# Magnitude of Hypertension and Associated Factors among Adult Human Immunodeficiency Virus- infected Patients Receiving Anti-retroviral therapy at Gurage zone selected public Hospitals, SNNPR, Ethiopia

By:

1. Zebiba Nejib
2. Ketema Debele
3. Abdlkerim Mohamed

A Research thesis to Be Submitted to Wolkite University, College of Health Sciences, Department of Nursing in Partial Fulfillment of The Requirements for Bsc Degree in Nursing

Advisors: => MR.BITEW TEFERA (Bsc, Msc, AHN)
=> MR. MAMO SOLOMON (Bsc, Msc, AHN)

August /2021
**Wolkite, Ethiopia**

# Magnitude of Hypertension and Associated Factors among Adult Human Immunodeficiency Virus- infected Patients Receiving Anti-retroviral therapy at Gurage zone selected public Hospitals, SNNPR, Ethiopia

By:

1. Zebiba Nejib
2. Ketema debele
3. Abdlkerim Mohamed

A Research thesis in Partial Fulfillment of The Requirements for Bachelor of Science Degree in Nursing

Advisors: => MR.BITEW TEFERA (BSc, MSc, AHN)
=> MR. MAMO SOLOMON (BSc, MSc, AHN)

Submitted to:-

WOLKITE UNIVERSITY
COLLEGE OF MEDICINE AND HEALTH SCIENCES
DEPARTMENT OF NURSING

August /2021
**Wolkite, Ethiopa**

## Acknowledgement

First we would like to acknowledgement department of nursing in wolkite University College of medicine and health science which offered the chance to go through such kind of invaluable task.

Our next sincere thanks and appreciation should goes to MR. Betew Tefera (BSc, MSc, and AHN) and MR. Mamo Solomon (BSc, MSc AHN) for their genuine commitment and guidance that has been provided to maximize quality of the thesis.

There are a number of unseen hands and individuals to whom special thanks should be presented for their undeniable support in terms of providing different supportive materials.

Last but not least, our sincere thanks should go to our families for their unlimited financial and moral support what we have been receiving for the last consecutive years so that we could finalize the study.

## Table of Contents

## List of table

## List of figures

## List of Annex

## List of acronyms and abbreviation

AOR: Adjusted Odd Ratio

BMI: Body Mass Index

BP: Blood Pressure
CVD: Cardio Vascular Disease
COR: Crud Odd Ratio
DBP: Diastolic Blood Pressure
HAART: Highly Active Anti-Retro viral Therapy

HIV/AIDS: Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome

NCDs: Non Communicable Disease

NICE: National Institute for Health and Care Excellence

PLWHA: People Live With HIV/AIDS

SBP: Systolic Blood Pressure

SNNPR: Southern Nation Nationality of People Regional State

WHO: World Health Organization

# ABSTRACT

**Background**: hypertension is one of the major non communicable cardiovascular disease which Human immunodeficiency virus infected people are at great risk. Availability of evidence on the magnitude of hypertension is vital to regularly monitor and plan programs and police to advocate innervation; but there is no/scare scientific study on the study area.

**Objective:** This study aimed to assess the magnitude of hypertension and associated factor among Adult Human Immunodeficiency Virus infected patient receiving Anti-retroviral therapy at Gurage Zone selected public hospital SNNPR Ethiopia June to July 2021G.C

**Methods:** Institution based cross sectional study was conducted in Gurage Zone from June to July 2021.data were collected from systematically selected 405 participants using pre-tested, interviewer administered structure questionnaire Data were entered and coded using Epi data version 3.1 and analyzed using SPSS version 25. The assumption of the logistic regression model was checked using a correlation matrix and Hosmer and Lemeshow tests. Bivariate and multivariate logistic regression analyses were conducted.

**Result:** In the present study, the prevalence of hypertension among human immunodeficiency virus-positive adult who received antiretroviral therapy was found to be 13.1 % (95% CI: 9.9-16.5). Age group greater than 45 years participants were 2.17(AOR= 2.17, 95%CI: 1.10-4.26), were significantly associated with hypertension.

**Conclusion:** In the current study, the magnitude of hypertension was low among HIV positive adult. Therefore, sustained educating about the use of life style change, counselling the uses of physical activity, promoting to have proportional body weight reduction and intervention in this situation are highly recommended



**Keywords:** hypertension, HIV, HAART, magnitude, gurage, Ethiopia.

# CHAPTER ONE

## 1. Introduction

### 1.1. Background

Hypertension is a force exerted by circulating blood against the walls of the body's arteries which systolic blood pressure (SBP) values ≥ 130 mmHg and/or diastolic blood pressure (DBP) value ≥ 80mmHg.It can be divided in to two stage. Stage 1 which is SBP value 130 – 139 mmHg and/or DBP value 80 – 89 mmHg and stage 2 SBP ≥ 140mmHg and/or DBP ≥ 90 mmHg hypertension. (1,2)

World Health Organization (WHO) estimated that high blood pressure is causing one in every eight deaths as hypertension getting the recognition to be the third leading killer in the world. (3)

As it is being assured by different studies, estimated number of people with hypertension throughout the globe is 1.13 billion, of these most are living in low-and middle-income countries.(2)

Throughout the world approximately 36.8 million people are living with HIV/AIDS in 2017 (2). Being part of the world higher share of the problem sub Saharan Africa is the most affected region with 25.6 million people living with HIV and account for two third of the global total of new HIV infections. As it corroborated by a study conducted in Vietnam, the number of new HIV cases, new AIDS case and deaths from AIDS have tended to decline a steadily, with annual decrease of 13.98% in people newly infected with HIV, 2.31 in new AIDS patients, and 9.65% in deaths from AIDS. The increased ART use has reduced the HIV related mortality rate from an estimated 2 million deaths in 2005 to 1 million in 2018 though cardiovascular disease (CVD) mortality rates in the same period was more than doubled from people living with HIV (2). It is also assured by other studies that approximately 35% of all HIV positive adults on highly active anti-retro viral Therapy (HAART) have hypertension, compared with estimated 30% of persons with not HIV.

## 1.2.Statement of the problem

The global prevalence of hypertension among HIV infected adults on ART was higher when compared with the counter parts 35% and 30% , this fact was investigated by a study which was conducted in American veterans on HIV positive adults on ART uninfected adults that HIV positive Adults on ART with hypertension showed twice as higher risk for cardiovascular events as adult with HIV negative with hypertension (1,2) studies conducted in Ethiopia, revealed that prevalence of hypertension among HIV infected adults on HAART ranges from 12.7%, and the other study conducted in north west Ethiopia showed that the prevalence of hypertension among HIV positive adult on ART was 14% ,29.7% and 41.3% in north east and Debre Markos referral Hospital.(2)

Non communicable disease (NCDs) are the leading causes of death globally, killing more people each year than all other causes combined, chronic disease account for the greatest share of early death and disability worldwide, over the next few decades, as it is predicted by different previous studies.(4) Burden of this chronic disease expected to increase fast especially in the developing countries. Hypertension, as core chronic problem, is identified to be one of the major NCDs in the globe which is now changed from relative rarity to major public health problem. (5) because now a day's cardiovascular disease (CVD) accounts for approximately 17 million deaths yearly, nearly one third of the total death out of the globe (1,2,6) it is also assured by different studies that complications of hypertension accounts for 9.4 million deaths worldwide every year and 80% of this total death occurs in low and middle income countries(2).

