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Research Article

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Assessment of Antiretroviral Therapy Adherence Among HIV/AIDS Patients at Jugel Hospital, Harar, Ethiopia. 2021

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ABSTRACT

Background: HIV/AIDS remains a major global health concern, significantly impacting not only health systems but also economic development and social fabric; it reduces life expectancy, exacerbates poverty, and contributes to food insecurity. While the introduction of Highly Active Antiretroviral Therapy (HAART) has improved the lives of people living with HIV, strict adherence to treatment regimens is crucial to maintain its effectiveness and prevent the development of drug resistance.

Objective: To assess ART adherence among HIV/AIDS patients at Jugol Hospital, Harar, Ethiopia.

Method: A cross-sectional descriptive study design was employed using a quantitative approach to determine the status of ARV adherence among HIV patients at Jugel Hospital from February 20, 2021, to March 10, 202. A convenience sampling technique was used to select the study subjects. The study covered all consecutive patients who attended the ART at Jugel Hospital for medication refills over the study period.

Results: Of the total 210 HIV-infected patients, the largest number were females, 62%, and belonged to the 26-35 age group, 112 (53.4%). Out of the 210 respondents, the majority, 129(61.4%), used cell phone alarms/watch bells for memory aids to take their medication on time. Most respondents thought that for more Adherence to ART, people need family and other support, education about the importance of medication and schedule aids, an understanding of the importance of adhering, and a belief in the efficacy of medication. Of the total, only 34 respondents had a history of missed doses after they had started ART. The main reasons for missed doses were forgetting 14(41.2%), being busy 9(26.3%), run out of pills 4(11.7%), fear of taking medication in front of others 5(14.7%) and side effects 2(5.9%). The main reasons that made the patients not follow and attend their clinical appointments regularly were forgetting 12(48%), being away from home 7(28%) and being busy 6(24%).

Conclusion: In our study, the self-reported adherence rate was higher than in industrialized nations. Regular patient follow-up, raising patients' understanding of ARV adverse effects, and enhancing patients' confidence, trust, and happiness with their caregivers are all goals of programs and clinical initiatives to promote drug taking in study setups..

Keywords: Assessment Adherence, Art, HIV/AIDS, Associated Factors, Jugel Hospital, Harar, Ethiopia

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Abbreviations and Acronyms

AIDS	:	Acquired Immunodeficiency Syndrome
ART	:	Anti Retro Viral Therapy
ARV	:	Anti Retro Viral
DHS	:	Demographic and Health Survey
HAART	:	Highly Active Antiretroviral Treatment
HIV	:	Human Immunodeficiency Virus
PLWHA	:	People Living With HIV/AIDS
PLWHIV	:	People Living With HIV
RNA	:	Ribose nucleic Acid
WHO	:	World Health Organization
FHAPCO	:	Federal HIV/AIDS Prevention and Control Office
P.I.s	:	Protease Inhibitors
NRTIs	:	Nucleoside Reverse Transcriptase Inhibitors
AACTG	:	Adult AIDS Clinical Trials Group
VAS	:	Visual analog scale

Introduction

According to a 2012 UNAIDS report, 35.3 million people were living with HIV, up from 29.4 million in 2001, the result of continuing new infections, people living longer with HIV, and general population growth. The global prevalence rate (the percentage of people ages 15-49 infected) has leveled since 2001 and was 0.8% in 2012. 1.6 million People died of AIDS in 2012, a 30% decrease since 2005. Deaths have declined due in part to antiretroviral treatment scale-up. HIV is a leading cause of death worldwide and the number one cause of death in Africa. New HIV infections overall have declined by 33% since 2001, and in 26 low- and middle-income countries, new infections have declined by 50% or more. Still, there were about 2.3 million new infections in 2012 or more than 6,300 new HIV infections per day. Most new infections are transmitted heterosexually, although risk factors vary. In some countries, men who have sex with men, injecting drug users, and sex workers are at significant risk [1].

In 2011, an estimated 23.5 million people were living with HIV in sub-Saharan Africa. This has increased since 2009, when an estimated 22.5 million people were living with HIV, including 2.3 million children. The increase in people living with HIV is partly due to a decrease in AIDS-related deaths in the region. There were 1.2 million deaths due to AIDS in 2011 compared to 1.8 million in 2005. Almost 80% of people living with HIV worldwide live in sub-Saharan countries [2].

Eastern and Southern Africa continues to be the epicenter of the HIV epidemic. The Southern Africa sub-region, in particular, experiences the most severe HIV epidemics in the world, with one-third (34 percent) of all people living with HIV globally residing in the ten countries of Southern Africa. Nine of the Southern African countries (Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe) have HIV prevalence rates among adults (15 to 49 years) of over 10 percent.

At an estimated 25.9 percent, Swaziland has the highest rate globally, followed by Botswana (24.8 percent) and Lesotho (23.6 percent). With 5.6 million people infected, South Africa is home to the world's largest population of people living with HIV and AIDS. In 22 countries in sub-Saharan Africa, however, new infections have dropped by more than 25 percent between 2001 and 2009, including in some countries with the largest epidemics, such as Ethiopia, Zambia and Zimbabwe [3].

Available evidence suggests that the HIV/AIDS epidemic in Ethiopia started in the early 1980's. The first two positive samples were retrospectively detected from samples collected in 1984 for another research. The first two AIDS cases were officially reported from Addis Ababa in 1986. Recent sentinel surveillance data shows that the national adult prevalence rate is 6.6%. Rural prevalence is much lower than urban prevalence (3.7% and 13.7%, respectively). The number of reported AIDS cases stands at 130,000 as of September 2003. In the lower age groups (15-29), more females than males are affected. There are an estimated 1.2 million AIDS orphans in the country [4].

