure, deep vein thrombosis, and stroke.

The prevalence of Diabetes Mellitus in the study area is found to be 10.76 %. This finding exceeds to the International Diabetes Federation Atlas-projected estimate of DM for Ethiopia (5.2%), to those of studies done in Bishoftu town in which a prevalence of 5% (Megersa *et al.*, 2019) and related to the study conducted in Addis Ababa in (2024), which is 14.3% (Asemu *et al.*, 2024). This discrepancy and differences may be due to differences in the study area, study designs, sample sizes used, and the times the studies were conducted. The present study was conducted on a relatively large sample and includes the three years data compared to the sample sizes of the other studies, and it was exclusively done among specific hospital. Moreover, the prevalence of DM become in increasing manner over the last three years at the hospital which shows 2.8% in 2015, 3.9% in 2016 and 4.06% in 2017 E.C.

Chronic obstructive pulmonary disease and asthma were among the chronic respiratory disease observed at the study area. The prevalence of asthma and chronic obstructive pulmonary disease were 9%, which is comparable to the study conducted in Abeshge Ethiopia in which the prevalence of COPD ranged from 9.4% to 25% (Weldeamanuel *et al.*, 2019). Cigarette smoking is considered as the most commonly encountered risk factor for COPD worldwide. It was estimated that 73 and 40% of COPD mortality is related to smoking in developed and developing nations respectively (Weldeamanuel *et al.*, 2019). In this study area also smoking was the main predisposing factor for the prevalence chronic respiratory disease. Other risk factors of respiratory disease may include occupational exposure to dusts and chemicals in different factories and caused chronic obstructive pulmonary disease and chronic asthma.

According to the study conducted at Tikur Ambessa Specialized Hospital in (2017), Cancer was an increasing public health burden for Ethiopia and Sub-Saharan Africa at large. In Ethiopia, hospital records show that there are more than 150,000 cancer cases per year and currently cancer accounts for 4% of all deaths (Woldu *et al.*, 2017). The hospital based study conducted in Bahir Dar in 2023 also shows, the prevalence of cancer as 11.6% (Tebabal *et al.*, 2023). In the study area the prevalence of cancer were 14.8% which is related to the study conducted in in different parts of the country.

However, Cancer is the most neglected and least prioritized health issue in Ethiopia. Because the exact causes of cancer are not known and very often no single cause can be found. Findings so far show that cancer causes are related to changes on genes. Such changes on genes are related to living habit such as tobacco smoking, unhealthy diet and physical inactivity, and environmental factors like exposure to infections and carcinogens, and longer life expectancy (Woldu *et al.*, 2017). The same is true in the study area.

The prevalence of chronic kidney disease (CKD) is high and it is gradually increasing. The current study result shows that the prevalence of CKD was about 7.6% which is comparable with the study conducted in East Amhara Dessie Referral Hospital which is 10% (Ali *et al.*, 2023). The other non-communicable disease including car accident epilepsy, thyrotoxicosis, chronic back pain and liver disease were also other disease that widely prevalent in the study area.

6. Conclusion

This study found that the magnitude of different NCDs in the study area was very high. Hypertension was one of the most prevalent diseases among the NCDs patients registered at Tirunesh Beijing General Hospital. CVDs were also the next most prevalent and leading cause of death at the study area. Different cancer, diabetes mellitus, chronic respiratory disease, chronic kidney disease and others are among the non-communicable disease that observed at the study area. In general the prevalence of NCD becomes in an increasing manner over the last three years at the study area.

7. Recommendation

This study revealed the higher prevalence of different types of NCD at the study area. Therefore, akaki kality health office and TBGH should plan and implement health education programs on prevention and control of NCDs. On top of this, Addis Ababa health bureau should design a local media plan to aware the public about CNCDs and their predisposing and risk factors. Federal Ministry of Health (FMOH) and Addis Ababa Administration bureau in collaboration with other stakeholders should encourage further studies on the prevalence of NCD and the associated predisposing factors of CNCDs. Any interested researcher should conduct further study on the biomedical measurements to have a better picture of the prevalence CNCDs and its predisposing factors. It is highly recommended that government should set up a community-based CNCDs prevalence and its predisposing factor surveillance system in the future.

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Appendix 1: Questionnaires and interview

The questionnaires and Interview questions that designed to collect data on the prevalence of non- communicable disease and its predisposing factors from specialist and source data at Tirunesh Beijing General Hospital

Patients' demographics

1. What demographics (age, gender, marital status, occupation, educational status:

- no formal education
- Primary ☐
- Secondary ☐
- Higher education ☐

Socio-demographic status) are most affected by non-communicable disease in this hospital?