In spite of the fact that progressive vascular damage in HIV-positive adults is not clearly identified, some studies suggested that the possibility of HAART may cause hypertension after HAART initiation.(2) A study conducted in Italy assured that there is higher rates of hypertension among HIV-positive adults on ART compared to uninfected adults. Additionally, studies conducted in Sub-Sahara Africa revealed that prevalence of hypertension among HIV-positive adults was high.(2) Though a study from South Africa revealed a different finding as hypertension was less common among HIV-positive adults.(7) Even though there a number of factors resulting in hypertension,

evidences from different studies authenticated that pro inflammatory impact induced by HIV infection on vascular endothelium would increase the risk of hypertension and it was corroborated by previous studies that smoking ,stress, drinking alcohol, cd4 count < 500 cell/mL, duration of HAART, lack of physical exercise, BMI greater than 25, anti-retro viral therapy regimens and kidney dysfunction were identified as significantly associated factors for hypertension in people living with HIV.(2)

Studies identified a number of factors associated with hypertension though it is not possible to get sufficient number of studies which had been conducted in Ethiopia to investigate factor related to hypertension among HIV positive adult. Magnitude of hypertension is high in different setting in HIV infected adult patient and worsen the disease outcome and poses to HIV care and treatment, nevertheless there is no well documented adequate evidence on the magnitude of hypertension and associated factor in HIV infected patient as well as provide information related to comorbidities of hypertension to inform varies program in Ethiopia specially in the southern part of Ethiopia (5). Hypertension is a marker for poor prognosis and comorbidities among HIV infected subject but it was critical under estimated factor susceptibility to comorbidities. There is also witnessing of personal observation in the day to day clinical activity of the study setting that showed no regular measurement of blood pressure. Due to the evidence reported elsewhere much information related to hypertension to PLWHIV in Ethiopia is needed to inform various HIV program whereby it will make hypertension measurement for the sampled HIV infected patient and will be possible to see the magnitude and associated factor of hypertension. Therefore, this study was assessed the magnitude of hypertension and associated factors among adult human immunodeficiency virus-infected patients receiving anti-retroviral therapy at Gurage zone selected public hospitals.

### 1.3.Significance of the Study

Significance of the study is to contribute for the existing literature gap. Next concerned bodies could use findings of the study as feedback to solve existing problems related to hypertension prevalence. The study also could contribute for the knowledge of the researchers about the topic

# CHAPTER TWO

## 2. Review of Related Literature

### 2.1.1Prevalence

The global prevalence of hypertension among adult HIV infected who are receiving ART was 34.7%. When we come to the prevalence of hypertension among HIV/AIDS positive adults evidence showed that approximately 35% of all HIV positive adults on ART have hypertension (8).

The study which is conducted in the united states the prevalence of hypertension in HIV infected patients 22%(9).in the other study conducted in Zimbabwe showed that the prevalence of hypertension among HIV infected patent are 29.9%(10) and also the prevalence of hypertension in HIV infected patient 36.44%(11) and 45.6%(12) in the study conducted Cameron and Malaysian respectively.

Research which is conducted in different African countries revealed that magnitude of hypertension ranged from Southern Ethiopia 15.9% (13), and (23.7%) Malawi (14). Whereas the prevalence of hypertension ranged from 38.8% in India to 73.8% in South Africa (15).

When we come to the study conducted in Ethiopia prevalence of hypertension among adult HIV infected patients showed that 12.7% (16) to 41.3% (2) and Jimma (9.3%) (17)

### 2.2. Factor associated with hypertension in adult HIV patient

The main objective of the study will be investigating magnitude of hypertension and associated factors among adult human immunodeficiency virus-infected patients receiving anti-retroviral therapy at Gurage zone selected public hospitals. However, it is not possible to get sufficient amount of existing related literatures though there are very few researches conducted to assess magnitude of hypertension and associated factors like socio-demographic factors, lifestyle factors and clinical affecting hypertension among adult human immunodeficiency virus-infected patients

receiving anti-retroviral therapy. Thus, the researchers in this study will try to test factors like smoking, alcohol drinking and khat chewing from life style group, sex, age and residence, occupation, education, marital status from socio-demographic group and CD4, ART, adherence, viral load, comorbidity and Diabetes from clinical group factors reviewing different existing literatures.

### 2.2.1. Socio demographic factor

Studies which were conducted in Uganda among the adult general population and associated factor among HIV infected and general population showed that older age, male, sex , family history physical inactivity, diet, and obesity as associated factor for hypertension (18)

In a study conducted in Tanzania a cross sectional studies a total of 34.111 HAART Native HIV infected adults showed that the prevalence of hypertension among adult HIV infected patient greater than 50 years are 24.5% and male are greater risk for hypertension than compared to female 24.8% and 6.6% respectively.(19)

A study conducted in Northwest Ethiopia Debre Markos hospital the magnitude of hypertension and associated factor adult receiving anti-retroviral therapy at facility cross sectional deign was done 412 HIV positive adult follow up to the ART clinic about 56.3%of respondents female and 43.7% respondents are male. In the study report the majority 82.2%from urban area compared to rural area 17.3%. And the marital status increase the prevalence of hypertension 43.9% compared to other like single 10.9%, Windowed 21.6%, Divorced 23.5 %.(2)

### 2.2.2. Lifestyle factor

There was also an association between overweight, obesity, and hypertension, both in the general population as well as in people live with HIV. The prevalence of obesity has increase from time to time in PLWHIV associated with dietary factor, aging of the HIV positive population, the widespread use of continuation of ART, and earlier continuation ART initiation is thought to contribute to hypertension. The study which is conducted in Zimbabwe also showed that advanced age, use of HAART for longer than 10 years, being overweight, a family history of hypertension and smoking are associated factor in HIV patient.(10)

A the study conducted in Thika level 5 hospital (TL5H) HIV comparative care clinic a cross sectional study design showed that the prevalence of hypertension among adult hive infected patient the mean BMI was higher in women 25. 8%± 5.1kg/$m^2$ compered to male that is 23.1± 4.2kg/$m^{2.}$ in the WHO definition the prevalence of overweight/obesity higher in female 25.3% compared to male 15.0% and the history of smoking male 14.3%(42) and female 1.9% (12) less risk than compered to non-smoker male 86.7%(259) and female 98.1% (634) participant so totally nonsmoker patients highly associated factor for hypertension than smoker and the prevalence of Alcohol consumption in the 95 participant are 11%.(20)

In the study conducted in Harrier at Jugal hospital a hospital based cross sectional study showed that identified the prevalence and associated factor among adult HIV infected patient who are drinking Alcohol 28.8% greater risk than non-Alcohol drinking patient 10.3% and the smoking patient are higher prevalence than the nonsmoking patient 22.3% and 11.9% respectively.(16)

### 2.2.3. Clinical factor

The study conducted in Tanzania prevalence of hypertension and associated factor among 34.111 HAART Native HIV infected Adult in Darus alem showed that the WHO clinical disease stage who are stage 2 higher prevalence and risk factor for hypertension 83% than other stage like stage 3 58% and stage 4 42% and the patient who are a history of TB 72% of prevalence for hypertension and HIV. Patient who are CD4 cell count < 350 11.4% and > 500 16.1% and also the viral load ART duration are associated factor for hypertension. (19)

A study conducted in Nigeria effect of HAART on BP change showed that the mean duration of diagnosis HIV infection or HIV time 56± 53 monthly 81% had AIDS by clinical or immunological ctateria. In the participant who are clinical AIDS had lower BP than other (SBP 113.9 VS 135.4 DBP 72.6 VS 88.32mmHg. p(<0.001) and also the duration of HAART uses > 5 year 40% greater risk for hypertension than the uses of HAART < 5 years 20%.(21)

The study conducted in northwest Ethiopia showed that the duration of HAART uses >5 years higher prevalence 40.9% than the uses of HAART <5 years 20.7% and the majority of participant good ART Adherence 88.1% but poor/ fair ART adherence participant are higher significant associated factor for hypertension11.9%.(2)

### 2.2.4. HAART regimen

The study conducted in northwest Ethiopia Debre Markos hospital a magnitude and associated factor of hypertension among adult HIV infected patient showed that the taking regimen of (2h(TDF + 3TC + ATV/r /2f, (ATZ + 3TC + ATV/r/ 2e,( AZT + 3TC + LPV/r)/ ABC + 3TC + ATV/r) were 3.058 (AOR = 3.038 , 95% Cl: 1.416, 6.605) are higher prevalence of hypertension develop compared to the participant who are taking HAART regimen of 1e ( TDF + 3TC + EF. (2)

## 2.3.Conceptual frame work

Conceptual frame work is a diagrammatical presentation used to show the relationship between dependent variable and independent variables. In other words, the relationship between Hypertension (dependent variable) and independent variables (Unhealthy diet, age, alcohol, smoking cigarette and obesity) is shown diagrammatically as conceptual framework in Figure-1below.