The latest ANC sentinel surveillance data show that HIV prevalence varies widely between urban and rural settings. This is confirmed by DHS 2011: urban adult HIV prevalence was 4.2% while rural adult HIV prevalence was 0.6%. ANC results also document wide variations among urban settings in different parts of the country. Similar variations were also observed among rural settings. Variations were also observed among administrative regions. According to the Ethiopian Demographic and Health Surveys, HIV prevalence ranges from 0.9% in SNNP to 1.0% in the Oromiya region, 5.2% in Addis Ababa and 6.5% in the Gambella region.

There is wide variation in HIV prevalence among administrative regions and between urban and rural settings. The epidemic is more heterogeneous than previously believed [5].

According to the FHAPCO single point estimate for the prevalence of HIV/AIDS in Ethiopia, the adult HIV prevalence for 2007 is estimated at 2.1%, of which 7.7% is urban and 0.9% is rural. The estimated number of people living with HIV is 977,394, of which 258,264 need ARV treatment. Children under 15 account for 15,716 (6.1%) of the total need for ART. By 2010, 397,818 people will need ART, of which 26,053 (6.6%) are children under15 [6].

According to the most recent estimates, about 1 million people (2.2% of the adult population) were living with HIV in Ethiopia in 2008. In the same year, approximately 290,000 people needed ART.

To respond to the treatment needs of people living with HIV/AIDS, the National Antiretroviral Drugs Policy was developed in 2002, and the first treatment guideline for adults and adolescents was issued in 2003 and revised in 2007. A fee-based ART program was officially started in 2003. Moreover, several initiatives have been undertaken to expand ART availability in Ethiopia, including those by the Global Fund, the Ethiopian North American Health Professionals Association, the Clinton Foundation, and the Ethiopian Red Cross Society. As a result, a free ART program was launched in early 2005. Under the guidance of the strategic plan for the multi-sectoral response, 2004-2008 and the road map for accelerated access

to ART, 2004-2006 and 2007-2008/10, the ART roll-out plan has been implemented. Consequently, ART services have been decentralized and available in health centers and hospitals since August 2006 [7].

Statement of problem

As HIV/AIDS rates continue to rise in developing countries, it is becoming increasingly necessary to scale up access to highly active antiretroviral Therapy (HAART), especially in Africa, where 95% of all new HIV infections occur. However, in resource-constrained settings where healthcare services are not well developed, poor Adherence to treatment and defaulting from treatment are the two significant challenges faced by ART programs. Nonadherence, one of the foremost contributing factors in treatment failure, is associated with virologic failure, immunological failure, clinical disease progression and drug resistance. Nonadherence to ART in the adult population has been shown to range from 33 to 88%, depending on how Adherence is defined and evaluated. Research reveals that a minimum of 95% adherence is necessary to achieve (or predict) virologic success in patients receiving HAART [8].

The introduction of HAART has dramatically improved the survival of HIV/AIDS-infected people. HAART reduces morbidity and mortality by suppressing viral replication, restoring and preserving immune function, and preventing drug resistance. Mortality among patients on HAART is associated with high baseline levels of HIV RNA [9].

Unlike other chronic diseases, the rapid replication and mutation rate of HIV means that very high levels of Adherence are required to achieve a durable suppression of viral load. Inadequate Adherence to treatment is associated with detectable viral loads, declining CD4 counts, disease progression, episodes of opportunistic infections, and poorer health outcomes [10].

As per WHO, treatment adherence is "the extent to which a person's behavior of taking medications, following a diet and/or executing lifestyle changes corresponds with agreed recommendations from a health care provider." For ART, a high level of sustained Adherence is necessary to suppress viral replication and improve immunological and clinical outcomes, decrease the risk of developing ARV drug resistance, and reduce the risk of transmitting HIV. Multiple factors related to health care delivery systems, the medication and the person taking ARV drugs may affect Adherence to ART. The individual factors may include forgetting doses, being away from home, changes in daily routines, depression or other illnesses, a lack of interest or desire to take the medicines, and substance or alcohol use. Medication-related factors may include adverse events, the complexity of dosing regimens, the pill burden, and dietary restrictions. Health system factors may consist of requiring people with HIV to visit health services frequently to receive care and obtain refills, traveling long distances to reach health services, and bearing the direct and indirect costs of care [11].

The principal factors associated with nonadherence appear to be patient-related, including substance and alcohol abuse. However, other factors, such as inconvenient dosing frequency, dietary restrictions, pill burden and side effects, patient-health-care provider relationships, and the care system, may also contribute. Improving Adherence probably requires clarifying the treatment regimen and tailoring it to patient lifestyles [12].

It was found that simply making ART medicine available to PLWHIV is not enough, as strict Adherence is required for treatment success. Poor Adherence can lead to the virological failure of cheap first-line treatment regimens and the spread of multi-drug-resistant forms of the virus, resulting in a public health calamity. Unlike many other diseases, PLWHIV must consume all doses of the drug to prevent resistance and improve their chances of survival. Understanding the level of nonadherence and the factors that lead to it are significant clinical and public health goals. This information is essential to inform ART programs and maximize treatment success [13].

Significance of the Study

Antiretroviral treatment success depends on the high rates of sustainable Adherence to the medication regimen of ART. However, significant proportions of HIV-infected patients do not reach high levels of Adherence, and this can lead to devastating public health problems.

