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# Magnitude and Determinants of Non Communicable Disease and Its Contributing Factors in Medical Ward of Mettu Karl Referral Hospital, South Western, Ethiopia: A Prospective Observational Study

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**Abstract**

**Background:** Non-communicable diseases are defined as diseases or conditions, which affect individuals over an extended period of time (years, decades or even an entire lifetime) and for which there are no known causative agents that are transmitted from one affected individual to another. Non-communicable diseases are a major global problem.

**Objective:** To find out magnitude and determinants of non-communicable disease and its contributing factors in medical ward of Mettu Karl Referral Hospital.

**Methods:** A prospective observational study design was conducted from April 23/2021 to June 24/2021. Data was collected through employing structured questioner, and then the collected data was coded and analyzed by statistical packages for social sciences 25.0-version statistical software. A test of association was done using binary and multiple logistic regressions. P value <0.05 was considered significant.

**Findings:** The overall prevalence of non-communicable disease in medical ward was 288 (68.2%).Hypertension was the commonest type of non-communicable disease 41.71% followed by diabetes mellitus 41.5%. Regarding body mass index majority 153 (36.3%) of patients were normal (18.5-24.9 kg/$m^2$) and least 57 (13.5%) of the patients were underweight (<18.5kg/$m^2$). Age, every khat chewers, every alcohol drinkers, BMI ≥thirty kg/$m^2$, biochemical risk factors (obesity, high blood pressure, high fasting blood sugar, low density lipoprotein, and comorbidity were significantly predictors of non-communicable diseases).

**Conclusion and Recommendation:** Majority of patients had physical activity ten minutes per day, had sedentary lifestyle ten to thirty hours per week, were walking ten to thirty hours/per week, and above half of patients were use salt always/usually. Health care workers should have teach the patients how to prevent non-communicable diseases.

**Keywords:** Non-communicable disease; Risk factors; Medical ward; Mettu karl refer ral hospital; Ethiopia

## Abbreviations

BMI: Basic Mass Index; CHD: Coronary Heart Disease; COPD: Chronic Obstructive Pulmonary Diseases; CPD: Chronic Pulmonary Disease; CVD: Cardiovascular Diseases; DALYs: Disability-Adjusted Life Years; DM: Diabetes Mellitus, HIV/AIDS: Human Immune Virus/Acquired Immunodeficiency Syndrome; ICU: Intensive Care Unit; NCD: Noncommunicable Diseases; MKRH: Mettu Karl Referral Hospital; WC: Waist Circum Ference

## Introduction

Non-communicable diseases, also known as chronic conditions that do not result from an (acute) infectious process and hence are "not communicable, also a disease that has a prolonged course, that does not resolve spontaneously, and for which a complete cure is rarely achieved. NCDs are becoming a significant burden in middle-income developing countries. The major groups of chronic NCDs are DM, CVD, cancers, and CPD. These have several major risk factors in common and together account for around 50% of global mortality [1]. According to WHO, the health and socioeconomic impact of non-communicable disease is currently increasing rapidly, making a substantial contribution towards the total global mortality, global burden of diseases and the loss of DALYs. From a total global death toll of 58 million people registered in 2005, non-communicable diseases, particularly CVD, cancer, COPDs and type 2 diabetes, accounted for 38 million deaths [2]. This is double the total death toll for all infectious diseases, including HIV/AIDS, tuberculosis, malaria, maternal and perinatal conditions and nutritional deficiencies. It is projected that NCDs will increase by 17% by 2015 if action is not taken [3]. In the




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developing countries, non-communicable diseases are also emerging as a major public health concern, and this is believed to be an attribute of the effects of industrialization, e.g. adoption of a sedentary lifestyle, poor nutrition, cigarette smoking and risky alcohol intake, coupled with improved health care in infection control and improved general mean life expectancy. The major causes of morbidity and disability in the developing countries have shifted from a predominance of nutritional deficiencies and infectious diseases to non-communicable diseases [4]. This became evident when approximately 75% of the total global individual non-communicable disease cases were recorded in the developing countries, especially those in sub-Saharan Africa [5]. 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 [6]. 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 [7]. An epidemiological study of risk factors carried out in Switzerland demonstrated that there exists a significant association between NCDs and some socio-demographic and health factors, including gender, age, ethnicity, level of education and work status [8]. The association observed is consistent with the outcome of a National Health Survey on the prevalence of cigarette smoking, risky alcohol consumption, physical inactivity, and overweight among the American population. The American study revealed that gender, age, occupation, and educational levels are significantly associated with chronic disease risk factors [9]. According to the literature, there is a widespread scientific and public health consensus that the likelihood of developing NCDs is linked to the exposure of an individual, community or population to a cluster of behavioral risk factors, such as tobacco use, unhealthy diets and physical inactivity [10].

