Health related quality of life and associated factors among HIV/AIDS Patients on highly active anti-retroviral therapy in Woliso town, south west Ethiopia, 2018.

By: MeseretWakumaTaye (BSc)

A thesis to be submitted to Jimma University, Institute of Health, Department of health economics, management and policy; in Partial Fulfillment for the Requirements for Masters of Science in health economics.

November, 2018
Jimma, Ethiopia

Assessment of Health related quality of life and associated factors, among HIV/AIDS patients on HAART, in Woliso town, south west Ethiopia, 2018

By: Meseret Wakuma Taye (BSC)

Advisors:

FikruTafese (MPH, Assistant professor)

DejeneMelese (BSC, MPH)

November, 2018

Jimma, Ethiopia

Abstract

Background: - The Human Immune-Deficiency Virus (HIV) epidemic is a major public health issue affecting the worlds today. As a result of the effectiveness of the highly active antiretroviral therapy (HAART), people living with HIV/AIDS now live longer. As people living with HIV/AIDS (PLWHA) live longer health related Quality of life (HRQOL) become important prognostic measure in HIV care. The issue of HRQOL of HIV/AIDS patients is not yet well documented in Ethiopia. In this study, HRQOL and associated factors among people living with HIV/AIDS was assessed.

OBJECTIVE: - assessment of health related quality of life(HRQOL) and associated factors among people living with HIV/AIDS on HAART, in Woliso town , south west Ethiopia,2018.

Methods:-a Facility based cross-sectional study design was employed from august 13, 2018 to September 12, 2018 in selected health center and hospital, in woliso town. A total of 403 patients were interviewed for Health related quality of life using standardized and validated medical outcome study short form-36 (sf-36) questioner. Data entry was done on Epi Data 3.1, and then transported to SPSS version 20 for analysis. Descriptive statistics and logistic regression model was used to summarize the results.

Result: The majority of the respondents reported to have a good physical functioning (90) and social functioning (90) domains, they also reported to have moderate score in role emotional domain (70). Educational status (AOR=0.125) and occupational status (AOR=0.021) was found to be significantly associated with Role physical and Role emotional domains of health related quality of life. The average monthly income and recent CD4+ cell counts of the respondents, however, did not show significant association with any of the domains of health related quality of life.

Conclusion: according to the finding of this study, health related quality of life show score which is from moderate to high in all (eight) domains; marital status, educational status, occupational status ,months on ART,ART follow up spacing, treatment regimen and WHO stage of HIV/AIDS showed significant association with at least one domain of HRQOL.

Table of Content

List of Tables

List of Figures

Abbreviation

AIDS: Acquired Immune Deficiency Syndrome

ART: Anti-Retroviral Therapy

CD4 cells: Cells with CD4 marker

EPHA: Ethiopian Public Health Association

GH: General Health perception

HAART: Highly Active Anti-Retroviral Therapy

HAPCO: HIV/AIDS Prevention & Control Office

HIV: Human Immunodeficiency Virus

HRQoL: Health Related Quality of Life

MH: Mental Health

MOS-SF: Medical Outcome Study short form

PF: Physical Functioning

PEPFAR: President's Emergency Plan for AIDS Relief

PLWHA: People Living With HIV/AIDS

QoL: Quality of Life

RF: Role Functioning

SF: Social Functioning

UNAIDS : United Nations program on HIV/AIDS

VT: Vitality

WHO: World Health Organization

Acknowledgements

First of all I would like to thanks almighty God, for his mercy and protection. I would like to express my heartfelt thanks to Jimma University, institute of health, department of health economics, management and policy for arranging this practical learning program and giving me the opportunity to go through this study. My heart-felt gratitude goes to my advisors Mr. Fikru Tafese and Mr. Dejene Melese for their unreserved and invaluable support from the Conception of the study to the final write-up. I am highly indebted to the study participants, data collectors, supervisors and staffs of St.Luke Hospital and Woliso No, 1 H/Center for giving me their time out of their busy schedules and for their cooperation.

Chapter one: Introduction

1.1 Background

HIV/AIDS is one of the pandemic diseases affecting every aspect of the society including individuals, families, communities and institutions in the world. In the year 2017 it is estimated that 36.9 million people were living with HIV/AIDS worldwide, people receiving ART till mid 2017 is 20.9 million. There is1.8 million people newly infected and 1.0 million HIV related deaths. In sub-Saharan Africa, an estimated number of PLWHA at the end of 2015 was 25.8 million, which accounts for about 70% of the global burden(1)

With a population of over 107.53 million, Ethiopia is the second most populous country in Sub-Saharan Africa (1).

The HIV/AIDS situation in Ethiopia continues to be characterized by a low-intensity; mixed epidemic with significant heterogeneity across geographic areas, adult HIV prevalence in Ethiopia in 2016 was estimated to be 1.2%. There is substantial prevalence variation by residence (3.8% urban versus 0.6% rural), and gender 1.9% female versus 1.0% male. during 2011,AIDS death per year 17,647,PLWHIV(729, 517), and (18,806) new infection per yrs.(2).

The QOL of a person is defined by WHO as an individual's perception of his/her status in life in the context of their value systems and culture in which they live and in accordance with their expectations, goals, standards and concerns. This considers individuals' satisfaction on their physical, psychological, social relationships, environment, and spiritual aspects of their life (3).

Government of Ethiopia introduced its free ART program by early 2005, with the goal of improving the quality of life of people living with HIV, reducing HIV-related morbidity and mortality and mitigating some of the impact of the epidemic(4).

Given the longevity achievable with the current prophylactic and therapeutic strategies for PLHIV quality of life has emerged as a significant measure of health outcome and quality of life enhancement as an important goal (5).

Currently, quality of life is accepted to have two principal aspects: internal, referring to certain personal traits and skills that enable the human being to take individual, autonomous actions, and external, referring to the environmental conditions of the individual's life. The internal factors are responsible for the feeling of satisfaction with life while the external ones affect internal mechanisms at the level of the individual or the community (6)

During the past two decades, Quality of life (QoL) has become an important outcome measure in medical and psychological research. Increasingly, new evidence supports the importance of including patient's assessment of Health-Related Quality of Life (HRQoL) in clinical studies, It is well known that clinical data only show small correlations with patients' judgments (7).

Warsch burger stressed that a QoL measure offers the possibility to describe the specific emotional problems to extract the relevant influences on the disease process. Our Understanding of these factors is crucial to the development of comprehensive care, therapies and new interventions (8).

Although there is still no agreed upon definition, there is agreement that quality of life is a multidimensional construct defined in terms of an individual's subjective experiences and a construct that cannot be generalized across cultures (9).

The President of emergency plan for AIDS relief-Ethiopia team(PEPFAR-E) has identified 20 priority towns from Ethiopia with high HIV burden and created a detailed package of interventions along with the "Catch-Up Campaign" to implement in these towns, focusing on improving HIV case finding and linkage to treatment (2).

To further strengthen retention on care PEPFAR-E with FMOH implement service delivery models in targeted towns. Focus will be on facilities with more than 2,000 PLWHA enrolled on treatment; current service delivery model is (8 clinical assessment/ART refills every,1.5 months, 2 clinical assessment /ART refills every, 6 months and 4 clinical assessment/ART refills every 3 months),woliso is one of the targeted 20 Ethiopian town with high prevalence of the disease (10).

Although many studies have made a contribution to the understanding of health-related quality of life, most of these studies that focus on the relationship between quality of life and health, concentrate primarily on objective indicators, such as sickness, income levels and social status, In contrast, indicators relating to subjective quality of life or subjective well-being (how satisfied a person is with his/her life as a whole) still remain, to a great extent.(11)

1.2Statement of the problem

HIV/AIDS has multidimensional consequences: personal suffering such as discomfort associated with the disease's progression, the social impact of the diagnosis, the emotional consequences of dealing with the diagnosis, and related stigma. Hence it interferes with day-to-day functioning and affects both personal relationships, decision making and economic hardships. The importance of finding ways of mitigating these consequences of HIV/AIDS makes quality of life in PLWHIV a salient issue for health care (12).

Patient's well-being is influenced by a lot of factors including psychosocial and environmental factors and not only by his or her current health status and response to treatment. The assessment of the QOL is crucial in order to provide better comprehensive care to clients so as to improve the functioning and total well-being of PLWHA (13).

As some studies indicates, HIV/AIDS has changed individual's lifestyles and quality of life, as the HIV disease progresses, quality of life deteriorate (9,14).

HIV/AIDS have impacts on cognitive function and contributes to poverty through impeding individual's ability to lead productive lives, therefore improving QOL of these PLWHA will improve productivity (13)

Although the burden of HIV-related morbidity and mortality in Africa has been reported, there has been little research on the impact of HIV on peoples' everyday lives (14).

However, in spite of the high prevalence rate of HIV/AIDs in Ethiopia and other African sub-region, no practical evidence was identified by the researcher on the HRQOL of PLWHA in different follow up spacing. This study required to examine the HRQOL of PLWHA in different follow up spacing in Woliso Town, South West Ethiopia.