ART is essential to reduce morbidity and mortality of PLWHA. However, if there is no adherence to the drug regimen, viral replication and drug resistance of the virus may occur, which causes great difficulties in treatment. Adherence to more than 95 per cent of ART increases the length and quality of life and the patients' productivity by decreasing the viral load and increasing the CD4 count. Adherence also improves survival and reduces the incidence of opportunistic infections in PLWHA. Hence, strict Adherence to HAART is crucial [14].

This study will assess the adherence rate and factors affecting Adherence to ARV therapy among PLWHA patients receiving ART at Jugol Hospital, Harar.

literature Review

A study done in Thailand has shown that almost a third (n=121; 31.4%) of PLWHA reported ever forgetting to take their prescribed ART. Among the 121 PLWHA who reported failing to adhere to ART, 49 PLWHA (40.5%) reported failing to adhere to ART in the past month. The majority of the PLWHA who reported failing to adhere to ART in the past month reported that they simply forgot to take the medication (78%). About a fifth of the PLWHA (18%) reported that the reason for nonadherence was because they were afraid of stigma if their HIV status was disclosed. Other reasons given were trouble visiting the doctor (6%), running out of medication (6%), not understanding the medication or believing that the medication would not help (6%), and being too sick to retrieve the medication from the hospital or wanted to avoid side effects (4%) [4].

In Kwazulu-Natal, South Africa, 515 patients were taken and assessed using the 30-day visual analog scale (VAS), and 427 patients (82.9%) were 95% adherent in the month before the survey. Results from the Adult AIDS Clinical Trials Group adherence instrument found that on the 4-day recall dose adherence, 15.5% of patients were non-adherent (having missed at least one full day of medication in the past four days). 70.8% of patients adhered to all parameters (dose, schedule and food). Pearson correlation among the two adherence outcome measures

(VAS and AACTG) using categorical cutoffs to define Adherence indicated a moderate level of association (r= .56, P < .001). From those found non-adherent on the VAS (17.1%), 85.2% were also found to be non-adherent on the AACTG measure [15].

A cross-sectional survey done in the Lao People's Democratic Republic has revealed that 39.1% of PLWHIV reported nonadherence to the prescribed medication and dosage. Concerning whether the daily routine activities fit or do not fit with the time of pill intake, this study found that the majority (80%) of the respondents' pill intake time fit with their daily routine activities, while 20% did not. The main reasons that made the patients not fit in with their daily routine activities were being too busy (65%) and fear of taking their medications in front of others (35%).

Forty-three (12.4%) out of 346 respondents reported missing at least one medical appointment. They went to the health center (32.6%) or because the center was too far from their home (27.9%). One reason for this was being too busy (41.9%) and lack of money to travel. One hundred and eighty-one (52.3%) patients reported having experienced side effects due to their treatment. Of these, the most common symptom was a rash (42%), followed by headache or dizziness (34.3%) and numbness (32.6%). Two groups were created to examine factors associated with Adherence. Out of 346, the majority of them, 206(59.5%), adhered to≥ 95% to ART, which was allocated to the adherence group, and the remaining 140(40.5%) respondents adhered to ≤ 95% to ART, which allocated to a nonadherence group [16].

In another study in Togo, West Africa, the average individual adherence level was 89.8% of doses taken, while sixty-two (62) patients (62.62%) reported 95% or more of the doses taken. Except for the patient's group who received 2 NRTIs + 1 P.I. combination (median percent of 46% of doses taken), the median percent of other treated groups varied from 82% to 92% of doses prescribed. In this study, factors for nonadherence were found to be forgetting (34.9%), travel (25.6%), cost of treatment (13.9%) and side effects (11.6%) were the main factors of poor Adherence reported by the 43 patients who missed at least once a dose intake. They reported using a method in order not to forget the medication intake. Among them, 69.4% stated using a watch and/or an alarm clock to remember the time of drug intake, while 27.9% referred to parents' recall for the medication intake. Twelve patients (12.1%) stopped or changed one or more ARVs included in the treatment regimens because of side effects in 6 patients (6.1%), inefficiency in 4 patients (4%) and because of disease in 2 patients (2%) [17].

A survey conducted in Uganda revealed that 97% of the patients had not missed their doses in the last week, and 93% had not missed appointments in the past three months. Patient and healthcare providers ' interactions influence patients' Adherence to ARV medications. This study found that % of the respondents, 83%, had good relationships with healthcare providers, 85% followed their clinical appointments regularly, and only 15% didn't follow their clinical appointments.

Out of the patients who reported ever missing their doses for the period on ART, the most common reasons were traveling, forgetting, work conflicts, and feeling unwell. This study found that patients on ART who missed their appointments (29.2%) were likelier to miss their doses than those who did not (5.7%) [18].

In another study conducted in Ethiopia, using a combination of survey data and transcription from hospital records, 2% of the respondents discontinued the medication during the study period. 17% had missed at least one dose of medication and dosage timing. Most respondents (54.4%) reported missing medication but not in the study period. 25.5% of the respondents reported they had not missed starting from the beginning of the ART therapy. Adherent respondents claimed that they didn't understand when and how to take medication during their first month of beginning medication. The mean adherence rate of the Shashemene General Hospital was calculated using a weighted average and was found to be 84.62% [19].

A comparative cross-sectional survey done at Yirgalem Hospital, south Ethiopia, has shown that the adherence level in the week before assessment was74.2% (no dose missed or delayed for greater than or equal to 90 minutes), while 26.1% did not follow the treatment schedule and 5.5% did not follow instructions. The main reason for skipping or delaying doses was forgetting (51% of those non-adherents). Two hundred and ninety-one AIDS patients were involved in the survey. The prevalence of Adherence in the week before the interview was 74.2%. The main reasons for nonadherence cited by the patients were being busy or simply forgetting (51%), change in daily routine (9.4%), and being away from home (8.3%) [20].