The prevalence of NCDs increases throughout the world. It leads to 47% of the disease burden and 63% of all mortalities. Of which, 80% of mortalities occur in developing countries, and the majority of deaths are premature. Further, by the year 2020, global anticipated NCDs burden will rise to 80% and the majority of deaths (70%) will occur in low and middle-income countries [11]. Similarly, the magnitude of NCDs is increasing in Ethiopia. Hypertension and Diabetes Mellitus (DM) are the two most common and easily diagnosed forms of NCDs. There are one billion Hypertensive cases worldwide [12]. Of which one in three patients live in developing countries. In Ethiopia too, the magnitude of hypertension increased from 18.8% in 2010 to 27.9% in 2015 [13]. Non-communicable diseases are the leading causes of death globally, killing more people each year than all other causes combined. Contrary to a widely held opinion, available data demonstrate that nearly 85% of deaths due to non- communicable diseases occur in low- and middle-income countries. Of the 56 million deaths that occurred globally in 2012, 38 million (68%) were due to non-communicable diseases, comprising mainly cardiovascular diseases, cancers, diabetes and chronic lung diseases [14]. This implies that NCDs represent a leading threat to health, economies and overall human development in the African region. The World Health Organization estimate in 2014 showed that in Ethiopia 30% of deaths was due to non-communicable diseases in 2012; in which case cardiovascular diseases accounted for 9%, Cancer 6%, Chronic Obstructive Pulmonary Diseases 3% and Diabetes Mellitus 1% [15]. In Ethiopia, NCD deaths are estimated at around 42%. Among these, 27% are premature deaths occurring before 70 years of age. DALYs due to NCDs in the country have increased from 20% in 1990 to 69% in 2015, which is more than double that of communicable maternal, neonatal & nutritional problems combined. Despite the increase in the DALYs lost and deaths from NCDs, the total health spending per capita for NCDs is negligible [16]. Most developing countries of Africa, including Ethiopia, are faced with a double burden of infectious diseases and the emerging non-communicable disease pandemic. This is a concern for public health since it poses a great threat to already overstretched and poorly structured health care systems. This information will facilitate the training and practice of health care workers, including medical doctors, physiotherapists, environmental health officers, and nurses.

## Methodology

### Study area and period

The study was conducted in MKRH, Mettu town, South western oromia regional state, Ethiopia which is found at 600 km from Addis Ababa. There are different wards and clinics within MKRH; those include internal medicine ward, surgery ward, pediatric ward, gynecology and obstetrics ward, Antenatal clinic, dental clinics, tuberculosis clinic, anti-retroviral therapy clinic and ophthalmologic clinic. The study was conducted from April 23/2021 to June 24/2021.

### Study design

A Hospital based prospective observational study design was conducted.

### Study participants

Target population for this study was all patients who attending medical ward of MKRH during the data collection period & that fulfilled the inclusion criteria. Patients who were greater than 18 years age and who had complete registration charts, Patients whose hospital stays were greater than 2 days (48hrs), Patient who were on drug therapy or who needs drug therapy during study period were included in the study. Patients discharged before cross checking the collected data, Patients whose back ground information were incomplete or no drug orders on their charts, Patients who were admitted to intensive care unit were excluded.

### Sample size determination and sampling technique

The sample size was calculated based on single population proportion formula; due to paucity of data in the country, proportion of population, magnitude and determinants of non-communicable disease in medical wad was assumed to be 50%. Then, $n = \frac{(Za/2)2\ P(1-P)}{d2}$ , n= $(1.96)^2$ 0.5 (1-0.5)/$(0.05)^2$ =384. By adding 10% contingency for non-response rate, a total of 422 study participants were included. Consecutive sampling technique was used to recruit samples for the study in each day of the data collection process until the desired sample size was obtained.