1.3 Significance of the study

This research was undertaken with the objective of determining the extent to which the specific treatment-related clinical variables and selected socio demographic factors influence of HRQoL of PLWHA on HAART.

Assessing HRQoL of PLWHA on HAART is important to indicate the status of patients on the therapy.

Evaluation of QOL provides important feedback about treatment outcomes

study on QOL of adult PLWHA and associated factors in the area is important as it fulfills the gap in the data availability which enables the local health offices and other concerned bodies to utilize the data in improving the gap identified by this study.

This study will contribute to knowledge since there is very little work in the country and no study in the specified town.

Furthermore, the study outcomes can set the pace for further studies.

The findings will also enable the stakeholders of health in the country and regions to have an idea of the baseline QOL of this vulnerable group so as to make and implement policies that can improve their QOL.

Chapter two: Literature review

2.1 Quality of life

The concept of quality of life can be traced back to 1947 in the World Health Organization's definition of health, Health as defined by the WHO is "a state of complete physical, mental, and social well-being not merely the absence of disease"(15).

QOL is a very broad concept that is influenced in diverse ways by the person's physical health, psychological status, social relationships, and environmental factors. Furthermore, the QOL of PLWHA is a concept that has gained a lot of recognition in literature since HIV is now accepted as a chronic illness. Therefore assessing the QOL has become an integral part of patient follow-up(16).

The identification of factors that determine QOL is important in order to better tailor health and social care services, thereby improving the functioning and well-being of PLWHA. Such factors should be viewed within an individual's culture and value systems, as these factors may shape the perception of what constitutes normality and health (17).

Most physicians normally make implicit and very subjective assessment about QOL when managing a patient. However, very few physicians make explicit, objective evaluation about QOL using standardized validated tools and instruments. Formal assessment of QOL is now a mandatory requirement in most clinical trials but most physicians still use informal assessment mostly clinical judgment due to time constraints .It has been established that patients with a good QOL at the start of treatment have better prognosis than those with a poorer baseline score. However, there are lots of studies showing the efficacy of QOL as an effective predictive tools (16).

Factors that have facilitated this rise in usage include the accumulation of evidence show that measures of QOL are valid and reliable. Additionally, the results of several clinical trials indicate that these outcome measures are responsive to important clinical change. Health related quality of life is a multidimensional concept that includes global health perspectives, symptom status, functional status, biological and physical variables, individual and environmental characteristics and general health perception(18).

Several studies reveal the QOL of PLWHA to be lower than the average population of people without (19).

Additionally, the evidence asserts that even asymptomatic HIV infection has an important impact on QOL of patients. The overall QOL of patients improves significantly with ART as compared to pre-ART (20).

The final component of the QOL model defined by Wilson and Cleary (1995) as subjective well being in relation to an individual's happiness or satisfaction in life as a whole. Subjective well-being signifies multiple concepts such as pleasant and unpleasant affect, total judgment on fulfillments of life and individual's satisfaction with the domains of life (21).

2.2 Factors affecting quality of life of PLWHA

Chronic HIV infection results in presentations that eventually result in various forms of disability and mortality. This includes muscle weakness, easy fatigability and decreased functional work capacity leading to decreased QOL (22).

According to study conducted in Iran The most important factors, association with decreased quality of life of HIV/AIDS patients, is being female, separated or divorced, having less CD4+ count, and being at severe stage of the disease(23)

The functional exercise capacity of PLWHA is believed to be lower than the normal population. The association between functional exercise capacity and HIV/AIDS is very complex. Studies comparing PLWHA with healthy controls revealed that PLWHA had significantly lower functional exercise capacity (24).

The impact of ART on QOL has been depicted as a balance between a reduction in HIV-infection related symptoms and good QOL on one end and the adverse-effects of the medications on the other end. In PLWHA with a fairly good health status prior to beginning ART, these adverse-effects could outweigh the potential gains (16).The negative effect of pain on QOL has been documented in literature (25).The PLWHA undergo and face many undesirable physical and psychological changes which affect their direction and level of body image satisfaction, ultimately resulting in QOL and life's satisfaction ,Body image and HAART associated body changes have been linked to physical discomfort, worries about disclosure, social isolation, adherence, low satisfaction of life and mental health problems (26).

The increase in disease burden among PLWHA requires a better insight into what social resources are available and accessible, and the consequences of these resources on their health outcomes. Attempts at addressing these challenges would require a holistic strategy that incorporates their daily context-specific challenges; hence the overall QOL of PLWHA is influenced by physical, psychological, social and environmental factors (27).

The social relationships of PLWHA is affected by the level of social support, personal relations with family and friends, sexual relations and the level of acceptance in the home and community (28,29).

Environmental factors such as safety and security, physical environment, finance, home environment, social care, and transport also influences the QOL of PLWHA (30).

Poverty and access to health care are two main challenges confronting PLHIV. Their determination to improve their situation is obstructed by the lack of employment opportunities and widespread stigma and discrimination, on the basis of gender as well as of HIV status (31). There is a positive association between an individual's financial situation and QOL (16).
The human immune-deficiency virus (HIV) attacks the cellular structures of the immune system, impeding their function and resulting in continuous destruction of the immune system (24).

The QOL is also affected by lack of mobility, inability to work and inability to carry out ones daily activities. Factors such as body image, cognition, self-esteem and negative feelings about self affect the psychology of PLWHA and this influences their QOL (32).

Generally, studies on quality of life of PLWHA on HAART have reported drug side effect, adherence, economic, access to treatment centers and employment problems. In addition, clinical evaluative researches have reported imperfect immune restoration even if patients stay on treatment for long periods. Moreover, worries about marriage, having children and fear of rejection have become serious problems of these people. Now the question is which of the treatment and care setting, which social, economic and demographic part of the community is gaining benefit and which not. How could we assess the program gaps and fill them.

Therefore, assessing the health related quality of life associated factors of PLWHA is an important tool in the success of prevention and treatment programs.

2.3 Conceptual framework of analysis

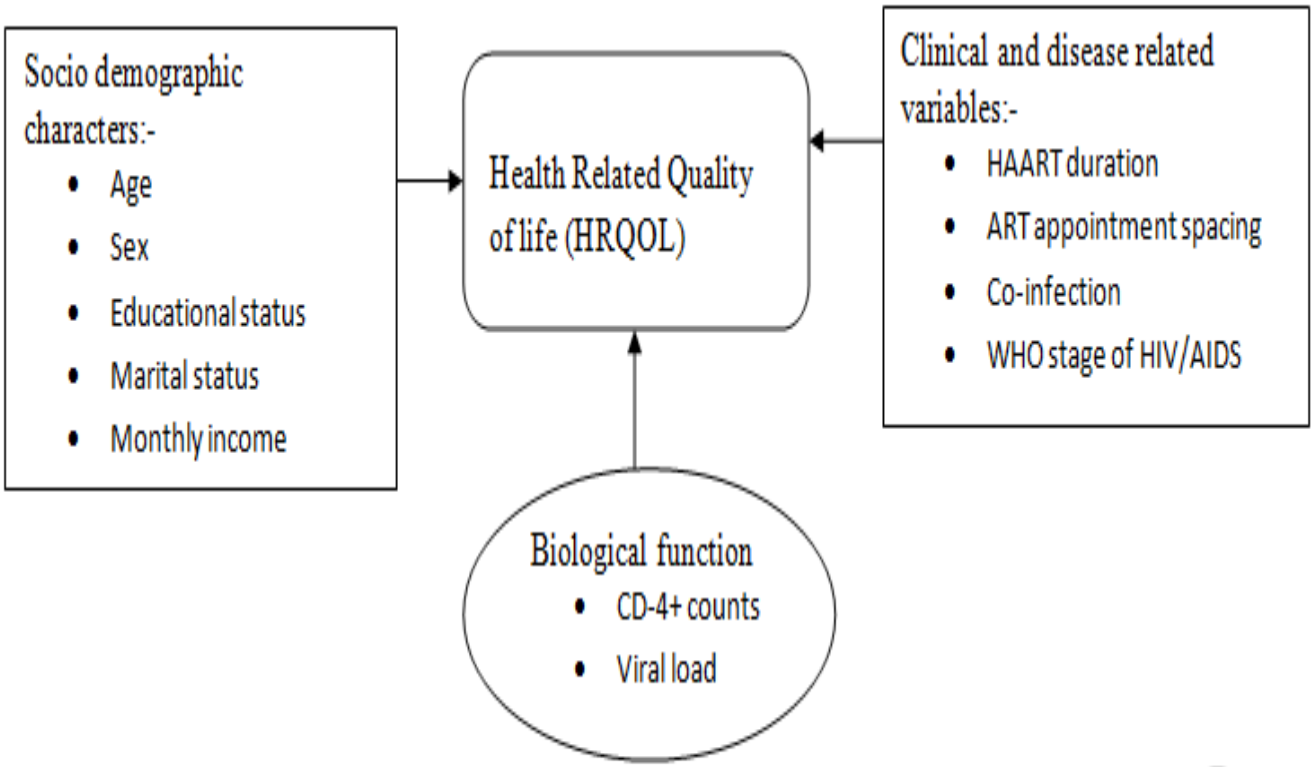

Figure 1:- graphical representation of conceptual framework of analysis adapted from different literature (**ref no, 16, 18 &34).**

Chapter Three: Objectives

3.1 General Objective

To Assess Health Related Quality Of Life and Associated Factors among Adult HIV/AIDS Patients, In Woliso Town ART Centers, South West Ethiopia, 2018

3.2 Specific Objectives

1) To Assess Health Related Quality Of Life among Adult HIV/AIDS Patient On ART In Woliso Town ART Centers, 2018.