A study conducted in Harari National Regional State has revealed that 87% of the participants had taken >95% of their prescribed ARV drugs for the past 7 days of study. Almost similar adherence rate was observed among males (85.7%) and females (87.5%). A higher adherence rate was observed in the age group of 20-30 years (92.8%) [21].

Objective

General Objective

- To assess the rate of Adherence and factors affecting Adherence of HIV/AIDS patients to ART drugs at Jugol Hospital in Harar, Ethiopia, from FEB/20 /2021 - MAR/10/2021.

Specific Objectives

- To assess the knowledge of HIV/AIDS patients with ART drugs who follow treatment at Jugol Hospital, Harar, towards the importance of Adherence to ART drugs.
- To identify the reasons for poor Adherence of HIV/AIDS patients who follow their treatment at Jugol Hospital, Harar.
- To assess the factors affecting Adherence to ART drugs at Jugol Hospital, Harar.

Methodology

Study area

Harari, officially Harari people's National Regional state, is one of the nine ethnically- based. Regional states (kililoch) of Ethiopia cover the homeland of the Harari people.

Based on the 2007 census conducted by the Central Statistical Agency of Ethiopia (CSA), Harari has a total population of 183,415, of whom 92,316 were men and 91,099 women.

This region is the only one in Ethiopia where the majority of its population is urban inhabitants. With an estimated area of 311.25 square kilometres, this region has an estimated density of 589.05 people per square kilometre. For the entire region, 46,169 households were counted. Almost all ethnic groups live in Harar. The religion with the most believers in the area is Muslim, with 68.99%; 27.1% are Ethiopia Orthodox, 3.4% Protestant, 0.3% Catholic, and 0.2% followers of other religions. According to the CSA, as of 2004, 73.28% of the total population had access to safe water, of whom 39.83% were rural, and 95.28% were urban. Harar is 525 km from Addis Ababa, Ethiopia's capital. For centuries, it has been a primary commercial Centre, linked by a trade route with the rest of Ethiopia, the Horn of Africa, and the Arabian Peninsula and, through its ports, the outside world. According to the 2000 Health and Health Related Indicators Publication by FMOH, Harari has 4 Hospitals, two of which are governmental teaching hospitals, 3 Health Centers and 23 Health Posts. This study will be conducted in Jugol Hospital, where more healthcare providers work in public hospitals and have a greater patient flow [22].

Study period

- The study was conducted from February 20 /2021 - to March 10/2021.

Study design

- An institutional-based cross-sectional descriptive study was conducted to assess the status of ARV adherence among HIV patients at Jugol Hospital from February 20, 2021, to March 10, 2021, G.C.

Population

Source population

- The primary source population for this study was all patients being attended to for their illness in the Jugol hospital's ART clinic.

Study population

- The study population was all HIV-positive individuals (who fulfil the criteria) who were on ART in the ART unit of the hospital during the study period.

Selection criteria

Inclusion criteria

All HIV/AIDS patients at Jugol Hospital:

- Adult (18 years and above)
- On ARV treatment for 6 months or more
- Willing to participate and
- Not severely ill.

Exclusion Criteria HIV/AIDS Patients:

- On ARV treatment for less than 6 months
- I am over 18 years old and unable to communicate for different reasons.
- Those who are severely ill
- Less than 18 years
- Unwilling individuals to participate.
- The mentally disabled will be excluded from the study.

Sample Size Determination

The study's sample size will be determined by including all consecutive ART patients who fulfil the criteria and attend ART Medication at Jugol Hospital during the study period.

Sampling procedure

A convenience sampling technique will be used to select the study subjects. The study will attempt to cover all consecutive patients who attend ART Medication at Jugel Hospital for medication refills over the study period.

Data collection procedure

Data collection instrument

The questionnaire will be adapted after reviews of different literature and formulated in English. Then, it will be translated into Amharic, and comparisons will be made for the consistency of the two versions. The questionnaire will include different domains, including the respondent's background, Patient factors, Regimen factors, Clinical interaction, and Social and environmental factors.

Data collection

Data will be collected using an interview method and a structured questionnaire.

Data Quality Control

The questionnaire will be cross-checked for completeness and consistency. It will be prepared in English and then translated into Amharic.

Data Process and Analysis

The collected Data was analyzed and organized manually using a tally. Descriptive analysis will be used to describe the percentages and number distributions of the respondents by socio-demographic characteristics, the percentage of Adherence to the area and the percentages and number distributions of factors affecting medication adherence. The result was presented using tables, bar graphs, and statements.

Variables

Dependent

- Adherence to HIV/AIDS patients

Independent variables

- Sex
- Age
- Access to the health centre (nearness)
- Religion
- Educational status
- Marital status
- Income

Ethical consideration

The Jugel University Faculty of Medical and Health Science, School of Medicine, prepared an official formal letter to request permission to perform this study at Jugel Hospital. We delivered an acceptable introduction and clarification of the study's goal. The interview was done in a manner that was respectful of the people's culture, norms, and likely situation. Their identities were omitted and code was used to maintain and ensure confidentiality. Following data collection, questionnaires were suitably formatted and managed.

Plan for dissemination Findings

The finding of this baseline assessment was disseminated to Jugel University, the Harar campus, and the School of Medicine through submission of the document for using the result in the decision-making process and advisors /supervisors and students through the presentation of the result in the classroom for experience sharing.