### Variables

The dependent variables was non-communicable diseases (at least one of the Hypertension/Diabetes/Asthma),and independent variables were socio demographic factors (age, sex, educational status, monthly income, marital status, family size), behavioral factors (smoking cigarettes, chewing chats, drinking alcohol, and physical activity, salt intake), metabolic factors (high blood pressure, high glucose sugar, BMI, hyper cholesterolemia).

### Data collection process and quality control

All data about the patients were collected from the medical records at the time the patients were admitted to the hospital and from patient's feedback face-to-face interview. Data collected by questionnaire consisted of demographic characteristics, socioeconomic factors such as age, sex, educational status, monthly income, marital status, family size, metabolic factors such as high blood pressure, high glucose sugar, body mass index, hypercholesterolemia, and behavioral risk factors such as smoking, fruit and vegetable consumption, and physical activity were recorded accordingly. Physical measurements including weight, height, waist circumference. Weight and height were measured with participants standing without shoes and wearing light clothing. Body weight (kilograms) was recorded to the nearest 0.5kg and measured with an Omron medical scale that was checked every day with a known weight. Height (centimeters) was recorded to the nearest 0.5cm and measured with a manual height-measuring instrument (SECA stadiometer) with participants standing upright with the head in Frankfort plane. Body mass index was calculated as weight in kilograms divided by the square of the height in meters ($kg/m^2$). Waist circumference was measured at the midpoint between the lower margin of the last palpable rib and the top of the iliac crest, using a measuring tape to the nearest 0.5cm with the subject standing and breathing normally. A laboratory tests such as Fasting venous blood samples were collected from participants to determine the concentration of serum glucose and lipids (fasting serum glucose, total cholesterol, high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, and triglycerides) were included. The principal investigators were also closely supervising the activity on daily basis. At the end of each data collection days, the principal investigator checked the completeness of filled questionnaire and recorded information to ensure its quality.

### Data entry, analysis and interpretation

All data collected was feed into the computer and analyzed using the statistical package for the social sciences, version 25.0 software. Descriptive analysis was done using frequencies and percentages to describe the participants and their health related behavioral patterns, metabolic factors and socio-demographic characteristics. Associations between categorical variables were established from the Chi-square test. Binary logistic regression was used to see the association between independent variable and dependent variable. Independent variables having p-value <0.20 in the bivariate logistic regression analysis were entered into multivariable logistic regression analysis in order to control confounding effect. A multivariate linear regression model was performed in order to identify independent variables associated with treatment satisfaction. A 95% CI and p-value of <0.05 was considered statistically significant for all data analysis.

### Ethical clearance

This study was conducted after ethical clearance obtained from SWAN diagnostic pharmaceutical importer. Written informed consent was obtained from participants before collecting the required data. The study result did not intend to include participants' identifiers. The raw data was not made available to anyone, other than the research team.

### Operational definitions

Noncommunicable diseases is a disease that has a prolonged course, that does not resolve spontaneously, and for which a complete cure is rarely achieved.

A cigarette smoker was a person who smoked cigarettes daily whatever the number of cigarettes.

An alcohol drinker was a person who drinks (beer, local beer or areke, tella, or tej) every day or every other day.

A chat chewer was a person who chewing chats at least once within a week.

Overweight and obesity was defined as BMI ≥25kg/$m^2$ and >30kg/$m^2$ respectively.

Physical activity was vigorous and moderate activities during work, leisure time and during transport, and the time spent in weekly and daily on these activities.

## Results

### Socio-demographic characteristics of the patient

The study population consisted of 422 patients with 230 (54.5%) males and 195 (45.5%) females. Majority of the participants were dwell in rural area 250 (59.2%) and 143 (41.0%) were age between 35-49 years. Above half 250 (59.2%) of respondents were had earn ≤500 ETB monthly income. Regarding marital status 249 (59.0%) were married and majority 173 (41.0%) of patients were uneducated. The prevalence of non-communicable disease in medical ward was 288 (68.2%) (Table 1).

### Behavioral and physical factors of the respondents

The present study showed that the majority 191 (45.3%) of patients eating red meat in a month 3 times only and 173 (41.0%) were eating rice in a month 3-6 times. Preponderance 154 (36.5%) of the participants taking vegetables once per week, also 173 (41.0%) taking fruits once per week and 192 (45.5%) taking vegetables.