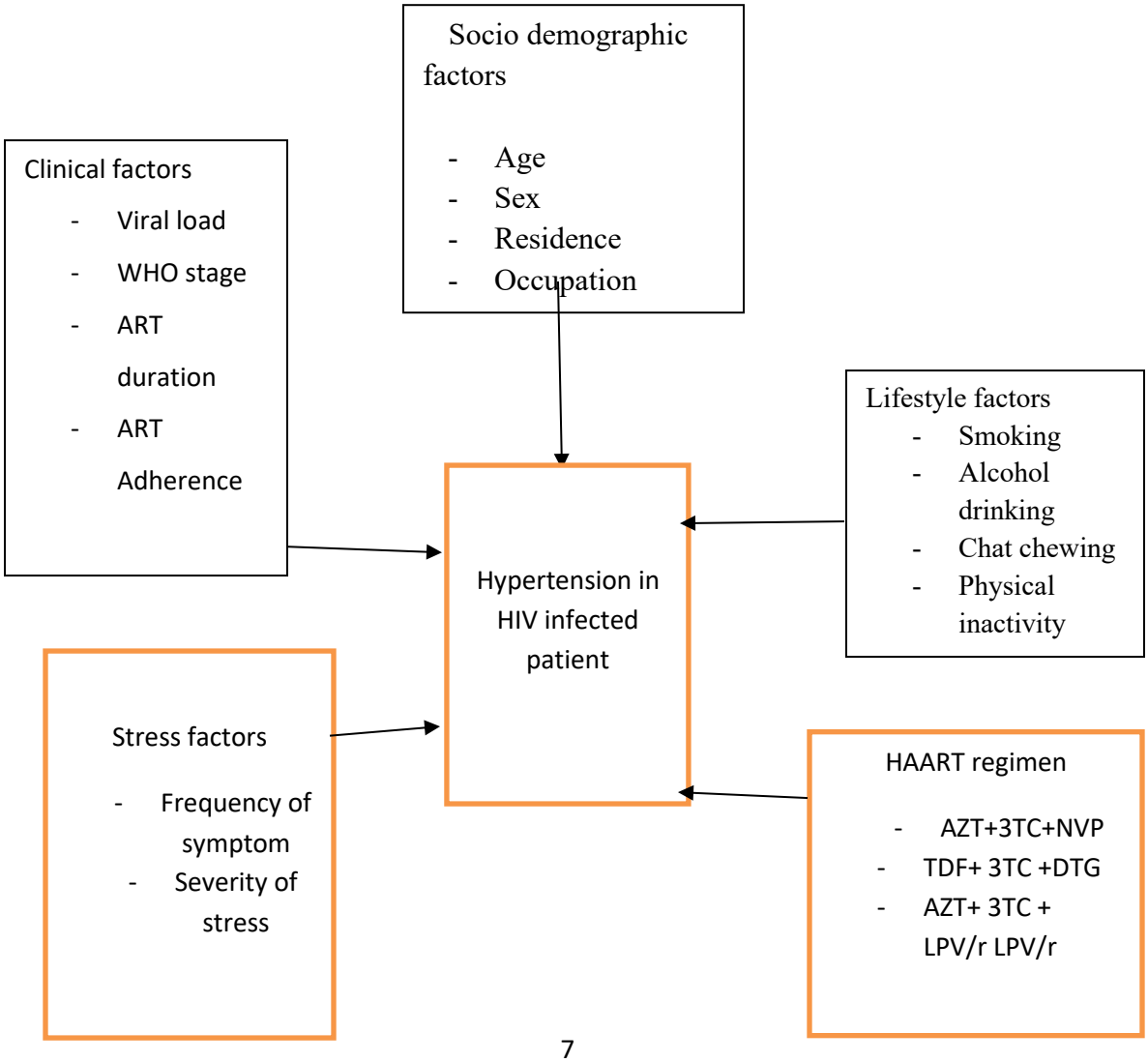

**Figure 1 conceptual frame work**

# CHAPTER THREE

## 2. Objective of the study

### 2.1.General objective

To assess Magnitude of Hypertension and Associated Factors among Adult HIV Infected Patients Who Are on Highly Active Anti-Retro-Viral Therapy in Gurage zone selected public Hospital June to July 2021 G.C

### 2.2.Specific objective

- To determine the magnitude of hypertension among Adult HIV infected patients who are on highly active anti-retro-viral therapy in Gurage zone selected public Hospital.
- To identify factor associated with hypertension among Adult HIV infected patients who are on highly active anti-retro-viral therapy in Gurage zone selected public Hospital.

CHAPTER FOUR

# 4. METHOD AND MATERIAL

## 4.1.study area

This is a study that was conducted taking different hospitals that are found in Gurage zone as case study area in southern nation nationalities and peoples regional state (SNNPR) of Ethiopia and wolkite is a capital city of Gurage zone which far from 155km to Addis Ababa .the major ethnic group are gurage but different nation nationality and people of Ethiopia living harmoniously there are 2.7 million people in 16 woreda and 5 city administration and also 6 governmental and 2 privet hospital,65 health center 9 clinic 38 specialist 130 medical doctor ,468 HO and 965 nurses.

## 4.2. Study period

The study was conducted from June up to July, 2021.

## 4.3. Study design

An Institution based cross sectional study was conducted.

## 4.4. Population

### 4.4.1. Source population

All HIV infected adult who have a follow up in Gurage Zone selected public hospital in ART clinic

### 4.4.2. Study population

All HIV infected adult's receiving antiretroviral therapy who have follow up in the ART clinic and available during the data collection period.

## 4.5 . Inclusion and Exclusion criteria

### 4.5.1. Inclusion criteria

Patient age greater than or equal to 18 years old, Have a patient chart and complete record and patient who are on ART at least 6 month was included in the study.

### 4.5.2. Exclusion criteria

Patients who were pregnant women and patient who develop hypertension before HIV infection was excluded in the study.

## 4.6 .Sample size and sampling technique

### 4.6.1. Sample size determination

Sample size of this study was calculated using the formula to estimate a single population proportion.

$$n= (za/2)^2\ p\ (1-p)/d2$$

Where

n= minimum sample size of the study subject

z= standard normal distribution or value for 95 confidence interval (1.96)

p=prevalence (41.3% is preferred to obtain possible sample size) (2)

d=the marginal error taken (0.05).

$$n= (1.96)^2(0.41)\ (1-0.41)/\ (0.05)^2$$

n = 368 + 10%

n = 405

### 4.6.2 Sample technique

We were used lottery sampling method to select three hospital such as Butajira hospital, Gunchire hospital and Buee hospital was selected Participant was selected simple random technique when who are get service in the hospital and who have at least six month follow up.

### 4.7. Data collection Method

#### 4.7.1. Data collection instrument

A structured questionnaire survey was adapted to fit with the local situation and the objective of study and variable of interest the questionnaires contain close ended and open ended question. This questionnaire is prepared in English and was translated to local language Amharic.

#### 4.7.2. Data collection procedure

Interviewer administered and car review approach was applied and data was collected by using Amharic version of questionnaire that was prepared by the researchers.