2) To Identify Factors Affecting HRQOL Of Adult HIV/AIDS Patient On ART In Woliso Town ART Centers, 2018.

Chapter four: Methods and materials

4.1 Study area and period

The study were conducted in Woliso Town, ART centers from august 13 to September 2.Woliso town is the capital of south west shoa Zone located at 114 Km from Addis Ababa with the total population of (59,685) According to population estimation of 2017 .It cover total area of 4.27km^2,the geographical coordinates of Woliso Town is approximately with elevation variation of 1900-2000m above sea level; temperature range of 20-30^{o}C(22.5^{o}C)and average annual rainfall of 800-2500mm^3,(1200mm^3).

The Town has one general nongovernmental hospital, two health centers, seven medium clinics, three small clinics, nine drug stores and three pharmacies. From the above one of the two health centers named woliso number one health center and ST. Luke General Hospital has ART center, in those ART centers there are (2401) adult PLWHA on care.

4.2 Study design

A facility-based cross-sectional study design was employed.

4.3 Population

4.3.1 Source population

The source populations were all HIV/AIDS patient inWoliso town and surrounding woredas enrolled in care in woliso town ART sites.

4.3.2 Study population

Study populations are all HIV/AIDS patient having follow up at woliso Town ART centers.

4.3.3 Study unit

Study unit was selected patients during the data collection period using inclusion/exclusion criteria.

4.3.4Eligibility criteria

4.3.4.1Inclusion criteria

Included were adult PLWHA ≥18yrs, who were on ART for at least 3 months prior to study period.

4.3.4.2Exclusion criteria

Severely ill Patients unable to respond

4.4 Sample size and sampling procedure

4.4.1Sample size

The sample size is determined using single population proportion considering the following assumption:

- Z α/2 = (1.96) at 95% Confidence interval.
- d= is the degree of precision (marginal error) 5%
- Proportion of PLWHA with QOL level of lower than average will assume to be 50% as far as my searching techniques addressed there is no previous study done in south west shoa zone on similar topic of the research.
- n(sample size) =(Z α/2)²×p×q/d²
- $n = (1.96)^2 0.50(1- 0.50)/(0.05\ )^2 = 384$
- 5% non respondent rate
- Final n= 403

4.4.2 Sampling technique

Woliso town is selected purposively because of high prevalence of HIV/AIDS in the town, In Woliso town there are two thousand four hundred and one patients on care. Since the target is to assess HRQOL, proportional allocation is done for two ART sites then adult HIVAIDS patients on HAART were selected using simple random sampling Technique to obtain calculated final sample size.

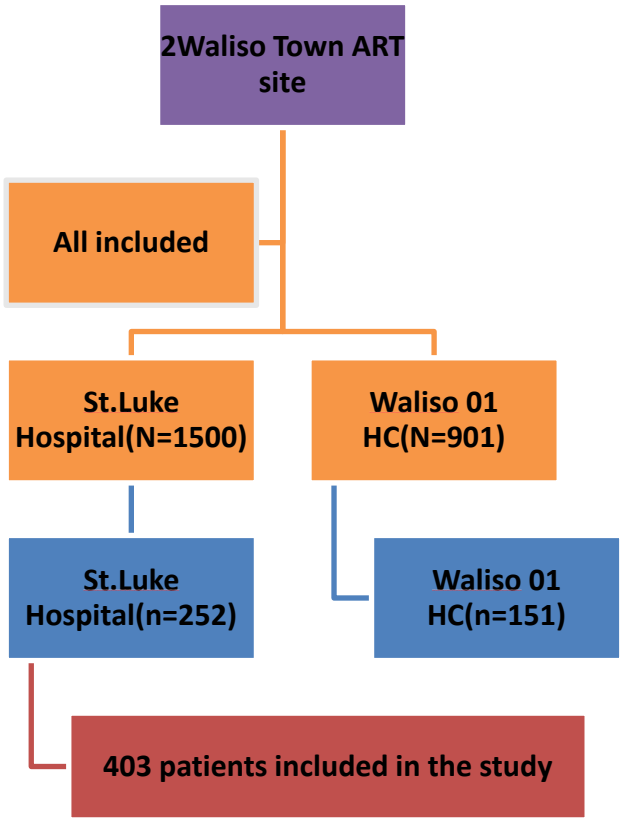

Figure 2 graphical representation of sampling procedure

4.5 Data collection tools and procedure

4.5.1 Data collection tools

Health related quality of life was assessed using prognostic patient reported medical outcome study short form -36 **/(PROMS/SF-36)** standardized and validated, structured questioner which is closed ended. In MOS/SF-36 the items are grouped into 8 domains, (physical functioning(PF), social functioning(SF), and mental health(MH), role limitations due to physical problems(RP), role limitations due to emotional problems(RE), vitality/energy and fatigue/(VT), bodily pain(BP), and general health perception(GH).The tool was adapted from MOS/SF-36 in English, it is validated for use in Ethiopian context **(33).** An array of scores representing individual dimensions or domains of HRQOL can be provided by health profiles/health status questionnaires. The rationale is that since such questionnaires focus on those aspects of existence that are affected by ill health, they may give some indication of the impact of illness on quality of life. The Short Form-36 (SF-36) is a well-known example of such health profiles.

4.5.2Personnel

Data was collected by two data clerks' from each ART sites, data clerks are from other ART sites and 2 BSC nurse was recruited for supervision during study period.

4.5.3Data collection methods

Quantitative data collection method was employed with interviewer administered questioner with the domain of short form -36 tools to assess HRQOL. Documents were reviewed for different clinical variables like (CD4+ count, treatment regimen, treatment spacing and WHO stage of the disease).

4.6 Study Variables

4.6.1Dependent variables

- HRQOL**(**health related quality of life)

4.6.2Independent variables

- Socio demographic characteristics: - age, sex, educational status, marital status, average monthly income, Employment status.
- Clinical and disease related variables: - Duration of ART treatment, ART appointment spacing, co-infection, WHO stage of HIV/AIDS.
- Biological function**:** -CD4+ count, viral load.

4.7 Operational Definition

Bodily Pain: Captures the frequency of pain and the extent of interference with normal activities due to pain (low score= feeling of body pain, high score=more freedom from body pain).

General Health: Assesses overall current health status, susceptibility to illness, and one's expectations for health in the future (low score=poor current health status, high score=good health status).

Mental Health: assess Positive and negative psychological states including anxiety, depression, loneliness, positive affect and feeling of belonging. (Low score =poor psychological well being, high score= good psychological well being)

Physical Functioning: Assesses the impact of the health in performing physical activities (low score= Limitation in performing physical activities, high score= No limitation in performing physical activities)

Quality Of Life: Personal evaluation of how things have been going for one self, this definition considers individuals' satisfaction on their physical, psychological and social relationships.

Health related quality of life: aspects of self-perceived well-being that are related to or affected by the presence of disease or treatment (assessed with score of the SF-36 domains)/Good HRQOL if mean score of the SF-36 domains is >50 and Poor HRQOL if mean score of the SF-36 domains is <50.

Role Emotional: Assesses the impact of emotional health on vocational and a vocational activity.

Role physical: Assesses the impact of physical health on vocational and a vocational Activity.

Social Functioning: Assesses the impact of either physical health or emotional problems on normal or usual social activities.

Vitality: Personal evaluation of one's energy and fatigue to do things that one wants to do.

Low score =feels tired and worn out, high score =feels full of pep and energy

4.8Data Analysis procedure

Dimensionality Analysis

The SF-36 data was recorded as described in detail in the SF-36 user's manual**(34)**. Twenty-eight items are in ordinal type following the Likert format, seven items are in binary format (yes–no recoded 1–2), and one item, investigating the health changes over the past year is not used for HRQoL evaluation. Therefore, to investigate the questionnaire dimensionality we rescaled the Likert/binary points of the 35 items of the SF-36.

The data was entered and cleaned using Epi data version 3.1 and exported to SPSS version 20 and analyzed. First, descriptive statistics such as, mean, median, frequency and percentage was carried out to explore the socio-demographic characteristics of respondents and Mean was also computed for each QOL domain. The SF-36 items were scored in such a way that a higher score indicated a better health state. To achieve this, items of the SF-36 that required recoding were recalibrated. After item recoding, domain scores were computed by summing across items in the same domain to give raw scale scores. Lastly, the raw scores were transformed to a 0–100 scale.