**Table 1:** Socio-demographic characteristics of the study patients in medical ward, Mettu Karl Referral Hospital (n=422).

| Variables | Category | Frequency | Percent |
|---|---|---|---|
| Age | 19-34 years | 134 | 31.8 |
| | 35-49 years | 173 | 41 |
| | ≥50 years | 115 | 27.3 |
| Sex | Male | 230 | 54.5 |
| | Female | 195 | 45.5 |
| Residency | Urban | 172 | 40.8 |
| | Rural | 250 | 59.2 |
| Monthly income | ≤500 ETB | 250 | 59.2 |
| | >500 ETB | 172 | 40.8 |
| Marital status | Married | 249 | 59 |
| | Unmarried | 173 | 41 |
| Educational status | uneducated | 173 | 41 |
| | Preliminary | 115 | 27.3 |
| | Secondary | 77 | 18.2 |
| | Higher education status | 57 | 13.5 |
| Prevalence of NCDs | Yes | 288 | 68.2 |
| | No | 134 | 31.8 |

**Table 2:** Behavioral, and physical factors of the study patients in medical ward, Mettu Karl Referral Hospital (n=422).

| Variables | Frequency | Percent |
|---|---|---|
| **Frequency of eating red meat in a month** | | |
| 3 times per month | 191 | 45.3 |
| 3-6 times/month | 154 | 36.5 |
| 6-9 times/month | 77 | 18.2 |
| **Frequency of eating rice in a month** | | |
| 3 times per month | 95 | 22.5 |
| 3-6 times/month | 173 | 41 |
| >6 times/month | 154 | 36.5 |
| **Frequency of taking vegetables per week** | | |
| Once of a week | 154 | 36.5 |
| Twice a week | 115 | 27.3 |
| Thrice a week | 96 | 22.7 |
| More than 3 times a week | 57 | 13.5 |
| **Frequency of taking fruits per week** | | |
| Once of a week | 173 | 41 |
| Twice a week | 115 | 27.3 |
| Thrice a week | 76 | 18 |
| More than 3 times a week | 58 | 13.7 |
| **Frequency of taking vegetables and fruits** | | |
| Once of a week | 134 | 31.8 |
| Twice a week | 192 | 45.5 |
| More than 2 times a week | 96 | 22.7 |
| **Frequency of physical activity per day in minutes** | | |
| 10 minutes per day | 193 | 45.7 |
| 10-30 minutes/day | 133 | 31.5 |
| >30 minutes/day | 96 | 22.7 |
| **Frequency of sedentary lifestyle per week in hours** | | |
| 10 hours per week | 154 | 36.5 |
| 10-30 hours/week | 211 | 50 |
| >30 hours/week | 57 | 13.5 |
| **Frequency of walking per week in hours** | | |
| 10 hours per week | 192 | 45.5 |
| 10-30 hours/week | 134 | 31.8 |
| >30 hours/week | 96 | 22.7 |
| **Salt** | | |
| often/always | 212 | 50.2 |
| Sometimes | 134 | 31.8 |
| Never & rarely | 76 | 18 |
| **Smoking status** | | |
| current smoker | 96 | 22.7 |
| Ever smoker | 153 | 36.3 |
| Never smoker | 173 | 41 |
| **Khat chewing status** | | |
| Current khat chewers | 95 | 22.5 |
| Every khat chewers | 153 | 36.3 |
| Never khat chewers | 174 | 41.2 |
| **Alcohol drinking status** | | |
| Current drinker | 115 | 27.3 |
| Every drinker | 155 | 36.7 |
| Never drinker | 152 | 36 |