### 4.8. Study variable

#### 4.8.1. Dependent variable

Hypertension

#### 4.8.2. Independent variables

- Socio demographic factor

  Age, sex. Residence, occupation, Education
- Clinical factor (viral load, WHO stage, ART duration, ART adherence)
- Lifestyle factor (smoking, Alcohol drinking, chat chewing ,physical inactivity)
- HAART regimens(TDF+3TC+ EFV, TDF + 3TC+ DTG, AZT+ 3TC + LPV/r)
- Stress factor ( frequency of symptom, severity of stress)

### 4.9. Operational definition

- Hypertension: means a high blood pressure who having a systolic blood pressure (SBP) >130mmHg or a diastolic blood pressure (DPB) >80 mmHg on at least two occasion.
- Adherence to ART: The recent adherence status of the adult to ART is recorded as poor when an adult takes <85% of the dose, fair when he or she takes 85 -94% of the dose, and good when he or she 95% and above of the dose.
- Comorbid disease a chronic disease with a confirmed diagnosis of the disease other than HIV infection.
- Opportunistic infection/ disease: is the list of opportunistic disease documented on national comprehensive HIV prevention, care, and treatment.
- Formal education which means ( can able to read and write, primary school, secondary school and diploma and degree was included
- Not formal education which means can be unable to read and write.
- Single means (actual single, devoid, widowed).
- Viral load undetectable: which means the viral load less than one thousand.

### 4.10. Data quality management

Quality of the data was controlled through continuous checking the completeness of the questionnaires. The questionnaires was translated to Amharic version. Pre-test was done in 5% respondents other than the study sitting.

### 4.11. Data processing and analysis

After data was checked for completeness and consistency. It was entered using Epi data software version 3.1 and exported to SPSS software version 25 for analysis. Descriptive statistics were computed and presented using text, tables and graphs. All variables with p<025 in the bivariate analysis were included in the final mode of multivariable analysis to control all possible confounders. The degree of association between dependent and each independent variable was assessed using an adjusted odd ratio with 95% CI and variables that a p- value < 0.05 were considered statically significant.

### 4.12. Ethical consideration

The data was carried out after getting an official letter from Wolkite University College of medicine and health science. The respondents were informed about the objective of the study by making clear

explanation and discussion according to the issue raised. The respondents were assessed for their willingness to fill the questionnaires.

### 4.13. Dissemination of the study

Findings of the study will finally be submitted to Wolkite University, college of medicine and health science, department of nursing and gurage zone health department. Moreover, copy of the results will submitted to each hospital that will be used as case study area.

# CHAPTER FIVE

# Result

## Socio-demographic Characteristics of the study participant

In this study, 405 participants were included with a response rate of 100%. Among the study participants 248(61%) of the respondent were female and two- third of respondents were 269(66.4%) from rural area. The mean (±SD) age of the study respondents was 39.05(± 10. 73) years. Regarding marital status, two third of the study participants 271(66.9%) were married, and 134(33.1%) of them were single. One hundred ten of the participant 110(27.2%) were merchant and nearly one fourth of 100(24.7%) were house wife, more than half of the study 346(85.4%) were nutritional support and counseled and the majority 328(81%) had no family history of hypertension. (Table 1)

**Table 1** socio- demographic characteristics of the study participant (N = 405) at Gurage zone selected public hospital ART clinic SNNPR Ethiopia 2021.

| Variable | category | Frequency (number) | Present (%) |
|---|---|---|---|
| Sex | | | |
| | Male | 157 | 38.8% |

| | | | |
|---|---|---|---|
| | Female | 248 | 61.2% |
| Age group | | | |
| | <45 years | 308 | 76.0% |
| | >45 years | 97 | 24% |
| Residence | | | |
| | Rural | 269 | 66.4% |
| | urban | 136 | 33.6% |
| Marital status | | | |
| | Single | 134 | 33.1% |
| | Married | 271 | 66.9% |
| Occupation | | | |
| | Student | 19 | 4.7% |
| | Daily laborer | 25 | 6.2% |
| | Governmental | 38 | 9.4% |
| | employee | 40 | 9.9% |
| | Privet worker | 73 | 18% |
| | Farmer | 110 | 27.2% |
| | Merchant | 100 | 24.6% |
| | Other | | |
| Education | | | |
| | Formal education | 210 | 51.9% |
| | Not formal education | 195 | 48.1% |
| Family history of hypertension | | | |
| | Yes | 77 | 19% |
| | no | 328 | 81% |

Lifestyle related characteristics

Most 382(94.3%) of the participant were nonsmokers and the majority of the participant 352(86.9%) were not used alcohol and the majority of 391(96.5%) and 365(86.9%) of the participants did not undergo physical exercise and did not chew chat, respectively. Among the participant 45(11%) experienced symptom of stress a participant were at mild (1-3) level of stress. (Table 2)

Table 2 Lifestyle –related characteristics of the study participant (N= 405) at Gurage zone selected public hospital, SNNPR Ethiopia 2021.

| Variable | category | Frequency | Percent |
|---|---|---|---|

| | | (number) | (%) |
|---|---|---|---|
| Smoking | | | |
| | Yes | 23 | 5.7% |
| | No | 382 | 94.3% |
| | Current smoker | 12 | 3% |
| | Ex. smoker | 21 | 5.2% |
| Alcohol use | | | |
| | Yes | 53 | 13.1% |
| | no | 352 | 86.9% |
| Khat | | | |
| | Yes | 40 | 9.9% |
| | no | 365 | 90.1% |
| Physical exercise | | | |
| | Yes | 14 | 3.5% |
| | no | 391 | 96.5% |
| Stress in the past month | | | |
| | Yes | 45 | 11% |
| | no | 360 | 88.9% |

Clinical- related characteristics

The majority of the participants in the world health organization (WHO) 375(91.9%) were stage 1 , more than half of the participants 214(52.8%) had greater than 500 cell/µL cd4, more than half 264(65.2%) of the participant had received ART for greater than or equal to 5 years, approximately 65(16.5%) had taken prophylaxis of which the majority 62(15.3%) were taking cotrimoxzol . the majority 391(96.5%) and 14(3.5%) of the participant good and fair ART adherence respectively. Most 396(97.8%) of participant did not develop comorbidities. Among participant in the study 267(65.5%) had a body mass index at normal body weight 18.4-24.9. and most 384(94.3%) of participant did not develop opportunistic infection. The majority 394(97.3%) of the participants viral load were undetectable .Among the participants in the study the majority 354(87.4%) were taking the HAART regimen of 1J (TDF+ 3TC+ DTG) and 40(9.9%) were taking 1e (TDF+3TC+EFV), and 11(2.7%) were taking 2h (TDF+3TC+ATV/r). (Table 3)

Table 3Clinical related characteristics of the study participant (N= 405) at Gurage Zone selected public hospital SNNPR, Ethiopia 2021

| Variable | category | Frequency | Percent |
|---|---|---|---|

| | | (number) | (%) |
|---|---|---|---|
| BMI(kg/m$^2$) | | | |
| | Under weight | 104 | 25.7% |
| | Normal body weight | 267 | 65.9% |
| | Over weight | 34 | 8.4% |
| WHO clinical disease stage | | | |
| | Stage 1 | 375 | 92.6% |
| | Stage 2 | 26 | 6.4% |
| | Stage 3 | 4 | 1% |
| CD4+cell count (cell/µL | | | |
| | <350 | 71 | 17.5% |
| | 350-500 | 120 | 29.6% |
| | >500 | 214 | 52.8% |
| Duration of HAART | | | |
| | <5 years | 141 | 34.8% |
| | >5 years | 264 | 65.2% |
| Taking prophylaxis | | | |
| | Yes | 67 | 16.5% |
| | No | 338 | 83.5% |
| HAART adherence | | | |
| | Good | 391 | 96.5% |
| | fair | 14 | 3.5% |
| Develop opportunities infection | | 23 | 5.7% |
| | Yes | 382 | 94.3% |
| | No | | |
| Current regimen | | | |
| | 1e(TDF+3TC+EFV) | 40 | 9.9% |
| | 1J( TDF+3TC+DTG) | 354 | 87.4% |
| | 2h(TDF+3TC+ATV/r) | 11 | 2.7% |

Magnitude of hypertension among HIV infected patients

Among the 405 study participants 53 had develop hypertension yielding the overall magnitude of hypertension was (53/405) 13.1% (95% CI: 9.9- 16.5).