2. Are there any specific populations or communities that you feel are particularly at risk?

Family history

3. Are there the patients with the family history of any NCDs?

Yes ☐ No ☐

General understanding

4. Can you provide an overview of the types of non-communicable disease that are most prevalent in this hospital?

5. What do you believe are the primary factors contributing to the prevalence of non-communicable disease in this area?

Data and statistics

6. What statistical data do you have on the prevalence of non-communicable disease in this hospital over the past three years?

7. How does the prevalence of NCDs in this hospital compared to national or regional statistics

Life style factors

8. Are the patients smoke? Yes, regularly ☐ yes, occasionally ☐ no, never ☐

9. How often the patients consume alcohol?

Never ☐ occasionally ☐ regularly ☐

10. Physical activity level of the patients

Sedentary (little to no exercise)

Moderate (light exercise/sports 1-3 days per week)

Active exercise/ sports 3-5 days per week

Very active (intense exercise/ sports 6-7 days per week)

11. How would you describe the patient's diet?

Healthy (fruits, vegetables, whole grains, proteins) ☐

Average (some healthy, some unhealthy foods) ☐

Unhealthy (high sugar, fats, and processed foods) ☐

Treatment and management

12. What treatment protocols are in place for managing NCDs at this facility?

13. How does the hospital collaborate with other healthcare providers to address the needs of NCD patients?

Prevention and Education

14. What initiatives or programs does the hospital have in place aimed at preventing NCDs?

15. How does the hospital engage in the community outreach to educate the public about NCDs prevention?

Challenges and barriers

16. What challenges does the hospital face in managing and treating NCDs

17. Are there specific barriers to accessing care for patients with NCDs in this area?

Future direction

18. What are your hopes for the future in terms of addressing the prevalence of NCDs at this hospital?

19. How do you envision the role of technology and innovation in managing NCDs in moving forwards?

20. In your experience, what has been the most significant change in the prevalence of NCDs over the years?
21. Do you have any personal stories or experiences that highlight the impact of NCDs on patients?
22. Is there anything else you would like to add that we haven't covered regarding the prevalence of NCDs at this hospital?

Appendix 2: Sample data collected from Tirunesh Beijing General Hospital

Data collection format on the prevalence of non -communicable disease among patients attending at Tirunesh Beijing General Hospital

NO	Year	MRN	Age	Sex	Type of NCD(patients admitted)	Family history	Marital status	Education level	occupation	Associated risk factors	remark
1	2/3/15	42215	37	F	Diabetes mellitus	Yes	married	Secondary school	Gov't employer	overweight, unhealthy diet	
2	2/3/15	34795	54	M	Hypertension	Yes	Married	Junior	Non-gov't employer	Drinking alcohol, Overweight	
3	2/4/15	195655	70	M	Hypertension	No	Married	No formal education	Private	Aging, unhealthy diet	
4	2/4/15	3758	97	M	COPD	No	Married	No formal education	Farmer	Aging, Smoking, alcohol consumption	
5	2/5/15	343380	50	F	Diabetes mellitus	Yes	Divorced	Higher level	Gov't employer	overweight, unhealthy diet	
6	3/2/16	147578	73	M	Chronic kidney disease	No	Married	No formal education	Farmer	Job, unhealthy diet	
7	3/3/16	296500	38	M	Ischemic stroke	No	Single	Higher level	Private	Hypertension, smoking	
8	3/4/16	50016	37	F	Breast cancer	No	Married	Junior	trader	lifestyle, genetic factors and environment	
9	3/4/16	268412	25	F	Diabetes mellitus	NO	Single	Secondary school	No occupation	Overweight	
10	3/5/16	97864	85	F	Hypertension	Yes	Divorced	No formal	No	Aging, overweight,	

22	2/6/16	115854	39	M	Asthma	No	Married	Secondary school	Self-reliance	Environmental condition	
23	2/6/15	413267	46	M	Car incidence	No	Married	Secondary school	Driver	Consuming alcohol, uncontrolled driving	
24	2/7/15	281846	29	F	Cervical cancer	No	Married	Secondary school	Self		
25	3/5/16	391978	52	M	Chronic kidney disease	No	Married			Unhealthy diet, drinking	
26	3/5/16	106859	40	M	hypertension	Yes	Married	No formal education	Farmer	Smoking, consuming alcohol	
27	3/6/16	109187	26	F	Diabetes mellitus	Yes	Single	Secondary school	Private	Overweight, Unhealthy diet, low physical activity	
28	3/6/16	29891	42	M	COPD	No	Married	No formal education	Farmer	Smoking, drinking of alcohol	
29	3/7/16	001588	67	F	Hypertension	Yes	Married	Higher level	Gov't employer	Overweight, Unhealthy diet	
30	3/7/16	72778	49	F	Deep vein thrombosis	No	Divorced	No formal education	No occupation		
31	3/8/18	261761	29	M	Epilepsy	Yes	Single	Higher level	No occupation		
32	3/8/16	146212	52	F	Diabetes mellitus	No	Married	Higher level	Gov't employer	Overweight, Unhealthy diet	