Transformed Scale = (Actual raw score – lowest possible raw score) x100

Possible raw score range

To determine factors associated with health related quality of life(HRQOL) of people living with HIV/AIDS, Since 50 is considered the average score in the general population on measures of health status**(34).** The odds of being below the score of 50 were analyzed using multivariate logistic regression for different variables that might affect the scores of the HRQOL domain measures (i.e. the dependent variables). Variables associated with HRQoL in bivariate analyses (with p values less than 0.25), was included in the multivariate logistic regressions to identify the effect of independent variables on the outcome variable. P-values less than 0.05 were considered as statistically significant in all cases.

4.9 Data quality management

In order to make the study more valid and reliable, English version of SF-36 was translated to Afaan Oromo, then re-translated to English to check consistency. Afaan Oromo version questioners was then pretested on 5% of sample size, at chitu health center ART clinic, which is a neighboring town of the study area and necessary correction was employed accordingly.

Training was given for data collectors and supervisors prior to data collection. The missing data, completeness and consistence were checked before data entry to epi data.

Cronbach's-α was checked for internal consistency with value >0.70 for six out of eight multi-item scales, with values ranging from 0.649 to 0.949 for all scales, with 0.649 for GH and 0.672 for VT indicating good internal reliability of the Afaan Oromo version of the SF-36,

4.10Ethical consideration

Ethical clearance was obtained from Jimma University, institute of health, department of Health Economics Management and Police.

Letter of permission was obtained from south west shoa zonal health office.

Informed oral consent was taken from each participant prior to interview.

All information obtained from the study participants was kept strictly confidential.

4.11 Dissemination plan

The final report will be presented for Jimma University, Department of Health Economics Management and Policy. The report will also disseminate to south west shoa zonal health office, oromia regional health bureau and for the study centers. Efforts will be made to present the results on scientific Conferences and for publication in Reputable Journals

Chapter five:-results

5.1, socio Demographic characteristics of the study participants

From total 403 PLWHA, 401respondents participated in the study. Two of study participants are with incomplete medical documents. Male to female ration in this study is 1:1.6, mean age was 39.5 years (SD = 5.39), more than halve (77.6%) of the study participant were in the age group of (25-49) yrs.

More than halve (84.5%) of the participants were Oromo. Married participants accounted for 65.6%, singleones5.5%, widowed were14.7%, separated 3% and divorced 11.2%. Education-wise, 48.9% had attended primary school, 17.7% had attended secondary school including preparatory (9-12) and 7.2 % had attended diploma and above and the rest (26.2%) have no formal education.

The majority of the participants were unemployed (73%) including merchant, house wife, daily laborer and farmer), which accounts for 11.2%, 22.2%, 15% and 22.2% respectively, about 48.9% of participants stated that they have average monthly income of less than 500 birr/months (Table 1).

Table 1: Socio demographic characteristics of HIV/AIDS patients on HAART in woliso town ART centers, 2018

Variables		Frequency	Percent
sex of patient	Male	154	38.4
	Female	247	61.6
Age	18-19	10	2.5
	20-24	11	2.7
	25-49	311	77.6
	50+	69	17.2
Ethnicity	Oromo	339	84.5
	Amhara	30	7.5
	Tigre	1	.2
	Gurage	29	7.2
	Other	2	.5
marital Status	Married	263	65.6
	Single	22	5.5
	Widowed	59	14.7
	Separated	12	3.0
	Divorced	45	11.2
Educational status	No formal education	105	26.2
	Primary	196	48.9
	Secondary	71	17.7
	Diploma and above	29	7.2
Occupation	Employed	32	8.0
	Unemployed	4	1.0
	Merchant	45	11.2
	Housewife	89	22.2
	Daily laborer	60	15.0
	Student	8	2.0
	Farmer	89	22.2
	Other	74	18.5
Income	<500	196	48.9
	≥500	205	51.1

5.2, clinical parameters and ARV uses of the study participants.

When we come to clinical parameters the values for the most-recent CD4 cell counts were (200-499cells/ mm^3) for 36.4% of study participants and (500+ cells/mm3)for 50.9% of study participants. Majority of the participant (55.6%) had follow up every month, 17.7% had follow up every 3 months and 26.7% had follow up every 6 months. almost all (88.3%) of study participants are on first line ART regimen.

Around 59.7% of the participants had been on treatment for >60 months, the vast majority of participants (98.8%) had at WHO stage one. about 63.6% study participants had undetectable viral load (table 2).

Table 2 :- Clinical parameter and estimated ARV use of HIV/AIDS patients on HAART in woliso town ART centers, 2018

Variables	Frequency (no.)	Percent (%)
Most recent CD4 cell count		
1.<200 cell/mm^3	51	12.7
2.200-499cell/mm^3	146	36.4
3.500+ cell/mm^3	204	50.9
ART follow up spacing	Number	Percent
At one month	223	55.6
At 3 months	71	17.7
At 6 month	107	26.7
ART regimen :-1st line	354	88.3
2nd line	47	11.7
Month on ARV treatments'		
3-6 months	35	8.7
7-12 months	17	4.2
13-60 months	110	27.4
>60 months	239	59.7
WHO stage:-Stage 1	396	98.8
Stage 2	2	0.5
Stage 3	3	0.7
Viral load :- Not detected	255	63.6
1-100	56	14
101-500	27	6.7
>500	63	15.7

5.3 description of average score of health related quality of life domain.

When we come to average score of HRQOL domains 96.5% of study participant had good score in physical functioning scale. In role functioning 23.2 % score poor quality of life. When we come to role emotional domain 25.7 % of participant score poor HRQOL. Almost all study participants (94.8%) had good quality of life score in vitality domain; on the domain of mental health 96.5% of the participant scores good QOL. When we see social functioning domain 94.5% of study participant score good .on body pain domain 95% of study participant score good HRQOL according participant self report(table 3).

Table 3 : Description of Health-related quality of life average scores for adult PLWHA on HAART in woliso town ART centers, 2018

QOL Domain (no. of item)	Score of QOL	No.(%)	Cronbach's-α	Mean(SD)
Physical functioning(10)	Good	387(96.5)	0.844	90(15.07)
	Poor	14(3.5)		
Role limitation due to physical problem (4)	Good	308(76.8)	0.949	78(38.4)
	Poor	93(23.2)		
Role limitation due to emotional problem(3)	Good	298(74.3)	0.814	70(38.64)
	Poor	103(25.7)		
Vitality (4)	Good	380(94.8)	0.672	74(14.68)
	Poor	21(5.2)		
Mental health(5)	Good	387(96.5)	0.721	76(13.31)
	Poor	14(3.5)		
Social functioning (2)	Good	378(94.3)	0.796	90(16.68)
	Poor	23(5.7)		
Body pain (2)	Good	381(95)	0.763	90(18.04)
	Poor	20(5)		
General health (5)	Good	376(93.8)	0.649	81(17.55)
	Poor	25(6.2)		

5.4 Mean scores on the SF-36 scales in relation to selected socio demographic variables.

When we come to mean of HRQOL domain each domain of quality of life was included. There are Lower scores for all subscales in age group 50+, Except for mental health [MH], female participant score less than male participants in all domains. Those participants with average monthly income of less than 500 birr/month scored less in all sub scale. Those participants without formal education scored less in all scales in comparison to those with formal educations.

Table 4: Mean scores of HRQOL domains in relation to selected socio demographic and clinical variables of adult PLWHA on HAART in woliso town ART centers, 2018

Variables	HRQOL domains							
	PF	RP	RE	VT	MH	SF	BP	GH
Sex								
Male	92	81	74	75	77	92	91	82
Female	89	76	68	74	76	89	90	81
Age								
18-19	97	85	70	78	76	97	95	79
20-24	95	95	87	75	74	96	98	89
25-49	91	80	72	74	77	90	90	82
50+	86	63	59	72	75	89	88	77
Educational status								
No formal education	86	66	59	71	73	87	86	77
Primary	91	78	71	73	78	91	90	81
Secondary &preparatory	95	92	83	79	78	94	95	85
diploma &above	91	92	80	79	80	87	90	87
Socioeconomic status/Average monthly income								
<500 birr	88	70	61	72	75	89	88	79
500-1000 birr	90	83	79	74	75	90	91	81
1001-1500 birr	92	91	86	75	81	96	95	81
1501-2000 birr	96	90	75	79	77	92	91	88

>2000 birr	94	85	80	79	81	92	92	86
ART treatment regimens								
First line	91	78	72	74	76	91	91	81
Second line	90	78	64	78	80	89	85	82
ART follow up spacing								
One month	89	74	68	72	77	91	89	80
Three months	93	82	74	76	77	92	92	80
Six months	93	85	74	76	77	88	90	85

5.5 Factors associated with health related quality of life among Adult HIV/AIDS patient on HAART.

Factors associated with health related quality of life were assessed for their associations with socio demographic and clinical characteristics of respondents. Since 50 is considered the average score in the general population on measures of health status; the odds of being below the score of 50 were analyzed using multivariate logistic regression(**34**).