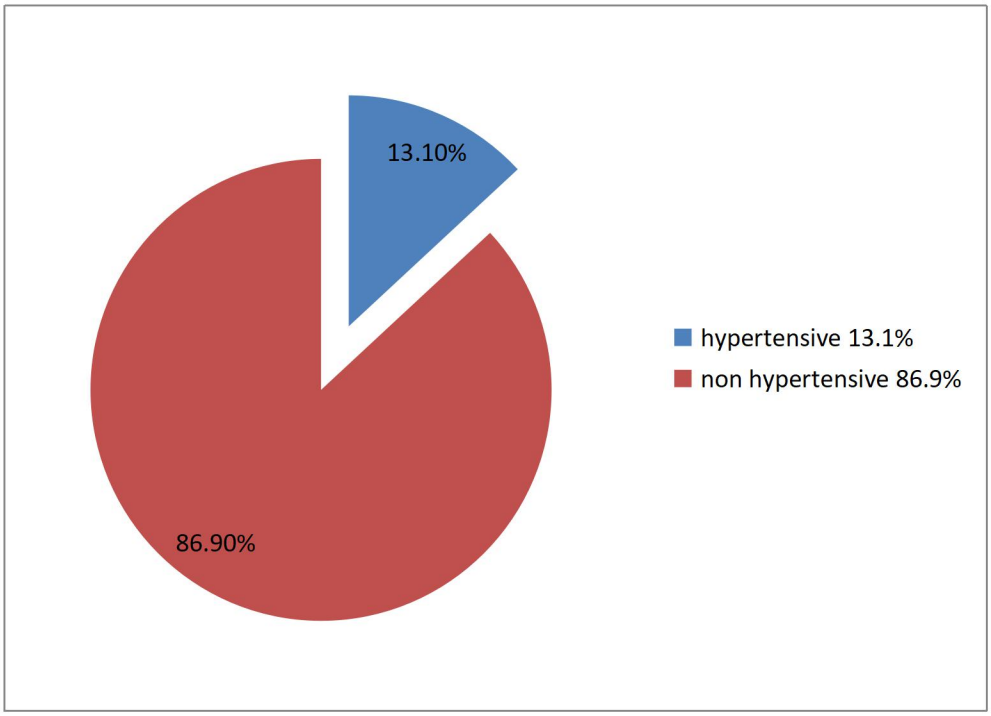

Figure 2 magnitude of hypertension among dult HIv-positive patient at Gurage Zone selected public Hospital SNNPR, Ethiopia, 2021.

**Associated factor of hypertension Among HIV Positive Adult**

In bivariable logistic regression analysis variable with (p-value <0.25) were age, sex, marital status educational status, body mass index, family history of hypertension , alcohol, chat chewing, physical inactivity, duration of HAART, prophylaxis therapy, HAART regimen, taking COC. In the multivariable analysis, only one variables were identified as significantly associated factor of hypertension. Age group (>45) years participants were 2.17(AOR=2.17, 95% CI: 1.10-4.26) more likely to develop hypertension than age group (<45) years. (Table 4)

Table 4 Table 4 Bivariable and Multivariable Logistic Regression Analysis of Associated Factor of Hypertension (N=405) at Gurage zone selected public hospital SNNPR Ethiopia 2021.

| variable | category | Hypertension yes | no | COR | AOR | P-value |
|---|---|---|---|---|---|---|
| Age | | | | | | |
| | <45 years | 33(62.3%) | 275(78.1%) | 1 | 1 | |
| | >45 years | 20(37.7% | 77(21.9%) | 2.48(1.15-5.38) | 2.17(1.10-4.26) | 0.02 |
| Sex | | | | | | |
| | Male | 27(50.9%) | 130(36.9%) | 1.77(0.99-3.16) | | |

| | | | | |
|---|---|---|---|---|
| | Female | 26(49.1%) | 222(63.1%) | 1 |
| Residence | | | | |
| | Rural | 32(60.4%) | 237(67.3%) | 0.73(0.40-1.33) |
| | Urban | 21(39.6%) | 115(32.7%) | 1 |
| Education | | | | |
| | Formal | 31(58.5%) | 179(50.9%) | 1 |
| | education | | 173(49.1%) | 0.73(0.40-1.31) |
| | Not formal | 22(41.5%) | | |
| | education | | | |
| Alcohol use | | | | |
| | Yes | 13(24.5%) | 40(11.4%) | 2.53(1.25-5.14) |
| | No | 40(75.5%) | 312(88.6%) | 1 |
| Family history | | | | |
| of | | | | |
| hypertension | Yes | 14(26.4%) | 53(15.1%) | 1.64(0.84-3,21) |
| | no | 39(73.6%) | 239(67.9%) | 1 |
| Khat chewing | | | | |
| | Yes | 9(17%) | 53(15.1%) | 2.11(0.94-4.74) |
| | no | 44(83%) | 239(67.9%) | 1 |

## Discussion

In this study we assessed the magnitude and associated factor of hypertension among HIV – positive adult who received antiretroviral therapy in selected public hospital of Gurage zone SNNPR Ethiopia. This study revealed that the magnitude of hypertension among HIV-positive adult who received antiretroviral therapy, found to be 13.1% (95% CI: 9.9- 16.5). This finding is in line with previous studies conducted in Eastern Ethiopia 12.7% (95% CI: 9.8- 16.2) (16), and Southern Ethiopia 15.9% (95% CI: 12.6-19.2) (13) and Tanzania (12.5%). However, our finding was lower than studies conducted in Cameroon 36.44% (95% CI: 30.15- 43.10) and USA at university of florida 34.7% (95% CL: 27.4-42.8), Malaysians (45.60%), south Africa (15). Conversely, this study finding is higher than studies conducted in jimma, southwest Ethiopia, in general adult population (9.3%) (17)

The above disparity between studies could be elucidated by the study setting, cut-off point of blood pressure, ART duration and regimens and life style related factor of the study participants.

The current study shows that alder age, were associated with hypertension. Patients whose age greater than or equal to 45 were 2 times more likely to develop hypertension compared with the counter parts. The result is consistent with studies reported from Ethiopia (16), Zimbabwe (10), Malaysia (12) and the USA (9) this would be explained that aging causes a loss in vessel function by stiffening of the arterial vasculature, and vascular change include the advanced reduction in viscoelastic properties of vessels, progressive atherosclerotic arterial disease, and hypertrophy/sclerosis of muscular arteries and arterioles, which narrow the vessel wall and make resistance to blood pressure.

According to our study age was significantly associated with hypertension whereas BMI, Alcohol, physical inactivity smoking, khat chewing duration of HAART and others has strongly associated with hypertension in conducted to different studies such as Cameroon (11), Tanzania (19), Zimbabwe (10), Eastern Ethiopia (16), and northern Ethiopia (2). Even though there is no significantly associated with hypertension in our study because of our study participants majorly rely on rural area and also most of them are female participants which means not exposed to bad habit that is why in study area as the societies culture prohibit to do smoking, chat chewing, drinking alcohol for female.

## Limitations

Lack of sufficient time that result the researcher to become work over load and lack of financial resources are some of the core point what may face as limitation of the study.