**Table 3:** Biochemical risk factors of the study patients in medical ward, Mettu Karl Referral Hospital (n=422).

| Variables | Category | Frequency | Percent |
|---|---|---|---|
| Body Mass Index | <18.5kg/m$^2$ | 57 | 13.5 |
| | 18.5-24.9 kg/m$^2$ | 153 | 36.3 |
| | 25-29.9 kg/m$^2$ | 98 | 23.2 |
| | ≥30kg/m$^2$ | 114 | 27 |
| Blood Pressure | <140/90mmHg | 191 | 45.3 |
| | ≥ 140/90mmHg | 231 | 54.7 |
| Fasting Blood Sugar | ≤ 130gm/dl | 172 | 40.8 |
| | >130gm/dl | 250 | 59.2 |
| Triglycerides | <150gm/dl | 135 | 32 |
| | 150-199gm/dl | 114 | 27 |
| | 200-499gm/dl | 97 | 23 |
| | ≥500gm/dl | 76 | 18 |
| High Density Lipoprotein | <40gm/dl | 136 | 32.2 |
| | 40-50gm/dl | 191 | 45.3 |
| | >50gm/dl | 95 | 22.5 |
| Low Density Lipoprotein | <100gm/dl | 76 | 18 |
| | 100-129gm/dl | 192 | 45.5 |
| | 130-159gm/dl | 116 | 27.5 |
| | ≥160gm/dl | 38 | 9 |
| Comorbidity | Yes | 250 | 59.2 |
| | No | 172 | 40.8 |

Majority 193 (45.7%) of patients had physical activity 10 minutes per day, 211 (50.0%) had sedentary lifestyle 10-30 hours per week, 192 (45.5%) were walking 10-30 hours/per week, and above half 212 (50.2%) of patients were use salt always/usually. Regarding substance use 153 (36.3%) were every smoker, 153 (36.3%) were every khat chewers, 155 (36.7%) were every alcohol drinkers (Table 2).

## Biochemical risk factors of the participants

Regarding body mass index majority 153 (36.3%) of patients were normal (18.5-24.9 kg/m$^2$) and least 57 (13.5%) of the patients were underweight (<18.5kg/m$^2$). Above half 251 (54.7%) of respondents had blood pressure ≥140/90mmHg, and 250 (59.2%) were have fating blood sugar >130gm/dl. Majority 135 (32.0%) of patients were have triglycerides <150gm/dl, 136 (32.2%) were have high-density lipoprotein <40gm/dl, 192 (45.5%) were have low-density lipoprotein. Majority 250 (59.2%) of the patients have at least one comorbidity disease (Table 3).

**Table 4:** Predictors of non-communicable diseases in medical ward, Mettu Karl Referral Hospital (n=422).

| Variables | Category | n (%) | AOR (95% CI) | P-value |
|---|---|---|---|---|
| Age | 19-34 years | 134(31.8) | Ref | |
| | 35-49 years | 173(41.0) | 4.05(3.841-12.321) | 0.003 |
| | ≥50 years | 115(27.3) | 1.023(1.465-1.856) | 0.075 |
| Sex | Male | 230(54.5) | Ref | |
| | Female | 195(45.5) | 0.278(0.018-1.041) | 0.378 |
| Smoking Status | current smoker | 96(22.7) | Ref | |
| | Ever Smoker | 153(36.3) | 1.75(1.921-2.479) | 0.098 |
| | Never Smoker | 173(41.0) | 0.819(1.142-1.748) | 0.072 |
| Khat Status | current khat chewers | 95(22.5) | Ref | |
| | Every khat chewers | 153(36.3) | 2.43(1.976-6.183) | 0.008 |
| | Never khat chewers | 174(41.2) | 1.219(1.439-1.853) | 0.269 |
| Drinking Status | Current drinker | 115(27.3) | Ref | |
| | Every drinker | 155(36.7) | 3.97(3.021-8.285) | 0.047 |
| | Never drinker | 152(36.0) | 1.42(1.987-2.645) | 0.09 |
| Salt | Often/always | 212(50.2) | Ref | |
| | Sometimes | 134(31.8) | 1.14(1.578-1.910) | 0.054 |
| | Never & rarely | 76(18.0) | 0.479(0.043-1.142) | 0.967 |
| Body Mass Index | <18.5kg/$m^2$ | 57(13.5) | Ref | |
| | 18.5-24.9 kg/$m^2$ | 153(36.3) | 1.325(1.487-1.710) | 0.017 |
| | 25-29.9 kg/$m^2$ | 98(23.2) | 0.75(0.0167-0.849) | 0.495 |
| | ≥30kg/$m^2$ | 114(27.0) | 4.23(5.920-12.719) | 0.019 |
| Blood Pressure | <140/90mmHg | 191(45.3) | Ref | |
| | ≥140/90mmHg | 231(54.7) | 3.21(3.417-7.321) | 0.002 |
| Fasting Blood Sugar | ≤130gm/dl | 172(40.8) | Ref | |
| | >130gm/dl | 250(59.2) | 1.79(1.964-4.197) | 0.028 |
| Low Density Lipo Protein | <100gm/dl | 76(18.0) | Ref | |
| | 100-129gm/dl | 192(45.5) | 1.19(1.318-1.956) | 0.032 |
| | 130-159gm/dl | 116(27.5) | 0.25(0.017-0.698) | 0.765 |
| | ≥160gm/dl | 38(9.0) | 2.48(2.964-8.109) | 0.001 |
| Comorbidity | No | 172(40.8) | Ref | |
| | Yes | 250(59.2) | 7.67(9.213-13.274) | 0.000 |