The researcher was considered eight domains to measure health related quality of life among Adult HIV/AIDS patient on ART. These eight domains are (Physical Function, Limitation in role due to physical health, Limitation in Role due to Emotions, Vitality, Mental Health, Social Function, Bodily Pain and General health) were analyzed using binary logistic regression separately. Variables that had $p<0.25$ on bivariate binary logistic regression were considered to be candidates for multivariable to identify factors affecting HRQOL of Adult HIV/AIDS patients on HAART. A multivariate logistic regression model was fitted with the variable having a p-value <0.25 in the bivariate logistic regression analysis. Accordingly variables having p-value<0.05 considered as factors associated with health related quality of life among Adult HIV/AIDS patient on HAART.

5.5.1 Association between Physical function and independent variables among HIV/AIDS patient on HAART

In Physical function domain of HRQOL of adult HIV/AIDS patient on HAART, some variables were factors for health related quality of life after controlling other factors. This study shows that marital status was the only factors affecting physical function of adult HIV/AIDS patient on HAART. Patients who were separated had been 89% less likely to have good score (AOR=0.110; 95%CI: 0.018, 0.668) on physical functioning as compared to married. On other variables, like age, sex, level of education, occupational status didn't show an association with physical functioning domain.

Table 5: association of Physical function and independent variables among PLWHA on HAART in woliso town ART centers, 2018

Variables	**Categories**	**Physical Function**		**P-value**	**COR**	**P-value**	**AOR(95%CI)**
		>50	**<50**				
Marital status	Married**(1)**	257	6	.141			
	Single	22	0	.998	5.981	.998	7.644
	Widowed	56	3	.250	.436	.274	.445(.104,1.901)
	Separated	10	2	.014	.117	.016*	**.110(.018, .668)***
	Divorced	42	3	.124	.327	.142	.335(.078,1.439)
Education	No Formal Education	68	37	.140	1.037	.477	1.85(.337,10.221)
	1ryeducation	148	48	.965	3.556	.068	5.29(.881,31.838)
	2ndeducation	65	6	.154	5.185	.115	7.52(.612,92.423)
	3ryeducation **(1)**	27	2				

**Sig. at p<0.05* *(1):- reference category*

5.5.2 Association between role physical and independent variables among HIV/AIDS patient on HAART.

Limitation in role due to physical health was also other dependent variables used to measure health related quality of life of adult HIV/AIDS patient on HAART.A multivariate logistic regression model was fitted with the variable having a p-value <0.25 in the bivariate logistic regression analysis. Accordingly some variable were factors for health related quality of life after controlling other factors. From these, Education and occupational status were significantly associated with score of role physical domain. Being illiterate has 87.5% less likely to score good HRQOL in RP (Role due to physical health) scale than patients attending 3ry education (AOR=0.021; 95%CI: 016, .970). Similarly Being student have 97% less likely to score good QOL in RP scale than being employed (AOR=.021; 95%CI; 001, .368).

Table 6: association of role Physical and independent variables among PLWHA on HAART in woliso town ART centers, 2018

Variables	**Categories**	**Role due to physical health**		**P-value**	**COR**	**P-value**	**AOR(95%CI)**
		>50	**<50**				
Age	18-19**(1)**	8	2				
	20-24	10	1	.254	2.571	.691	1.843(.09, 7.62)
	25-49	248	63	.084	6.429	.239	.208(.015,.842)
	50+	42	27	.001	2.531	.073	.087(.006, .253)
Sex	Male	124	30	.165	.707	.594	.833(.426,1.630)
Education	No Formal Education	68	37	.009	.136	.047	**.125(.016,.970)***
	1ryeducation	148	48	.049	.228	.096	.182(.024,1.355)
	2ry education	65	6	.795	.802	.680	.643(.079,5.216)

	3ryeducation**(1)**	27	2				
Occupational Status	Employed**(1)**	30	2				
	Unemployed	3	1	.239	.200	.576	.411(.018,9.249)
	Merchant	37	8	.155	.308	.924	1.097(.162,.416)
	Housewife	65	24	.026	.181	.514	.544(.087,3.388)
	Daily Laborer	42	18	.017	.156	.477	.514(.082,3.219)
	Student	5	3	.033	.111	.008	**.021(.001, .368)***
	Farmer	68	21	.047	.216	.664	.671(.112, .070)
	Other	58	16	.070	.242	.736	.731(.118,4.533)

**Sign. At p<0.05 (1) reference category*

5.5.3 Association between role emotional and independent variables among HIV/AIDS patient on HAART.

Limitation in role due to emotion was a domain used to measure health related quality of life of adult HIV/AIDS patient on HAART. A multivariate logistic regression model was fitted with the variable having a p-value <0.25 in the bivariate logistic regression analysis. Some variable were factors for health related quality of life after controlling other factors. From these, Education and occupational status were significantly associated with role emotional HRQOL domain. Being illiterate has 89% less likely to score good QOL in RE (Role due to emotion) scale than those attending3ryeducation (AOR=0.110; 95%CI: 0.014, 0.880). Similarly Being student have 97% less likely to score good QOL in RE scale than being employed (AOR=.025; 95%CI; 0.001, 0.445).

Table 7: association of role emotional domain and independent variables among PLWHA on HAART in woliso town ART centers, 2018

Variables	**Categories**	**Role due to Emotion**		**P-value**	**COR**	**p-value**	**AOR(95%CI)**
		>50	**<50**				
Age	18-19**(1)**	8	2	.016			
	20-24	10	1	.225	2.732	.744	1.65(.08,33.95)
	25-49	239	72	.074	6.829	.237	.210(.016, 2.791)
	50+	41	28	.003	2.267	.069	087(.006, 1.211)
Sex	Male**(1)**	123	31				
	Female	175	72	.045	.613	.461	.775
Education	No Formal Education	65	40	.009	.188	.038	**.110(.014,.880)***
	1ryeducation	145	51	.077	.328	.082	.163(.021, 1.262)
	2ndeducation	62	9	.745	.795	.607	.573(.069, 4.786)
	3ryeducation **(1)**	26	3				
Occupational Status	Employed**(1)**	30	2				
	Unemployed	2	2	.029	.067	.705	.538(.022, 13.274)
	Merchant	35	10	.074	.233	.772	1.328(.195, 9.067)
	Housewife	65	24	.026	.181	.678	.676(.107, 4.276)
	Daily	44	16	.031	.183	.561	.579(.091, 3.662)

	Laborer						
	Student	6	2	.142	.200	.012	**.025(.001, .445)***
	Farmer	64	25	.021	.171	.743	.739(.121, 4.513)
	Other	52	22	.017	.158	.832	.819(.130, 5.167)
months on treatment	3mnth-6mnth**(1)**	30	5				
	7mnth-12mnth	14	3	.181	1.967	.292	1.756().616, 5.007
	13mnth-36mnth	37	14	.516	1.530	.911	1.084(.312, 1.335)
	37mnth-60mnth	37	22	.680	.866	.238	.645(.261, 4.502)
	>60mnth	180	59	.053	.551	.215	.643(.319, 1.293)

** p<0.05* *(1) reference category*

5.5.4 Association between vitality and independent variables among HIV/AIDS patient on HAART.

When we see vitality of adult HIV/AIDS patient on HAART, some variables were factors for health related quality of life after controlling other factors. This study shows that months on ART treatment was the only factor affecting vitality of adult HIV/AIDS patient on HAART. Patients who were on ART for three months to six months had been 48% less likely good score(AOR=0.523; 95%CI:0.187,0.915)on vitality scale as compared to PLWHA who had been on ART for greater than 60 months.

Table 8: association of vitality scale and independent variables among PLWHA on HAART in woliso town ART centers, 2018

Variables	Categories	Vitality		P-value	COR	P-Value	AOR(95%CI)
		>50	<50				
co morbidity	Tuberculosis**(1)**	10	1				
	Mental illness	3	1	.540	.518	.579	.542(.063, 4.704)
	None	367	19	.114	.155	.178	.194(.018, 2.105)
Months on treatment	3mnth-6mnth	34	1	.179	1.797	.049	**0.523(0.187,0.915)***
	7mnth-12mnth	16	1	.876	.846	.776	.734(.155, 1.537)
	13mnth-36mnth	46	5	.295	.486	.220	.488(.087, 6.903)
	37mnth-60mnth	57	2	.598	1.507	.604	1.503(.322,7.015)
	>60mnth**(1)**	227	12				
Treatment regimen	1stline**(1)**	337	17				
	2ndline	43	4	.230	.542	.211	.470(.144, 1.534)

** p<0.05* *(1):- reference category.*

5.5.5 Association between mental health and independent variables among HIV/AIDS patient on HAART

Mental health was another domain used to measure health related quality of life of adult HIV/AIDS patient on HAART. A multivariate logistic regression model was fitted with the variable having a p-value <0.25 in the bivariate logistic regression analysis. Some variable were factors for health related quality of life after controlling other factors. From these, months on ART treatment and ART follow up spacing were associated with good score of mental health (MH).

Patient on ART treatments between 13 to 36 months has 83% less likely to score good in MH (Mental health) scale than patients taking treatments for greater than 60 months(AOR=0.171; 95%CI: .037, .795). Similarly patients who have ART follow up every three months had 97% less likely to score good in MH scale than who follow ART at six month (AOR=.025; 95%CI; .002, .497).