## Conclusion

In the pre sent study, less than one-fourth of the study participants was develop hypertension among HIV –positive adult. Age group >45 years risk of hypertension among people living with HIV/AIDS.

## Recommendation

It is obvious that, most of the time people exposed to hypertension at the old age. In addition this we recommend to the ART patients whose age group greater than 45 years to take care that things which aggravate or exposed to hypertension.To advise The health Health professionals Who are at working in the hospital such as butajira hospital gunchire hospital and buee hospital should counsel

the subject with respect to risky behaviors such as alcohol use smoking creat awareness about prevantion of hypertension

## References


1. Armah KA, Chang CC, Baker JV, et al.(). Pre-hypertension, hypertension, and the risk of acute myocardial infarction in HIV-infected and -uninfected veterans. *Clin Infect;* 2014.
2. Sewale et al.(2020) Magnitude of hypertension and associated factor among human immunodeficiency virus positive adult receiving anti-retroviral therapy at Debre Markos referral hospital , northwest Ethiopia A journal published by HIV/AIDS research and palliative care.
3. WHO (2005) clinical guideline for the management of hypertension.
4. Kebadnew Mulatu and Tensaykahsay . Factor associated with hypertension among age group of 18 year and above in southwestern Ethiopia: a community based cross sectional study ( 2020)
5. Zekewos A, Egno T, Loha E (2019) The magnitude of hypertension and its risk factor in southern Ethiopia: A community based cross sectional study.
6. Z. ANWER et, al (2011). Hypertension management in diabetic patient, 15: 1256 -1263
7. SAMJ (2008) . Hypertension in adult part 1. Prevalence, type , causes and effect Vol 2 issue3. Available at http://WWW.southernsudanmedicaljournal. Com
8. Teshome DF, Demssie AF, Zeleke BM (2018) Determinate of blood pressure control amongst hypertensive patient in the Northwest Ethiopia
9. Krauskopf K, Natta MLV. Correlates of hypertension in patient with AIDS in the era of highly –active antiretroviral therapy United states. J Int Assoc Provid AIDS Care 2013; 1-18.
10. Chireshe R. hypertension among human immunodeficiency virus infected patient on treatment at Parirenyatwa Hospital. Afr J Prm Health care Fam Med Care Res Rev.2019; a11(1):a1974. Doi: 10.4102/phcfm. Vllil. 1974.
11. Pangmekeh PJ, Awolu MM, Gustave S,Gladys T, Cumber SN. Association between highly active antiretroviral therapy (HAART) and hypertension in person living with HIV/AIDS at the Bamenda reginal hospital, Cameroon Pan Afri Med J. 2019; 1-8.
12. Hejazi N, Huang MSL, Lin KG Choong LCK. Hypertension among HIV- infected Adult Receiving Highly Active Antiretroviral therapy (HAART) in Malaysia. Glob J Health sci , 2014 ; 6(2):1-4.

13. V. Sachithananthan, E. Lola, and M. Gose, “prevalence of hypertension, diabetes mellitus and lipodystrphy in HAART reciving HIV patient in southern Ethiopia” International STD Research reviews, vol. 1, no. 1, pp. 1-11, 2013.
14. Divala HO, Amberbir A, Ismail Z,et al. The burden of hypertension, diabetes mellitus, cardiovascular risk factor among adult Malawian in HIV care. BMC public Health 2016; 16:1243,doi: 10.1186/s12889-016-3916-x
15. Ataklte F, Erqu S, Kaptoge S et al. Burden of undiagnosed hypertension in sub Saharan Africa: a systematic review and Meta-analysis. Hypertension. 2015 65(2):291-298. Doi 10.1161/ HYPERTENSIONAHA. 114.04394.
16. Ataro Z Ashenafi W, Jiregna fayera TA. Magnitude and associated factor of diabetes mellitus and hypertension among adult HIV –positive individual receiving highly active ant retro viral therapy at Jugal hospital, Harar, Ethiopia. HIV? AIDS. Res Palliat Care 2018; 10.
17. Muluneh AT, Hailemlak A, Tessema F, et al. population based survey of chronic, non-communicable disease at gilgel gibe field research center, southwest Ethiopia. J Health Sci. 2012;(4): 7-18.
18. Dalsone kwarisiima, Laura B, David H, Prashant K, Gabriel C, Tamar C, James A, Florence M, Vivek J, Dathan B, Maya P, Diane H, Moses R, Kamya,
19. Marina N, Alfa M, Akum A, Donna S, Claudia H, Catharina A, Enju L, James C, Sylvia k, Ferdinand M, and wafaie F. prevalence of hypertension and its associated risk factor among 34,111 HAART Naïve HIV infected adults in dar es salaam, Tanzania
20. Grace W, M, Karani M and Stephen T. M. The prevalence and associated factor of hypertension among HIV patient at Thika Level 5 hospital comparative care clinic.
21. Ballah A, D, Pharm J, M, Wadzani G; Danniel N, M and Nnenna A, A. effect of hypertension active antiretroviral (HAART) naïve HIV infected patient in North eastern Nigeria

## Annex

Appendix-1 –Questionnaires

WOLKITE UNIVERSITY
College of Medicine and Health Sciences
Department of Nursing

**Dear Participant:**

The aim of this questionnaire is gathering data about magnitude of hypertension and hypertension related factors among adults with HIV positive attending Gurage Zone selected public Hospital receiving anti-retroviral therapy to conduct a research paper entitled as "*Magnitude of Hypertension and Associated Factors Among HIV Infected Patients Who Are on Highly Active Anti-Retro-Viral Therapy: Case Study in , Gurage Zone Sleeted public Hospital* partial fulfillment of the requirements for BSc Degree i at WOLKITE UNIVERSITY. Duplicated questionnaires will be distributed to selected respondents. Results of this questionnaire analysis are expected to identify magnitude of hypertension and hypertension associated factors. Conclusions and recommendations of the study will be drawn without any reference to specific respondent. As a respondent, be sure that the information you provide will be treated confidentially and will be used only for this academic research purpose. So, your honest response and committed participation has irrecoverable value for successful completion of the paper. We would like to express our heartfelt thanks in advance for your cooperation and participation.

**Information about the respondents**

**Annex 1 English version of the questioner**

| **I. Socio-demographic characteristics** | | | |
|---|---|---|---|
| S. no. | Questions | Responses | Skips |
| 101 | Age | _____years | |
| 102 | Sex | 1. Male<br>2. Female | |
| 103 | Residences | 1. Rural<br>2. Urban | |

| | | | |
|---|---|---|---|
| 104 | Occupational status | 1. Student<br>2. Daily laborer<br>3. Governmental employed<br>4. Private employed<br>5. Farmer<br>6. Merchant<br>7. Others_____ | |
| 105 | Educational level | 1. Unable to read and write<br>2. Able to read and write<br>3. Primary school<br>4. Secondary school<br>5. College/university | |
| 106 | Marital status | 1. Married<br>2. Single<br>3. Divorced<br>4. Windowed | |
| 107 | Family size of the household | _____ | |
| 108 | Have you got nutritional support and counseling? | 1. Yes<br>2. No | |