### Predictors of non-communicable diseases in study populations

Multivariate logistic regression analysis was carried out to identify independent predictors of occurrence of NCDs among the study participants. Patients with age bet ween 35-49 years were about 4.05 times more likely to have NCDs (AOR=4.05, 95% CI= (3.841-12.321, p=0.003) whereas those who had every khat chewers were about 2.43 times more likely to have NCDs (AOR=2.43, 95% CI: 1.1.976-6.183, p=0.008). Regarding drinking status patients who drunk ever have 3.97 times more likely to have NCDs (AOR=3.97, 95% CI: 3.021-8.285, p-0.047) and those who had BMI ≥30kg/$m^2$ were 4.23 times more likely cause NCDs (AOR=4.23, 95% CI: 5.920-12.719, p-0.019). Regarding biochemical risk factors patients who had blood pressure ≥140/90mmHg were 3.21 times more likely cause NCDs (AOR=3.21, 95% CI: 3.417-7.321, p=0.002), Fasting blood sugar >130gm/dl were 1.79 times more likely cause NCDs (AOR=1.79, 95% CI: 1.964-4.197, p=0.028), Low density lipoprotein ≥160gm/dl were 2.48 times more likely cause NCDs (AOR=2.48, 95% CI: 2.964-8.109, p=0.0 01), and finally patients who had at least one comorbidity were 7.67 times more likely cause NCDs (AOR=7.67, 95% CI: 9.213-13.274, p=0.000) than those who hadn't comorbidity (Table 4).

## Discussion

Most developing countries of Africa, including Ethiopia, are faced with a double burden of infectious diseases and the emerging non-communicable disease pandemic [17]. NCDs are becoming a significant burden in middle-income developing countries. The major groups of chronic NCDs are diabetes mellitus, cardiovascular diseases, cancers, and chronic pulmonary disease. The increasing prevalence of NCDs in middle income countries is attributed to rapid

urbanization, globalization, industrialization which result in marked changes in patterns of consumption of food and alcohol, increased tobacco use and sedentary lifestyles, high levels of stress and low levels of physical activity. The burden of NCDs is likely to increase tremendously over the coming decades unless there is appropriate action taken [18].

The present study revealed the overall incidence of high blood pressure and body mass index was 54.7% and 27.0% respectively and 36.3%, 36.3%, and 36.7% were every smoker, were every khat chewers, every alcohol drinkers were higher than the survey done in India [19] shows that the overall risk factor profile of the study subjects revealed universal prevalence of <500 grams intakes of vegetables and fruits, followed by 65.9% and 65.5% prevalence of high blood pressure and BMI respectively. Central obesity is present in 72.7% of subjects (high waist hip ratio) and 32.3% (high wait circumference) respectively. Tobacco usage, inactivity, and alcohol usage habit was prevalent in 31.4%, 17.3% and 5% of the study subjects respectively. The differences most of our study participants had smoke cigarette and chewing khat regularly and NCDs perhaps transited from low income to middle income status since Ethiopia was the low incoming country NCDs were highly occurred.

Our survey showed that the magnitude 45.7% of patients had physical activity 10 minutes per day and 50.2% of patients were use salt always/usually and 36.3% and 36.3% of patients had the history of cigarette smoking and chewing khat were higher than the study conducted in five districts of Hargeisa (Somali land) [20] the proportion of participants with low physical activity levels was 78.4%. The overall prevalence of high salt intake was 18.5%. The prevalence of smoking and khat chewing among men was 27 and 37% respectively. Because majority of our study participants dwell in rural area they use salt unsafely instead of use moderate amount of salt or iodine salt, and tobacco use, physical inactivity the harmful use of alcohol and unhealthy diets all increasing the risk of NCDs.