Table 9: association of mental health scale and independent variables among PLWHA on HAART in woliso town ART centers, 2018

Variables	**Categories**	**Mental Health**		**P-value**	**COR**	**P-Value**	**AOR(95%CI)**
		>50	**<50**				
co morbidity	Tuberculosis**(1)**	10	1				
	Mental illness	3	1	.297	.321	.546	.501(.053, 4.723)
	None	374	12	.049	.096	.143	.139(.010, 1.945)
Months on treatment	3mnth-6mnth	33	2	.152	.281	.095	.168(.021, 1.362)
	7mnth-12mnth	16	1	.257	.272	.099	.129(.011, 1.466)
	13mnth-36mnth	47	4	.026	.200	.024	**.171(.037, .795)***
	37mnth-60mnth	56	3	.141	.318	.081	.240(.049, 1.190)
	>60mnth**(1)**	235	4				
ART follow up spacing	1mnth	217	6	.999	49.757	1.000	8.558
	3mnth	69	2	.032	.068	.014	**.030(.002, .497)***
	6mnth**(1)**	101	6				

** p<0.05* *(1):- reference category.*

5.5.6 Association between social functioning and independent variables among HIV/AIDS patient on HAART

Social function of adult HIV/AIDS patient on HAART, accordingly, some variables were factors for health related quality of life after controlling other factors. This study shows that ART treatment regimen was the only factors affecting social function of adult HIV/AIDS patient on HAART. Patients who were on 2ndline ART regimen has been 65% less likely good score (AOR=0.353; 95%CI: 0.129, 0.968) on social function scales as compared to PLWHA on 1stline ART regimen.

Table 10: association of social functioning scale independent variables among PLWHA on HAART in woliso town ART centers, 2018

Variables	**Categories**	**Social Function**		**P-value**	**COR**	**P-Value**	**AOR(95%CI)**
		>50	**<50**				
Co morbidity	Tuberculosis**(1)**	10	1				
	Mental illness	3	1	.606	.575	.590	.557(.066,4.682)
	None	365	21	.135	.173	.123	.157(.015,1.649)
cd4 count	<200	45	6	.080	.387	.153	.453(.152,1.343)
	200-499	139	7	.963	1.024	.890	1.073(.394,2.92)
	500+ **(1)**	194	10				
treatment regimen	1stline**(1)**	337	17				
	2ndline	41	6	.034	.345	.043	**.353(.129, .968)***

** p<0.05* *(1) indicate reference category*

5.5.7 Association between body pain and independent variables among HIV/AIDS patient on HAART

On the domain of Bodily pain of adult HIV/AIDS patient on HAART, a multivariate logistic regression model was fitted with the variable having a p-value <0.25 in the bivariate logistic regression analysis. Hence, some variables were factors for health related quality of life after controlling other factors. This study shows that ART treatments regimen was the only factor affecting bodily pain of adult HIV/AIDS patient on HAART. Patients who were on the 2ndline ART regimen has been 68% less likely to sustain free of pain (AOR=0.323; 95%CI: 0.118, .883) as compared to patients on 1stline ART regimen.

Table 11: association of body pain scale and independent variables among PLWHA on HAART in woliso town ART centers, 2018

Variables	**Categories**	**Bodily Pain**		**P-value**	**COR**	**P-Value**	**AOR(95%CI)**
		>50	**<50**				
sex of patient	Male**(1)**	143	11				
	Female	238	9	.124	2.034	.937	.965(.394, 2.361)
co morbidity	Tuberculosis**(1)**	9	2				
	Mental illness	4	0	.064	.220	.572	.541(.064, 4.547)
	None	368	18	.999	1.226	.103	.142(.014,1.480)
treatment regimen	1stline**(1)**	341	13				
	2ndline	40	7	.002	4.590	.028	**0.323(.118, .883)***

** p<0.05* *(1):- reference category.*

5.5.8 Association between general health and independent variables among HIV/AIDS patient on HAART

When we come to General health domain of adult HIV/AIDS patient on HAART, a multivariate logistic regression model was fitted with the variable having a p-value <0.25 in the bivariate logistic regression analysis. Accordingly, some variables were factors for health related quality of life after controlling other factors. This study shows that WHO stage of HIV/AIDS was the only factor affecting general health of adult HIV/AIDS patient on HAART. Patients who had been at stage three were 98% less likely good score (AOR=0.014; 95%CI: 0.001, 0.255) on general health of adult HIV/AIDS patient on HAART as compared to Patients at WHO stage one.

Table 12: association of general health scale independent variables among PLWHA on HAART in woliso town ART centers, 2018

Variables	**Categories**	**General Health**		**P-value**	**COR**	**P-Value**	**AOR(95%CI)**
		>50	**<50**				
Co morbidity	Tuberculosis**(1)**	9	2				
	Mental illness	3	1	.771	.667	.088	.249(.050, 1.231)
	None	364	22	.109	3.677	.127	.166(.017, 1.670)
WHO stage of the disease	stage1**(1)**	373	23				
	stage2	2	0	.999	5.702	.599	**5.702(1.04,4.091)**
	stage3	1	2	.005	32.435	.004	**.014(.001,.255)***

**Sig. at p<0.05 (1) reference category*

Chapter six: Discussion

This study assess the health related quality of life and associated factors among people on highly active antiretroviral therapy, who came for follow up in woliso town ART centers.

In this study, HIV/AIDS was prevalent in female which accounts for 61.6 % of the study participants; mean age was 39.5 years (SD = 5.39)

More than halve (77.6%) of the study participant were in the age group of (25-49)yrs, the studies conducted in Addis Ababa, Ethiopia also showed that adults aged 25 to 49 years are Centre of the HIV and AIDS pandemic(36).the similarity may be because of the same socio demographic character.

Married participants accounted for 65.6%, and when we come to ethnic distribution more than halve (84.5%) of the participants were Oromo.

In this study, HIV/AIDS was prevalent in patients with primary educational status (48.9%). Only 7.2% of the respondents have attended higher educational studies, a status which might increase the awareness and knowledge on method of prevention against HIV/AIDS, when we see the association higher education status is associated with better HRQoL, a study in Gondar University referral hospital also showed the same result(37).

About 48.9% of participants stated that they have average monthly income of less than 500 birr/months. About 50.9% of participants had recent CD4+ counts for (500+ cells/mm3).In this study Majority of the participant (55.6%) had ART follow up every month, around 59.7% of the participants had been on treatment for >60 months, the vast majority of participants (98.8%) had at WHO stage one.

When we come to score of HRQOL eight domains of quality of life was included. Study participant score the highest in PF, SF&BP, which is 90 for both of them and the lowest is 70for RE, and the rest are in between. There is Lower scores for all subscales in age group 50+, Except for mental health [MH], female participant score less than male participants in all domains; this is consistent with cross sectional study conducted in Ethiopia (38).the similarity may be due to the same socio demographic character in study participant, their perception may be the same .

Those participants with average monthly income of less than 500 birr/month scored less in all sub scale.

Those participants without formal education scored less in all scales in comparison to those with higher education. when we see association between the variables and HRQOL In this study,

average monthly income was found to bear no significant relation with all domains of HRQoL, this may be because most study participants had a similar socio-demographic background .This result is in line with study conducted in Ethiopia(39).

In this study attending higher education had associated with good QOL in some domain of HRQOL, this is possibly because education is a Means for getting better employment, which in turn is shown to influence QOL. Marital status showed a significant association with one or more domains of HRQoL.

In this study CD4+ count didn't not show a statistically significant association with any of the domains of HRQOL, a study conducted in Gondar reported similar result (37)**.**

There are some clinical variables which associated with HRQOL among them ,longer duration on ART is associated with better QOL, This finding is consistent with cross sectional study conducted in north west Ethiopia (40).

6.1 Limitation of the study

- There may be Recall bias because the questioner assess QOL in four weeks recall period
- Selection bias
- Assessment of HRQOL was taken at one point in a time.
- SF-36 is a generic HRQOL measure it may not capture all HIV-specific dimensions of HRQOL.
- Environmental factors which affect HRQOL were not included in this study.

Chapter seven: conclusion and recommendation

7.1 Conclusions

This study demonstrates clinical data and different socio demographic variables can predict which patients are at increased risk of poor HRQOL domain score. The findings from this study again demonstrate that occupational status and educational status has clear effect on QOL score.

This study provides the mean values for the subscales of the SF-36, according to different socio-demographic factors, serving as the basis for comparisons with future clinical trials that use these measures (tool) for health related quality of life assessment.

The population under study has a lower degree of quality of life on RE sub scales, and good QOL score on PF and SF. The HRQOL domains in sf-36 values seemed to be influenced by gender, family income, age, occupational status, marital status and educational status.

7.2 recommendations

HRQOL measure should be incorporated by Ethiopian health service and MOH into the clinical assessment of PLWHA to improve their clinical outcome.

Future longitudinal study is recommended

Studies of both generic and disease-specific HRQOL measures were recommended as it have revealed several consistent observations.