Operational definition of study

Antiretroviral drug (ARVs): A substance used to kill or inhibit retrovirus replication such as HIV.

Adverse effect: An unwanted effect caused by the administration of drugs. Onset may be sudden or developed over time.

Adherence is defined as taking the correct dose of medications on schedule and following dietary instructions. (24)

Perfect Adherence: 100% consumption of ARVs without skip doses in the last 3 Months. (24)

Near perfect Adherence: 95% consumption of ARVs in the last 3 months (with minimum of 1 skip dose a week). (24)

Modest Adherence: 94.9% - 90% consumption of ARVs in the last 3 months (with Minimum of 2 skip doses a week). (24)

Low-adherence: <90% consumption of ARVs in the last 3 months with (more than two skip Doses a week). (24)

Combination therapy: Combines two or more drugs or treatments to achieve optimum results.

Highly active antiretroviral Therapy (HAART): The name given to treatment regimens meant to suppress viral replication and progress of HIV disease aggressively. The usual HAART regimen combines three or more different drugs.

Resistance: A reduction in a pathogen's sensitivity to a particular drug resistance is thought to result usually from a genetic mutation.

Result

Socio-demographic characteristics

A total of 210 HIV-infected persons on an antiretroviral regimen attended the ART clinic during the study periods at Jugol Hospitals with a response rate of 100%. Of the total 210 HIV-infected persons, the most significant number of the patients112 (53.4%) belonged to the 26-35 age group who had educational levels of grade 1-6, 83(39.5%) and were married, 106(50.5%). 62 % were females, and the remaining 38% were males. The majority of the patients were Oromo 120(57.1 %), followed by Amhara 54(25.7%), 167(79.5 %) of the patients were residing in urban and 104(49.5%) of the patients were followers of the Muslim religion. Of the total respondents, the majority of them, 85(40.5%), have a monthly income between 200-500 birr.

Table 1. Socio-demographic and socio-economic characteristics of people living with HIV at Jugol Hospital, Harar 2021 GC

S.N.	Variables		Frequency	%
1	Age	18 - 25	32	15
		26 - 35	112	53.3
		36- 45	43	20.5
		>46	23	11
		Total	210	100
2	Educational status	cannot read and write	60	28.6
		Grade 1 - 6	83	39.5
		Grade 7 - 12	32	15.2
		Diploma and above	35	16.7
		Total	210	
3	Sex	Male	80	38
		Female	130	62
		Total	210	100
4	Ethnic group	Oromo	120	57.1
		Amhara	54	25.7
		Tigre	8	3.8
		Somali	13	6.2
		Others	15	7.1
5	Current marital status	Married	106	50.5
		Single	41	19.5
		Divorced	47	22.4
		Widowed	16	7.6
		Total	210	100
6	Residence	Urban	167	79.5
		Rural	43	20.5
		Total	210	100
7	Religion	Orthodox	63	30
		Protestant	23	11
		Catholic	17	8.1
		Muslim	104	49.5
		Others	3	1.4
		Total	210	100
8	Monthly income in Ethiopian Birr	<200	41	19.5
		200 - 500	85	40.5
		500 - 1000	53	25
		>1000	31	15.0
		Total	210	100

Knowledge And Attitude Regarding Hiv, Haart-Belief, Benefit and Adherence

Out of 210 patients, 127 (60.5%) were aware of HIV/AIDS at first contact with a clinician. Concerning the time when they heard about the coming of ART, 105 (50 %), 57 (27 %), and 48 (23 %) of them heard about the introduction of ART before illness, during illness and after diagnosis, respectively.

Of those who were aware of the coming of ART, 85 (40.5%), 73(34.7%), 21(10%), 23(11%) and 8 (3.8%) of the respondents have heard the information from Health care provider, Mass Media, family, friends and anti-AIDS clubs respectively. The majority, 115(54.8%) of the respondents, did not have awareness about the benefit of the regimen or ART, and the rest, 95(45.2%), had awareness about the benefits of the regimen. One hundred ninety-six (93.3%) of the respondents think that all HIV patients are eligible for ART, and only 14 (6.7%) respondents didn't know that all HIV patients are eligible for ART. Most of the respondents, 121(57.6%), started ART twelve months (before one year).

Table 2: Knowledge and attitude regarding HIV, HAART-belief, benefit, Adherence

S.N.	Variables		Frequency	%
9	Awareness of HIV/AIDS when 1st contact with a clinician	Yes	127	60.5
		No	83	39.5
10	When did you hear about the coming of ART?	Before diagnosis	105	50
		During diagnosis	57	27
		After diagnosis	48	23
11	Source of information about ART	Health care provider	85	40.5
		Mass media (T.V., Radio…)	73	34.7
		Friends	21	10
		Family	23	11
		Anti-AIDs clubs	8	3.8
12	awareness of the benefit of the regimen or ART	Yes	95	45.2
		No	115	54.8
13	Do you think all HIV - patients are Eligible for ART?	Yes	196	93.3
		No	14	6.7
14	The time when do they start ART for the 1st time?	6-12 months	89	42.4
		Above 12 months	121	57.6
		Total	210	100

Characteristics of Drug Regimens / Treatment

Of the total 210 HIV-infected persons, the most significant number of the respondents, i.e.182 (86.7%), knew the types of medication by the identity of each drug they were taking, and the rest, 28 (13.3%) didn't know of the types of medication they were taking.