The current study revealed the overall magnitude of non-communicable disease was 68.2%. The prevalence of hypertension, diabetes mellitus and asthma and COPD was 41.71%, 41.51% and 17.54% respectively were higher than the study done in Ethiopia [21] shows the 400 truck drivers interviewed, the prevalence of chronic non- communicable diseases was 28.5. Eighty (20%) had hypertension followed by 8%, and 5.5% had diabetes mellitus and asthma, respectively. The differences was due sample size and study period including majority of our study respondents where using sedentary life style rather than using health friendly diet because of that hypertension and diabetes mellitus were highly prevalent disease.

The present survey showed that the 36.5% of the participants taking vegetables once per week and 41.0% taking fruits once per week and also 5.5% were walking 10-30 hours/per week were higher than the study conducted in Afghanistan [22] revealed that on average, subjects consumed 3.37 servings of fruit and 2.96 servings of leafy vegetables per week. Mean walking and sitting hours per week (as proxies for physical activity) were 19.4 and 20.5, respectively. This was due to vegetables, fruits were avail highly in the rural area, and unable to bought other food-stuffing due earn low monthly income the population use vegetables and fruits highly.

Our study showed that 54.7%, 59.2%, 18.0%, 23.2% and 27.0% ≥140/90mmHg, >130gm/dl, ≥500gm/dl, 25-29.9kg/$m^2$ and ≥30kg/$m^2$ were higher than the study conducted in Ethiopia [23] which estimated of the prevalence of NCD metabolic risk factors showed high rates of raised blood pressure (16%), hyperglycemia (5.9%), hyper cholesterolemia (5.6%), over weight (5.2%) and obesity (1.2%). Prevalence of 3-5 risk factors constituting a metabolic syndrome was 4.4%. The differences was due to majority of patients were have physical inactivity, use sedentary life styles which increases the risk of metabolic syndrome such as hyperglycemia, obesity, overweight and hypercholesterolemia.

The present study revealed that Patients with age bet ween 35-49 years were about 4.05 times more likely to have NCDs (AOR=4.05, 95% CI= (3.841-12.321, p=0.003) whereas those who had every khat chewers were about 2.43 times more likely to have NCDs (AOR= 2.43, 95% CI: 1.1.976-6.183, p=0.008). Regarding drinking status patients who drunk ever have 3.97 times more likely to have NCDs (AOR= 3.97, 95% CI: 3.021-8.285, p-0.047) and those who had BMI were 4.23 times more likely cause NCDs (AOR= 4.23, 95% CI: 5.920-12.719, p-0.019). Regarding biochemical risk factors patients who had blood pressure ≥140/90mmHg were 3.21 times more likely cause NCDs (AOR= 3.21, 95% CI: 3.417-7.321, p=0.002), Fasting blood sugar >130gm/dl were 1.79 times more likely cause NCDs (AOR=1.79, 95% CI: 1.964-4.197, p=0.028),Low density lipoprotein ≥160gm/dl were 2.48 times more likely cause NCDs (AOR= 2.48, 95% CI: 2.964-8.109, p=0.001), and finally patients who had at least one comorbidity were 7.67 times more likely cause NCDs (AOR=7.67, 95% CI: 9.213-13.274, p=0.000) than those who hadn't comorbidity were higher than the study conducted in Kenya [24] which showed the increasing age, female gender, and a low level of educational attainment were factors seen to be significantly associated with the development of risk factors for non-communicable diseases among the participants. Because metabolic syndromes were the highly factors that contributing the occurrence of NCDs.

## Conclusion and Recommendations

In the present study, the most common non-communicable diseases encountered were hypertension and diabetes mellitus. Majority of patients had physical activity ten minutes per day, had sedentary lifestyle ten to thirty hours per week, were walking ten to thirty hours/per week, and above half of patients were use salt always/ usually. Majority of the participants were dwell in rural area and were age between thirty five to forty nine years. Age, every khat chewers, every alcohol drinkers, body mass index greater than thirty kg/$m^2$, biochemical risk factors, and comorbidity were significantly predictors of non-communicable diseases. Health care workers should have teach the patients how to prevent non-communicable diseases.

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