References

1. UNAIDS:Ending AIDS:2018.
2. HIV Related Estimates and Projections for Ethiopia – 2017 March 2017. 2017;(March).
3. Development of the World Health Organization WHOQOL-BREF Quality of Life Assessment. 1998. 551-558 p.
4. GUIDELINES FOR IMPLEMENTATION OF THE ANTIRETROVIRAL THERAPY PROGRAMME IN ETHIOPIA Federal HIV / AIDS Prevention and Control Office Federal Ministry of Health July 2007 .
5. Fleck MP. Quality of life in HIV-positive Brazilians : Application and validation of the WHOQOL-HIV , Brazilian version Quality of life in HIV-positive Brazilians : application and validation of the WHOQOL-HIV , Brazilian version. 2007;(October 2014).
6. Lodziensis AU. Health-related quality of life: theory and measurement. 2006;3–15.
7. Collins D. Pretesting Survey Instruments : An Overview of Cognitive Methods : 2018;12(3):229–38.
8. Warschburgerl P, Landgraf JM, Petermann F, Freidell K. Health-Related Quality of Life in Children Assessed by Their Parents : Evaluation of the Psychometric Properties of the CHQ-PF50 in Two German Clinical Samples Author (s): Petra Warschburger , Jeanne M . Landgraf , Franz Petermann and Klaus Freidel Publ. 2018;12(3):291–301.
9. Robert W. Burgoyne DSS. Quality of life among urban Canadian HIV/AIDS clinic outpatients. 2001.
10. Ethiopia Country / Regional Operational Plan (COP / ROP) 2016 Strategic Direction Summary. 2016;
11. Health-Related Quality of Life and Well-Being. 2010;(November).
12. Penedo FJ, Gonzalez JS, Dahn JR, Antoni M, Malow R, Costa P, et al. Personality , quality of life and HAART adherence among men and women living with HIV / AIDS. 2003;54:271–8.
13. Rüütel K, Pisarev H, Loit H, Uusküla A. Journal of the International AIDS Factors influencing quality of life of people living with HIV in Estonia : a cross-sectional survey. 2009;8:1–8.
14. W. L. Holzemer, J. G. Spicer, H. S. Wilson, J. K. Kemppainen and CC. Validation of the quality of life scale: living with HIV," Journal of Advanced Nursing. J Adv Nursing,. 28(3).
15. Quality of life of ethnic minority persons living with HIV/AIDS,". J Multicult Nurs Heal. 2005;11(1):31–7.
16. Degroote S, Vogelaers D, Vandijck DM. What determines health-related quality of life among people living with HIV : an updated review of the literature. 2014;72(1):1–10.

17. Khumsaen N. Factors Influencing Quality of Life Among People Living With HIV (PLWH) in Suphanburi Province ,. J Assoc Nurses AIDS Care. 2012;23(1):63–72.
18. Wilson IB. Linking Clinical Variables With Health-Related Quality of Life. JAMA. 1995;(1).
19. Gakhar H, Medicine G, Kamali A, Medicine G, Holodniy M, Medicine G. HHS Public Access. 2015;73(7):651–72.
20. Beyene K, Engidawork E. Quality of Life of People Living with HIV / AIDS and on Highly Active Quality of life of people living with HIV / AIDS and on highly active antiretroviral therapy in Ethiopia. 2014;(May).
21. Diener E, Suh EM, Lucas RE, Smith HL. Subjective Well-Being : Three Decades of Progress Subjective Weil-Being : Three Decades of Progress. 1999;(May 2014).
22. Bopp CM, Phillips KD, Fulk LJ, Hand GA. Clinical Implications of Therapeutic Exercise in HIV / AIDS. 2003;14(1):73–8.
23. Marzieh Nojomi MD MPH•*, Khatereh Anbary MD MPH* MRMM. Health-Related Quality of Life in Patients with HIV/AIDS. 2008;11(6):608–12.
24. Mbada CE, Onayemi O, Johnson O, Akosile CO. Health-related quality of life and physical functioning in people living with HIV / AIDS : a case – control design. 2013;(June).
25. Nkhoma K, Seymour J, Arthur A. An Educational Intervention to Reduce Pain and Improve Pain Management for Malawian People Living With HIV / AIDS and Their Family Carers : A Randomized Controlled Trial. J Pain Symptom Manage. 2015;50(1):80–90.e4.
26. Jain P, Tiwari GK. Body Image Satisfaction and Life Satisfaction in HIV / AIDS Patients. 2016;(January).
27. Webel AR, Sattar A, Schreiner N, Phillips JC. Social resources , health promotion behavior , and quality of life in adults living with HIV. Appl Nurs Res. 2016;30:204–9.
28. Kawachi I, Berkman LF. Social Ties and Mental Health. 2001;78(3):458–67.
29. Prachakul W, Grant JS, Keltner NL. Relationships Among Functional Social Support , HIV-Related Stigma , Social Problem Solving , and Depressive Symptoms in People Living With HIV : A Pilot Study. 2007;18(6):67–76.
30. Ferrans CE, Zerwic JJ, Wilbur JE, Larson JL. Conceptual Model of Health-Related Quality of Life. 2005;
31. Somavia J. The ILO and its instruments on HIV and AIDS and the world of work. 2012;(May).
32. Parker R, Stein DJ, Jelsma J. Review article Pain in people living with HIV / AIDS : a systematic review. 2014;
33. Kebede D, Alem A, Shibre T, Negash A, Deyassa N, Beyero T. Health related quality of life (SF-36) survey in Butajira, rural Ethiopia: normative data and evaluation of reliability and validity.

Ethiop Med J. 2004;42(4):289–97.

34. Ware JE, Ph D, Kosinski M. SF-36 Health Survey Manual and Interpretation Guide.
35. Gandek B, Sinclair SJ, Ed M, Kosinski M, Ware JE, Ph D. Psychometric Evaluation of the SF-36 ® Health Survey in Medicare Managed Care. 2004;25(4):5–25.
36. Susuman AS. HIV / AIDS in Ethiopia : Health. 2015;(March).
37. Surur AS, Teni FS, Wale W, Ayalew Y, Tesfaye B. Health related quality of life of HIV / AIDS patients on highly active anti-retroviral therapy at a university referral hospital in Ethiopia. 2017;1–8.
38. Abera K, Gedif T, Engidawork E, Gebre-mariam T. Quality of Life of People Living with HIV / AIDS and on Highly Active Quality of life of people living with HIV / AIDS and on highly active antiretroviral therapy in Ethiopia. 2014;(May).
39. Deribew A, Deribe K, Reda AA, Ababa A. Change in quality of life : a follow up study among patients with HIV infection with and without TB in Ethiopia. 2014;(April 2013).
40. Alemayehu M, Wubshet M, Mesfin N, Tamiru A, Gebayehu A. Health-related quality of life of HIV infected adults with and without Visceral Leishmaniasis in Northwest Ethiopia. 2017;1–10.

Annex 1: Data collection tools

<table>
<tr><td colspan="2">Socio demographic Data</td></tr>
<tr><td>A. Id number –----------</td><td>F. education 1) No formal education 2)Primary(1-8) 3)Secondary(9-12) 4) Tertiary education(diploma and above)</td></tr>
<tr><td>B. age 1) 18-24 2) 25-34 3) 35-44
4) 45-49 5) ≥ 50yrs</td><td>G. Occupational status:-1)employed 2) Unemployed 3) Merchant
4) House wife 5) Daily laborer 6) student7) farmer 8) Other specify</td></tr>
<tr><td>C. sex 1) M 2) F</td><td>H. Religion 1) Protestant 2) Muslim 3) Orthodox 4) Catholic 5) Other specify</td></tr>
<tr><td>D. ethnicity 1) Oromo 2) Amhara 3) Tigre
4) Gurage 5) Other specify</td><td>I. What is the average monthly income of the family? ----------</td></tr>
<tr><td>E. Marital status 1) married 2) Single
3) Widowed 4) Separated
5) divorced</td><td>J.co morbidities if any ----------</td></tr>
<tr><td colspan="2">B. Data on different clinical variables from clinical document.</td></tr>
<tr><td colspan="2">A. months on treatments ----------</td></tr>
<tr><td>B. WHO stage of the disease 1) stage one 2) stage two3) stage three 4) stage four</td><td>C .CD-4 count----------</td></tr>
<tr><td>D. treatment regimen specify 1) 1st line 2) 2nd line</td><td rowspan="2">E. ART follow up spacing (schedule) :- 1)at a month 2) at 3 month 3) at 6 month</td></tr>
<tr><td>F. viral load----------</td></tr>
</table>

Afaanoromoo version of (sf-36)

1. WalligalahaalliFayyaakeetiiakkami ?: mallatoo x kahii.

GarmaleebayeeBayeegaariidhaGariidhaHomaahinjedhuGariimiti

Gaariidha

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

2. WagaatokkodurakanjiruraammahaalliFayyaakeeakkami?

Wagaahar'aa XiqqooammaAkkumawagaaWagaahari'aatiiWagaahari'aatii irraguddaaammanaafwayyahari'aatixiqqoogadibayeegadi naafwayya

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

3.Kanaagadittikanjiranhojiiatiguyyaakeessattihojachuumalan. Hojiidura hojjattuammadadhabdeetaa? Yoota'ehagam?