Table 3: Characteristics of drug regimens/treatment

S.N.	Variables		Frequency	%
15	Do you know the types of medication you are taking?	Yes	182	86.7
		No	28	13.3
16	What clinical benefit did you get after starting ART			
	Improved health conditions		55	26.2
	Weight gain		12	5.8
	Reduced fever		14	6.7
	Reduction of hospitalization		15	7.1
	Reduced frequency of diarrhea		4	2
	Reduction of morbidity		20	9.5
	To all		90	42.9
17	Any adverse effect when you take medication	Yes	34	16.2
		No	176	83.8
18	Symptoms did you feel			
	Nausea		6	17.6
	Diarrhea		8	23.5
	Vomiting		4	11.8
	Headache		3	8.8
	Anemia		1	2.9
	Insomnia		2	5.9
	Rash		10	29.4
		Total	34	100
19	Action taken			
	Immediately stopped taking pills.		3	8.8
	Withheld until the date of appointment		3	8.8
	Immediately, I was reported to the clinician.		27	79.4
	Dropped out permanently		1	2.9
		Total	34	100
20	Name of the drugs, Dose, and Total pills taken daily	Name of drugs	25	22.1
		Doses	5	4.1
		Total pills daily	180	50

Thirty-four (16.2%) HIV-infected persons out of the total respondents did face adverse effects when they took medication. Still, most of them, 176(83.8%), didn't face any adverse effects when taking medication. The most commonly developed adverse effects were rash 10(29.4%), nausea 6(17.6%), vomiting 4(11.8%), headache 3(8.8%), insomnia 2(5.9%) and anemia 1(2.9%).

Out of thirty-four (16.2%) HIV-infected persons who did develop adverse effects, 3 (8.8%) of the patients stopped taking pills immediately, 3 (8.8%) of the patients withheld until the date of appointment, 27(79.4%) of the patients were reported to the clinician immediately, and one (2.9%) patient dropped out permanently as a preventive measure.

Concerning the name of the drugs, dose, and total pills taken daily, 25 (11.9%) of the 210 HIV-infected persons Could mention the name of the drugs they were taking daily, and 5 (2.4%) Could mention the dose they were taking. Most 180 (85.7%) patients could say the pills they took daily.

The following pie chart shows that most patients obtained different clinical benefits after starting ART.

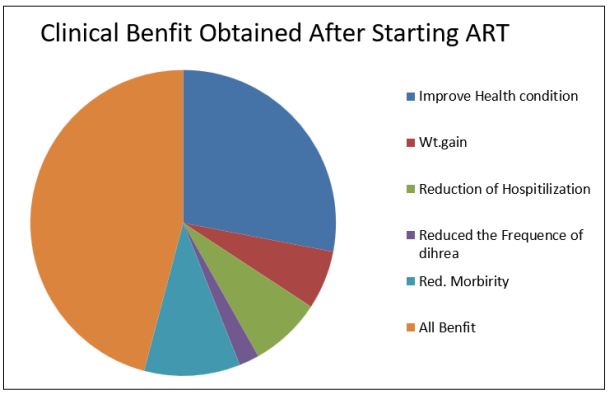

Figure 1: Distribution of Clinical benefit obtained after starting ART at Jugol Hospital of PLWHA 2021. Show the percent%

Patients - Level Factors and Social / Environmental Factors

Almost all respondents, i.e., 184 (87.6%), were convinced before starting ART. One hundred-fourth-four (54.3%) of the total HIV-infected persons felt comfort when taking ART in front of others. Out of the 210 respondents, the majority, 129(61.4%), used cell phone alarms/watch bell for memory aids to take their medication on time, which accounts for more than half of the respondents, and about 34(16.2%) of them didn't use any memory aid to take their medication.

Table 4: Patient-level factors and social / Environmental factors

S.N.	Variables		Frequency	%
21	Feeling comfortable when taking ART in front of others?	Yes	114	54.3
		No	96	45.7
22	Types of schedules you use for memory aids to take medication.			
	Cell phone alarm		129	61.4
	Pillboxes		28	13.3
	Written schedules		19	9
	Don't have any memory aids.		34	16.2
23	Any moral and practical support	Yes	150	71.4
		No	60	28.6
24	Who supports you?			
	Family		63	42
	Friends/peer		41	27.3
	Community		27	18
	Others	19	12.7	
25	Types of support did you get from your supporter			
	Financial support		34	22.6
	Care and moral		37	24.7
	Food and care		79	52.7
26	Medication schedules fit with daily routine activities.	Yes	159	75.7
		No	51	24.3
27	Any inability to fit into the medication	Being busy with specific activity	27	52.9
		Fear of taking medication in front of others	24	47.1
28	How do you think people can adhere more to ART?			
	Needs family and other support		105	50.0
	Belief in the efficacy of medication		15	7.1
	Needs education about the importance of medication		17	8.1
	Needs schedule aids		37	17.6
	Understanding the importance of adhering		36	17.1
29	Follow up	Weekly	3	1.4
		Every two week	23	10.9
		Monthly	107	51.0
		Every two month	77	36.7
30	History of missed days after having been starting ART	Yes	34	16.2
		No	176	83.8
31	How many pills did you miss within the last week?	<3 pills	31	91.1
		3-5 pills	2	5.9
		>5 pills	1	2.9
		One day	29	85.3

32	Days missed taking prescribed pills during the last month	2-4 days	3	8.8
		>4 days	2	5.9
33	Can you explain the reasons?	Forget	14	41.2
33	Can you explain the reasons?	Being busy	9	26.5
		Fear of taking medication in front of others	5	14.7
		Run out of pills	4	11.7
		Side effects	2	5.9

One hundred fifty (71.4%) of the 210 respondents had moral, financial, food and care and other support from different bodies; of these, 63 (42%) have got support from family, 41 (27.3.0%) have got support from friends/peers, 27(18%) have got support from the community. The remaining 19 (12.7%) were supported by others, e.g., religious organizations, NGOs…etc., while 60 (28.6%) of the respondents had no support. Out of those who have got support, 79 (52.7%) food and care, 37(24.7%) moral care, and 34(22.6%) financial.