**II. Measurements**

| | | | | | | |
|---|---|---|---|---|---|---|
| 201 | Blood pressure<br>i. a blood pressure reading 1<br>ii. a blood pressure reading 2 (with 2 minutes apart) | a. Systolic _____MmHg<br>b. Diastolic _____MmHg<br>a. Systolic _____MmHg<br>b. Diastolic _____MmHg<br>Averagebloodpressure=systolic/diastolic | | | | |
| 202 | Weight | Measur.1 _____Kg | Measur.2 _____Kg | Measur.3 ____Kg | ____Kg | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 203 | Height | Measur.1 _____M | Measur.2 _____M | Measur.3 _____M | ____M | |
| 204 | BMI | Kg/$m^2$ | | | | |
| | **III. Genetic predisposition factors** | | | | | |
| 301 | Do you have a family history of hypertension? | 1. Yes<br>2. No | | | If the answer "no" skip que.no. 501 | |
| 302 | Whose family has been hypertension? | 1. Father<br>2. Mother<br>3. Brother<br>4. Sister<br>5. Others———— | | | | |
| | **IV. Lifestyle factors** | | | | | |
| 401 | Have you ever been a smoker in your life? | 1. Yes<br>2. No | | | If the answer "no "skip que.no.506. | |
| 402 | Are you a current smoker? | 1. Yes<br>2. No | | | | |
| 403 | Did your ex. smoker? | 1. Yes<br>2. No | | | | |
| 404 | How long did/have you smoked? | _____years | | | | |
| 405 | How many sticks do you smoke per days | _____sticks | | | | |
| 406 | Have you drink alcohol? | 1. Yes<br>No | | | If the answer "no" skip qu.no.508. | |
| 407 | How many units of alcohol drink per day? | _____units | | | | |
| 408 | Have you chatted chewing? | 1. Yes<br>2. No | | | | |
| 409 | Have you done physical activities? | 1. Yes<br>2. No | | | If the answer "no" Skip que.no. 601 | |
| 410 | How many minutes do physical activities per day? | _____minutes | | | | |
| | **V. Stress factors** | | | | | |

| | | | |
|---|---|---|---|
| 501 | Have you experienced stress symptoms in the past month? | 1. Yes<br>2. No | If say "no" skip 701 |
| 502 | How long have you been experiencing these symptoms? | _____months | |
| 503 | How often do you experience these symptoms? | 1. Every day<br>2. Once or twice daily<br>3. Every night or day<br>4. 2-3 times per week<br>5. Once a week<br>6. Once a month | |
| 504 | How intense has your overall stress level been in the past month? | 1 2 3 4 5 6 7 8 9 10 | |

**VI. Clinical factors**

| | | | |
|---|---|---|---|
| 601 | What are the WHO stages of HIV/AIDS? | 1. Stage I<br>2. Stage II<br>3. Stage III<br>4. Stage IV | |
| 602 | Recent CD4 (cells/µl) | _____ | |
| 603 | Recent Viral load in the blood | _____ | |
| 604 | Duration of HAART (year) | _____years | |
| 605 | Is the patient taking prophylactic therapy currently? | 1. Yes<br>2. No | If the answer "no" skip qu.no.708 |
| 606 | Is the patient taking cotrimoxazole? | 1. Yes<br>2. No | |
| 607 | Is the patient taking Isoniazid? | 1. Yes<br>2. No | |
| 608 | What is the documented ART adherence status of the patient? | 1. Good<br>2. Fair<br>3. Poor | If the answer is good to skip to 710. |
| 609 | What is the reason for fair/poor adherence? | _____ | |
| 610 | What is the current regimen of HAART? | _____ | |

| | | | |
|---|---|---|---|
| 611 | Have you developed Opportunistic Infections? | 1. Yes<br>2. No | If the answer “no” skip que.no.713. |
| 612 | What are the types of OI? | _____ | |
| 613 | Have you ever been diagnosed with diabetes? | 1. Yes<br>2. No | If the answer “no” skip que.no.716 |
| 614 | What are the types of DM? | _____ | |
| 615 | When do you diagnosis DM (years)? | _____year | |
| 616 | Have you ever been diagnosed with kidney disease? | 1. Yes<br>2. No | If the answer “no” skip que.no. 719 |
| 617 | What are the types of kidney diseases? | _____ | |
| 618 | When do you diagnosis kidney diseases? | _____year | |
| 619 | Have you ever been diagnosed with other comorbidities with HIV/AIDS? | 1. Yes<br>2. No | If the answer yes skip que.801 |
| 620 | What is another diagnosis of comorbidities with HIV /AIDS? | _____ | |

**VII. Drug-related factors**

| | | | |
|---|---|---|---|
| 701 | Have you taken COC? | 1. Yes<br>2. No | |
| 702 | Have you taken another drug for comorbidities besides HAART? | 1. Yes<br>2. No | |
| 703 | What is the name of the drug groups? | _____ | |

Annex 2 Amharic version of the questionnaire

| ክፍል 1፡አጠቃላይማህበራዊ መረጃን የተመለከቱ መጠይቆች | | | |
|---|---|---|---|
| ተ.ቁ | መጠየቆች | መልስ | ምርመራ |
| 101 | ዕድሜ | _____? | |
| 102 | ፆታ | 1. ወንድ<br>2. ሴት | |

| | | | |
|---|---|---|---|
| 103 | የመኖሪያ ቦታ | 1. ገጠር<br>2. ከተማ | |
| 104 | ዋና ስራዎ ምንድን ነው? | 1. ተማሪ<br>2. የቀን ሰራተኛ<br>3. የመንግስት ሰራተኛ<br>4. የግል ሰራተኛ<br>5. አርሶ አደር<br>6. ነጋዴ<br>7. ሌላ_____? | |
| 106 | የትምህርት ደረጃ | 1. ማንበብናመፃፍ አልችልም<br>2. ማንበብናመፃፍ እችላለሁ<br>3. የመጀመሪያ ደረጃ ትምህርት/1-8 ክፍል/<br>4. ሁለተኛ ደረጃ/9-12 ክፍል/<br>5. ኮሌጅ/ዩኒቨርስቲ ና በላይ | |
| 107 | የጋብቻ ሁኔታ | 1. ያገባህ/ች<br>2. ያላገባ/ች<br>3. የፈታ/ች<br>4. የሞተበት/ባት<br>5. የተረራቀ/ቁ | |
| 110 | በቤት ውስጥ የሚኖሩ የቤተሰብ ብዛት | _____? | |
| 111 | ርዕስዋ፤ከማንኛውም፤ድርጅት፤ተጨማሪ፤የምግብ፤እርዳታና ምክርአግኝተው/ያውቃሉ/ታውቃለሽ? | 1.አዎ<br>2.አያውቅም | |
| ክፍል 2፡-ልኬታዎች | | | |
| 201 | የደም ግፊት፡- | ሲስቶሊክ _____ሚ.ሜ.ሜሪኩሬይ | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | የደም ግፊት ምንባብ አንድ<br>የደም ግፊት ምንባብ ሁለት<br>(ከሁለት ደቂቃ በታላ) | ዳስቶሊክ_____ሚ.ሜ.ሜሪኩሪይ<br>ሲስቶሊክ_____ሚ.ሜ.ሜሪኩሪይ<br>ዳስቶሊክ_____ ሚ.ሜ.ሜሪኩሪይ<br>አማካኝየደምግፊት=<br>ሲስቶሊክ/ዳስቶሊክ_____ሚ.ሜ.ሜሪኩሪይ | | | | |
| 202 | ክብደት | ልኬታአንድ _____ __ኪ.ግ | ልኬታለት_ _____ ___ኪ.ግ | ልኬታሶስት___ _____ _____ኪ. ግ | ___ኪ .ግ | |
| 203 | ቁመት | ልኬታአንድ _____ __ሜ | ልኬታሁለ ት_____ _____ሜ | ልኬታሶስት___ _____ _____ ሜ | _____ _ሜ | |
| ክፍል 3፡-የቤተሰብ ከፍተኛ የደም ግፊት መኖር ና አለመኖር የተመለከቱ መጠይቆች | | | | | | |
| 301 | በቤተሰብ ውስጥ ከፍተኛ የደም ግፊት የያዘው የቤተሰብ አባል አለ? | 1. አዎ<br>2. የለም | | መልስዎ የለም ከሆነ 501 ይሂዱ | | |
| 302 | ከፍተኛ የደም ግፊት የነበረበት የትኛው የቤተሰብ አባል ነበር ? | 1. አባት<br>2. እናት<br>3. ወንድም<br>4. እህት<br>5. ሌላ_____ ___? | | | | |
| ክፍል 4፡- አኗኗርን የተመለከቱ መጠይቆች | | | | | | |
| 401 | ሲጋራ አጭሰህ/ሽ ታቃለህ/ሽ/ታጨሳለህ/ሽ? | 1. አዎ<br>2. አላጨስም | | መልሰዎ አላጨስም ከሆነ ወደ ጥያቄ ቁጥር 506 ይሂዱ። | | |
| 402 | **አሁን ታጨሳለህ/ሻለሽ?** | 1. **አዎ**<br>2. **አላጨስም** | | | | |
| 403 | **በፊት ታጨስ/ሽ ነበር ?** | 1. **አዎ** | | | | |