								education	occupation	unhealthy diet	
11	3/6/16	407259	52	M	Hypertension	Yes	Married	Higher level	Gov't	Aging, overweight unhealthy diet	
12	2/2/17	911668	77	M	Hypertension	Yes	Married	Higher level	Gov't	Aging, overweight	
13	2/2/17	302298	30	M	Heart failure	No	Single	Higher level	Private	Not described	
14	2/3/17	66780	60	F	Diabetes mellitus	Yes	Married	No formal education	Farmer	Overweight, unhealthy diet	
15	2/4/17	112505	60	F	Diabetes mellitus	No	Divorced	Higher level	Gov't employer	Overweight, unhealthy diet	
16	2/4/17	900737	70	M	Lung cancer	Yes	Married	Higher level	Gov't employer	Smoking, consuming alcohol,	
17	2/5/17	1711720	70	M	Deep vein thrombosis	No	Divorced	No formal education	Farmer	Smoking, consuming alcohol,	
18	2/5/17	12926	70	F	Stroke	No	Married	Junior	Private	Smoking, consuming alcohol, job	
19	2/6/17	413301	55	F	Hypertension	No	Married	<u>Secondary school</u>	Private	consuming alcohol, unhealthy diet	
20	2/7/17	412052	50	F	Coronary heart disease	Yes	Devoid	Higher level	Gov't employer	Using traditional medicine	
21	2/5/15	273379	62	M	Hypertension	Yes	Married	Junior	Self-reliance	consuming alcohol, unhealthy diet	

33	3/9/16	26146	50	F	Diabetes mellitus	No	Divorced	Junior	No occupation	Low physical activity, overweight	
34	3/9/16	414365	46	M	COPD	No	Married	Junior	No occupation	Smoking, drinking of alcohol	
35	2/4/17	359571	34	F	Cervical cancer	No	Married	Higher level	Gov't employer		
36	2/4/17	73229	33	F	Cervical cancer	No	Devoid	Higher level	Gov't employer		
37	2/5/17	113001	54	M	Hypertension	No	Divorced	Higher level	Private	Stress , Drinking alcohol	
38	2/5/17	016803	70	F	Hypertension	Yes	Married	Secondary school	Farmer	Drinking alcohol, unhealthy diet, stress	



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በአዲስ አበባ ከተማ አስተዳደር ጤና ቢሮ የጥናትና ምርመራ ህዝብ ጤና
CITY GOVERNMENT OF ADDIS ABABA HEALTH BUREAU
TIRUNESH BEIJING GENERAL HOSPITAL

ቁጥር ጥ/ቢ/አ/ሆ/ 03/1268/2017
ቀን 20/09/2017 ዓ.ም

ለ:- የብሰን ቀስቶ አርጌቻ

ጉዳይ:- የምርመራ መረጃ መሰብሰብ ክፍያን ይመለከታል

ከ አዲስ አበባ ጤና ቢሮ ሪሰርች ኢንስቲትዩት ሪቪው ቦርድ (Institunal review board) ተረጋግጦ ጥናታቸውን በ " The prevalence of chronic non-communicable disease and its predisposing factors among patients attending in Tirunesh Beijing General Hospital, Addis Ababa, Ethiopia, 2025. በሚል ርዕስ በሆስፒታላችን በኮሌቲ ዲፓርትመንት ከቀን 04/09/2017 ድረስ የጥናታቸውን መረጃ መሰብሰብ ያካሄዳሉ።

በዚህም መሰርት በማኔጅመንት በቁጥር 09/6875/2017 በጸደቀው የምርመራ አከፋፈል መመሪያ መሰርት ለ ማስትረስ የምርመራ ጥናት ክፍያ 700 አጠቃላይ ድምረ 700 ሰባት መቶ ብር ብቻ በጥናትና ምርመራ ፋይናንስ ዳይሬክቶሬት ምመሪያ መሰረት ክፍ እንዲፈጽሙ የዚህ ደብዳቤ ግልባጭ የተደረገ መሆኑን እንገልጻለን።

ግልባጭ:-

- ለአስተዳደርና ቢዚነስ ም/ስራ አስኪያጁ
- ለፋይናንስ ዳይሬክቶሬት
- ለስልጠናናምርምር ዲፓርትመንት



ከሰላምታ ጋር
367 ዓ.መ