A.Hojiiwanakka,fiiguu, mi'aguddaakaasuu, sochiiqaamaacimmaataasisuu	Eeyeebayeendadhaba	Xiquman dadhaba	Homaahindadhabne
	1 ☐	2 ☐	3 ☐
B.Hojiiwanakka, jabalabakkaawaraaksuu	1 ☐	2 ☐	3 ☐
C.Waannyaataanol-kaasuu fi baachuu	1 ☐	2 ☐	3 ☐
D.Tabbayookinsadarkaamanaabahuu	1 ☐	2 ☐	3 ☐ 3
E.Sadarkaamanaatokkoyookiintabbaxiqqoo	1 ☐	2 ☐	3 ☐

F.Gadijechuu, jilbeenfachuuyookiindhaabachuu	1 ☐	2 ☐	3 ☐
G. Killo-meetiratokkodeemuu	1 ☐	2 ☐	3 ☐
H.Mandarabayeedeemuu	1 ☐	2 ☐	3 ☐
I. Mandaratokkodeemuu	1 ☐	2 ☐	3 ☐
J. Ofiindhiqachuufiiufachuu.	1 ☐	2 ☐	3 ☐

4. Torbeearfandarbankeessatti, dadhabinsaqaamaairraakanka'ehojiinyookinsochiingochuudadhabdenijiraa?

A. dheerinayeroodurhojjattuyookiinsochootugabaabsuu?	Eeyee	Lakki
	1 ☐	2 ☐
B. Hagahojjachuuyookiinsocho'uubarbaadduugaddiraawachuu?	1 ☐	2 ☐
C. Sochiiwaan, hojiiduraanhojjattudhiisuu	1 ☐	2 ☐
D. Hojiin, sochiindurraawattuyeroodabalataasi jalaafudhachuu)	1 ☐	2 ☐

5.Torbeearfandarbekeessatti, ofittiaaruuyokiin of jibbuuirraakanka'ehojiinyookinsochiinraawachuudadhabdenijiraa?

A.Dheerinayeroodurhojjattuyookiin sochootugabaabsuu?	Eeyee	Lakki
	1 ☐	2 ☐

B.Hagahojjachuuyookiinsocho'uubarbaadduugaddiraawachuu?	1 ☐			2 ☐	
C.Akkaduraanxiyeefannaadhaanraawadhuttiraawachuudhiisuu	1 ☐			2 ☐	
6. Torbeearfandarbekeessatti, rakkoonqamaa fi sammuu of jibbuuwalittidhufeenyamaatii, hiriyaa, olla, gareebiraawaliinqabdujeeqee?	Homaahin jeeqne	Bayeexiqaa	Xiqaa	Bayee	Garmaleebayee
	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
7.Torbeearfandarbekeessattidhukkubiiqamaahagamqabda?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
8. Torbeearfandarbekeessatti, dhukubniqamaahojiimanaayokiinalattihojjattuhagamsidhoowwe?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
9.Gaafiwankanaagadiitorbeearfandarbemaaltuakkasittidhagahamaaturegaafatuu. Gaaffiwankanaafdeebiihaalafayyaakeettidhiyaatu fi hagamiiakkata'eibsudeebisi.					

A.Bayeegamachunkansittidhagahamature?	Yeroohundaa	Yerooirracaala	Yeroobayee	Yeroomuraasaaf	Darbeedarbee	Gonkumaahinjiru
	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
B.Bayeeofittiaraakanturte?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
C.Kanhomtuusihingamachiifnefiigaddaakanturte?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
D.Nagaafiitasgabiinsittidhagahamaakanturte?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
E.Jabinagahaankansittidhagahame?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
F.Onneenkeecabeekan of jibite?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐

G.Bayeemiidhamuunkeekansittidhagahame?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
H.Gamadaakanturte?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
I.Bayeedadhabinsikansittidhagahame?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
10.Torbeearfandarbekeessattirakkoon, fayyaaqaamakeetii, dhiphinasammuufirayookinhiriyaagaafachuuirrattirakkoonsittiuume?	Yeroohunda	Yerooirracaala	Yeroobayee	Yeroomuraasaaf	Gonkumaahinjiru	
	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	
11.Hagamdhugaayookiin soba akkata’edeebisi?						
A.Namabiraairrasalphaatandhukubsadha	Siriidha	Yeroobayeesiriidha	Hinbeeku	Yeroobayeesoba	Soba	
	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	
B.Aniakkumanamafedheefayaadha	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	
C.HaalliFayyaakootiihir’ataaakkadeemuntilmaama	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	
D.haallifayyaakootiibay’eegariidhaa.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	

Questioners on quality of life

Appendix :MOS/SF-36 items

1. In general, would you say your health is: mark(x) in the box that best describes your answer?

Excellent Very good Good Fair Poor

1 ☐ ☐ 2 ☐ 3 ☐ 4 ☐ 5

2. Compared to one year ago, how would you rate your health in general now?

Much better Better now Than one yrs ago	somewhat better Now than one yrs ago	About the same as one year ago	somewhat worse now than one year ago	much worse now than one year ago
1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

3. The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much

	Yes limited a lot.	Yes limited a little	No not limited at all.
A. Vigorous activities, such as running, lifting heavy objects participating in strenuous sports	1 ☐	2 ☐	3 ☐
B. Moderate activities, such as moving a table, pushing a vacuum cleaner and bowling	1 ☐	2 ☐	3 ☐
C. Lifting or carrying cooking	1 ☐	2 ☐	3 ☐
D. Climbing several hills or inclines	1 ☐	2 ☐	3 3 ☐
E. Climbing one hills or inclines	1 ☐	2 ☐	3 ☐

F. Bending, kneeling or stooping	1 ☐	2 ☐	3 ☐
G. Walking more than one mile	1 ☐	2 ☐	3 ☐
H. Walking several blocks	1 ☐	2 ☐	3 ☐
I. Walking one block.	1 ☐	2 ☐	3 ☐
J. Bathing or dressing yourself.	1 ☐	2 ☐	3 ☐

4. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

	Yes	No
A. Cut down the amount of time you spent on work or other activities?	1 ☐	2 ☐
B. Accomplished less than you would like?	1 ☐	2 ☐
C. Were limited in the kind of work or other activities	1 ☐	2 ☐
D.Had difficulty performing the work or other activities (for example, it took extra time)	1 ☐	2 ☐

5. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

	Yes	No
A. Cut down the amount of time you	1 ☐	2 ☐

spent on work or other activities?					
B. Accomplished less than you would like	1 ☐			2 ☐	
C. Didn't do work or other activities as carefully as usual	1 ☐			2 ☐	
6. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?	Not at all	Slightly	Moderately	Quite a bit	Extremely
	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
7. How much bodily pain have you had during the past 4 weeks?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
8. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

9. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks.

A. Did you feel full of pep?	All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	None of the time
	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
B. Have you been a very nervous person?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
C.Has you felt so down in the dumps nothing could cheer you up?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐

D.Has you felt calm and peaceful?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
E. Did you have a lot of energy?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
F. have you felt downhearted and blue?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
G.did you feel worn out?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
H. have you been a happy person?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐
I. did you feel tired?	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐	6 ☐

10. During the past 4 weeks, how much of the time has your physicalhealthoremotionalproblemsinterferedwithyoursocialactivities(likevisitingfriends, relatives, etc.)?	All of the time	Most of the time	Some of the time	A little of the time	None of the time
	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

11. How TRUE or FALSE is each of the following statements for you?					
A. I seem to get sick a little easier than other people	Definitely true	Mostly true	Don't know	Mostly false	Definitely false
	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
B. I am as healthy as anybody I know.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
C. I expect my health to get worse	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
D. My health is excellent	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

Annex 2: steps in scoring Sf-36

Step 1:- Averaging Items to Form 8 Scales/Domains.

Scales	Items	Sum Final Item Values.	Lowest possible raw scores	Highest possible raw scores	Possible raw score range
PF	10	3, 4, 5, 6, 7, 8, 9, 10, 11, 12	10	30	20
RP	4	13, 14, 15, 16	4	8	4
RE	3	17, 18, 19	3	6	3
VT	4	23, 27, 29, 31	4	24	20
MH	5	24, 25, 26, 28, 30	5	30	25
SF	2	20, 32	2	10	8
BP	2	21, 22	2	12	10
GH	5	1, 33, 34, 35, 36	5	25	20

- Transformed Scale = $\frac{\text{(Actual raw score – lowest possible raw score)}}{\text{Possible raw score range}} \times 100$

DECLARATION

I, the undersigned, declare that this thesis is my original work, has not been presented for a degree in this or any other university and that all sources of materials used for the thesis have been fully acknowledged.

Name: _____

Signature: _____

Name of the institution: _____

Date of submission: _____

This thesis has been submitted with my approval as University advisors.

Name and Signature of internal examiner: - Mr. Tesfamichael Alaro(MPH) ----------

Name and Signature of the first advisor: - Mr. fikru Tafese (MPH, Assistant Professor) ----------

Name and Signature of the second advisor: - Mr. Dejene Melase (MPH) ----------