Most of the respondents' 159(75.7%) medication schedules fit their daily routine activities, and only 51 (24.3%) didn't. As indicated in this study, the main reasons why their daily activities didn't fit with their medication schedule were being busy with specific activities and fearing taking their medications in front of others.

As shown below in the pie charts, most respondents thought that for people to adhere to ART, they need family and other support, education about the importance of medication and scheduling aids, Understanding the importance of Adherence and belief in the efficacy of the medication.

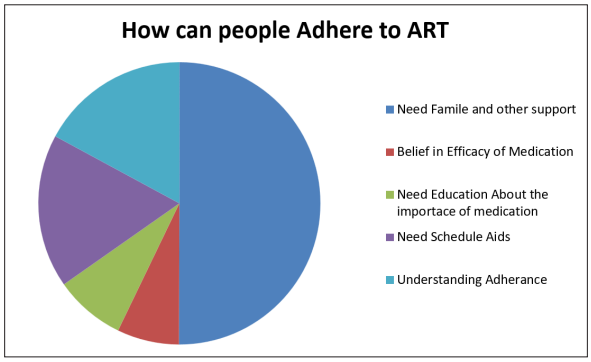

Figure 2: Shows the distributions of PLWHA in Harar, Jugol Hospital 2021GC Adhere to ART

Of the total, seventy-six (83.8%) respondents had no history of missed doses after starting. In contrast, e only 34 (16.2%) respondents had a history of missed doses after thestarting 34 respondents, 31(91.1%), 2(5.9%), 1(2.9%) missed less than three doses,3-5 doses, more significant than five doses respectively in the past seven days.

The main reasons for missed doses were forgetting 14(41.2%), being busy 9(26.3%), run out of pills 4(11.7%), fear of taking medication in front of others 5(14.7%) and side effects 2(5.9%). Adherence to ART was measured by the prescribed pills taken and the number of missed pills, as described below in Table 5.

Table 5: Percent distribution of respondents' Adherence to ARV therapy at Jugol Hospital, Harar 2020.

	Category	Frequency	%
Adherence rate	100%	176	83.8
	>95%	207	98.6
	<95%	3	8.8

As shown in the table, 176 (83.8%) respondents never missed a single dose, 100% adhered to the ARV medication regimen, and 207(98.6%) adhered >95% to their ART. Good AdherenceAdhesion was measured using self-report measurements like the number of prescribed Pills taken, missed pills, and good follow-up of appointment dates.

Clinician And Patient Relationship

Table 6: Clinician and Patient Relationship

S.N.	Variables		Frequency	%
34	Types of interaction do you have with clinicians	Excellent	18	8.5
		Very good	64	30.5
		Good	112	53.3
		Fair	13	6.2
		Poor	3	1.4
35	Follow clinical appointments regularly.	Yes	185	88
		No	25	12
36	Some of the problems with not following up regularly			
	Forget		12	48
	Too busy		6	24
	Long distance (travel)		7	28

These results show that most of the respondents, 112(53.3%), had good relations with clinicians or health care providers, and only 3(1.4%) had poor relations with health care providers. One hundred eighty-five (88%) of the respondents follow and keep their clinical appointments regularly, and only 25 (12%) of the respondents didn't follow and keep clinical appointments regularly. The main reasons the patients did not follow and attend their clinical appointments regularly were forgetting 12(48%) and being away from home 7(28%). being busy 6(24%).

Discussion

During the study period, the age group of respondents was 18-25(15%), 26-35(53.3%), 36-45(20.5%), and>46(11%), and the majority (62%) were females.

This study reveals that out of the total respondents (210), the majority of them, 176(83.8%), didn't miss a single dose in the past seven days of the study period. Only 34(16.2%) missed their prescribed medications in the past seven days. Two hundred seven patients (98.6%) were taken >95% of prescribed drugs. Hence, the adherence rate of this study was found to be 98.6%, which is higher than the study conducted in Yirgalem Hospital (88.3%) [20]. And the survey conducted in Lao Peoples Democratic Republic (59.5%) this could be because of the existence of a good relationship between patients and health care providers and also the majority of the patients follow their clinical appointments regularly [23].

Concerning socio-demographic variables, the majority of respondents who participated in this study were females (62%),26-35agegroups (53.4%), elementary school (39.5%), Oromo (57.1%), married (50.5%), residing in urban (79.5%), Muslim (49.5%), and their monthly income were 200-500 birr (40.5%).

In this study, the majority of the respondents, 127(60.5%), had an awareness of HIV/AIDS and had heard about the coming of antiretroviral medications before being diagnosed. Moreover, almost all of the respondents (93.3%) thought that all HIV-infected patients should be eligible for antiretroviral Therapy. Most patients, 121(57.6%), started antiretroviral treatment before twelve months, and 89(42.4%) patients were on ART for over six months but for less than twelve months. These results agree with the previously conducted study in Harari National Regional State, which revealed that those who stayed on ART for an extended period adhered more than those who were on ART for a short period [21].

This study found that most patients responded after starting antiretroviral medications. They improved their health condition, reduced morbidities and hospitalizations, and reduced fever and weight gain, which are the clinical benefits of ART. Hence, this study agreed with the analysis done at Shashemena General Hospital [24].