| | | | |
|---|---|---|---|
| | | 2. **አላጨስም** | |
| 404 | **ለምን ያህል አመት አጭሰዋል**? | _____ __**አመት** | |
| 405 | **በቀን ስንት ፍሬ ታጨሳለህ/ሽ**? | _____ _____? | |
| 406 | አልኮል ትጠጣለህ/ጫለሽ? | 1. አዎ<br>2. የለም | መልስዎ የለም ከሆን ወደ ጥያቄ ቁጥር 508 ይሂዱ። |
| 407 | በቀን ምን ያህል ትጠጣለህ/ጫለሽ | _____ _____ | |
| 408 | ጫት ትቅማለህ/ሚለሽ? | 1. አዎ<br>2. የለም | |
| 409 | የአካል ብቃት እቅስቃሴ ታደርጋለህ/ጊለሽ? | 1. አዎ<br>2. የለም | መልስዎ የለም ከሆነ ወደ ጥያቄ 601 ይሂዱ። |
| 410 | በቀን ለምን ያህል ደቂቃ **የአካል ብቃት እንቅስቃሴ** ታደርጋለህ/ለሽ | _____ _____**ደቂቃ** | |

| | | | |
|---|---|---|---|
| ክፍል 5፡-ጭንቀትን/ከባድ ስሜትን የተመለከቱ መጠየቆች | | | |
| 501 | ባለፈው አንድ ወር ውስጥ ሲኖሩ ተጨናንቀው/የጭንቀት ምልክት አጋጥሞት ያውቃሉ? | 1. አዎ<br>2. የለም | የለም ካሉ ወደ ጥያቄ ቁጥር 701 ይሂዱ። |
| 502 | ችግሩ ከገጠመዎት ምን ያህል ጊዜ ሆነወት? | _____ _____ወር | |
| 503 | ችግሩ አጋጠመወት የሚያውቅ መቼ መቼ ነው? | 1. ሁለቀን<br>2. አንድ ወይም ሁለት ጊዜ በቀን<br>3. ሁልጊዜ ሌሊት ወይም ቀን<br>4. ከሁለት እስከ ሶስት ጊዜ በሳምንት<br>5. በሳምንት አንድ ጊዜ | |

| | | | |
|---|---|---|---|
| | | 6. በወር አንድ ጊዜ<br>7. በፍፁም | |
| 504 | ሥሜቱ/ሀይለኝነቱ ምን ያህል ነበር? | 1 2 3 4 5 6 7 8 9 10 | |
| ክፍል 6 ፡-ክሊንካል ሁኔታን የተመለከቱ መጠይቆች | | | |
| 601 | የአለምጤናዴርጅትየኤድስደረጃ _____? | 1. ደረጃአንድ<br>2. ደረጃሁለት<br>3. ደረጃሦስት<br>4. ደረጃአራት | |
| 602 | የቅርብ ሰአት የCD4 ሴሌቁጥር _____? | _____ሴል/ሚሜ3 | |
| 603 | የቅርብ ሰአት በደም ውስጥ ያለ የቨረስ መጠን | _____ | |
| 604 | የፀረ-ኤችቨ መድሀኒት ከጀመርክ ሰንት አመት ሆነህ/ሽ? | _____ | |
| 605 | በአሁን ሰአት የቀድሞ መከላከል መድሀኒት እየወሰድክ/ሽ ነው? | 1. አዎ<br>2. የለም | መልስዎ የለም ከሆነ ወደ ጥያቄ ቁጥር 708ይሂዱ። |
| 606 | **በአሁኑ ሰዓት ኮትሪሞግዛዞል እየወሰዱ ነው**? | 1. **አዎ**<br>2. **አይደለም** | |
| 607 | **በአሁኑ ሰዓት አይነች እየወሰዱ ነው**? | 1. **አዎ**<br>2. **አይደለም** | |
| 608 | በአሁኑሰአትከጸረ-ኤችአይቪመድሃኒትጋርያለህ/ሽቁርኝት ምንይመስላል? | 1. ጥሩ<br>2. መካከለኛ<br>3. ዝቅተኛ | መልስዎ ጥሩ ከሆነ ወደ ጥያቄ ቁጥር 710 ይሂዱ፡ |
| 609 | ቁርኝቱ መካከለኛ/ዝቅተኛ ከሆነ ምክንያቱ ምንድን ነው? | _____ | |

| | | | |
|---|---|---|---|
| | | _____ | |
| 610 | አሁን እየወሰዱት ያለው የፀረ-ኤችቪ መድሀኒት ምንድን ነው? | _____<br>_____ | |
| 611 | ከኤችአይቪ/ኤዴስተዛማችየሆኑበሽታዎች ተጋልጠሀል/ሽል? | ነ. አዎ<br>2. የለም | መልስዎ የለም ከሆነ ወደ ጥያቄ ቁጥር 713 ይሂዱ። |
| 612 | **የተጋለጡት** ተዛማች በሽታ ምንድን ነው? | _____<br>_____ | |
| 613 | የስኪር ህመም አለብህ/ሽ ተበለህ/ሽ ታውቃለህ/ቂለሽ? | 1. አዎ<br>2. የለም | መልስዎ የለም ከሆነ ወደ ጥያቄ ቁጥር 716 ይሂዱ። |
| 614 | የስኪርህመም አይነትምንድን ነው? | _____<br>_____ | |
| 615 | የስኪርህመም ከተገኘበዎት ስንት አመት ነው? | _____<br>__**አመት** | |
| 616 | የኩላሊት ህመም አለብሽ ተብለህ/ሽ ታውቃለህ/ቂለሽ? | 1. አዎ<br>2. የለም | መልስዎ የለም ከሆነ ወደ ጥያቄ ቁጥር 719 ይሂዱ። |
| 617 | የኩላሊት ህመም አይነቱ ምንድን ነው? | _____<br>_____ | |
| 618 | የኩላሊት ህመም ከተገኘበዎት ስንት አመት ነው? | _____<br>__**አመት** | |
| 619 | ሌሎች ተጓዳኝ ህመሞች አሉበዎት? | 1. አዎ<br>2. የለም | **መልስሥ የለም ከሆነ ወደ ጥያቄ ቁጥር** 801 **ይሂዱ።።** |
| 620 | **ተጉዋዳኝ ህመም ህመም አይነቱ ምንድን ነው?** | _____<br>_____ | |
| ክፍል **7**፡-ከመድሀኒት ጋር ተያያዥነት ያላቸው መጠይቆች | | | |
| 701 | በአፍ የሚወስደውን የወሊድ መቆጣጠሪያ በአሁኑ ሰአት እየወሰዱ ነው? | 1. አዎ<br>2. የለም | ለሴቶች ብቻ |

| | | | |
|---|---|---|---|
| 702 | ከፀረ-ኤች-ቨ-ኤድስ መድሀኒቱ ውጭ የሚወስዱት መድሀኒት አለ? | 1. አዎ<br>2. የለም | **መልስሞ የለም ከሆነ ያቁሙ** |
| 703 | **ስዱት መድሀኒት ምንድን ነው**? | _____<br>_____ | |