Out of 210 patients, about 34(16.2%) had experienced or developed adverse effects after starting antiretroviral treatment. Hence, the result of this study agreed with the study done in Togo, West Africa, which showed that out of the total respondents included in the survey, about 11.6% experienced medication side effects. Although the percentage of the patients who developed side effects in both studies was relatively equal, medication side effects were considered the main factors that caused poor Adherence in the case of Togo. This shows that the patients did not miss their pills due to side effects developed in this study. Instead, they immediately reported to the clinicians [17].

This study reveals that the most commonly developed adverse effects were rash (29.4%), nausea (17.6%), vomiting (11.8%), headache (8.8%), insomnia (5.9%) and anemia (2.9%), 34 adverse infect developed perfect-developing patients. The majority (79.4%) prefer r(reporting) preferred clinicians as soon as the adverse effects were observed rather than stopping permanently or withheld until the withholding appointments [25].

Even though knowing the types of medication did not affect Adhesion, this study found that most patients knew the kinds of medication they had taken and the frequency and total number of pills taken daily.

Regarding memory aids, 83.8% of the respondents used a watchbell/cell phone alarm in the highest proportion (61.4%) to remember the time of medication intake. This was similar to a study done in Togo, West Africa, in which 69.4% of the patients used a watchbell/phone alarm not to forget their medication intake [17].

Compared to the other aids in the study, which is different from a similar study conducted in Addis Ababa only, 48.2% of the respondents used memory aids. Memory aid is one of the methods used to achieve readiness to initiate Therapy and maintain patient Adherence. The adherence rate to antiretroviral medication in this study was 98.6% of all prescribed doses, more significant than the finding of a study conducted in Addis Ababa, which is 81.2% [23].

Concerning whether the daily routine activities fit or do not fit with the time of pill intake, this study found that the majority (75.7%) of the respondents' pill intake time fit with their daily routine activities. In comparison, 24.3% of respondents were not fit. The main reasons that made the patients not fit in with their daily routine activities were being too busy (62.7%) and fear of taking their medications in front of others (37.3%). Hence, this study agreed with a survey done in Lao People's Democratic Republic, which showed that out of 346 respondents included, about (80%) of the respondents' pills intake time fit with their daily routine activities. In contrast, 20% of respondents were not fit. The main reasons that made the patients not fit in with their daily routine activities were being too busy (65%) and fear of taking their medications in front of others (35%).

Patient and healthcare providers ' interactions influence patients' Adherence to ARV medications. This study found that most respondents (53.3%) had a relationship with healthcare providers 88% of respondents owed their clinical appointments regularly, and only 12% didn't follow their clinical appointments. Hence, this study agreed with a survey conducted in Uganda, which found that the % of the respondents, 83%, had good relationships with healthcare providers, and 85% of respondents followed their clinical appointments regularly. Only 15% of respondents didn't follow their clinical appointments.

The main reasons patients did not follow their clinical appointments were forgetfulness, being too busy and being away from home.

Generally, this study found that HIV-infected patients' adherence rate to ART in Harar, Jugol Hospital was 98.6% (those who took>95% of prescribed doses or did not miss more than three

doses per month). The main factors that affected Adherence to ART in Harar, Jugol Hospital were forgetfulness, being busy with specific activities, running out of pills and fear of taking medication in front of others.

Conclusion

In general, this study showed that 98.6% of the patients on ART had an adherence rate of >95% in Harar, Jugol General Hospital. The primary reasons for missing doses were forgetfulness, being busy with specific activities, being away from home (long-distance travel), running out of pills, and fear of taking their medications in front of others.

Recommendation

- I recommend that staff members of the ART pharmacy at Jugel Hospital provide addiction counseling and health information dissemination, including strategies to reduce or avoid forgetfulness by using memory aids to help patients maximize Adherence to ART.
- They should also maintain good interactions with the patients to enhance patient adherence.
- This hospital should conduct continuous clinical monitoring and assessment of Adhesion to ensure the provision of safe and effective antiretroviral Therapy.
- Haramaya University School of Pharmacy should further study Adherence to solve the barriers to Adherence.

Reference

1. UNAIDS WHO: AIDS Epidemic Update. 2013.
2. UNAIDS, Regional Fact Sheet Sub Saharan Africa available. 2012.
3. Getting To Zero the HIV and AIDS Epidemic in the Eastern and Southern Africa UNAIDS. 2013.
4. World Health Organization, Regional Office for Africa, country Programs report on HIV/AIDS. 2012.
5. Country Progress Report on HIV/AIDS Response, UNAIDS. 2012.
6. AssefaY, Dereje D, Lulseged S, OomisG, VanD. Rapid Scale-Up of Antiretroviral.
7. Treatment in Ethiopia: Successes and System-Wide Effects, PLOS Medicine. 2009. 6.
8. Ethiopian Ministry of Health: Ethiopian monthly antiretroviral treatment report. Addis Ababa (Ethiopia): Ministry of Health 2008.
9. Uzochukwu B, Onwujekwe E ,Onoka A, Okoli C, Uguru N, et al. Determinants of nonadherence to subsidized antiretroviral treatment in southeast Nigeria, Oxford Journals. 2009. 24: 189-196.
10. Andrew M, Todd J, Ekor K, Joan N K, Jonathan L, et al. to HAART and improved survival in A community HIV/AIDS Treatment and Care Programme: the experience of The AIDS Support Organization (TASO), Kampala, Uganda, BMC health services research. 2008. 8.
11. Vivek L, Shashi K, Sanjay K. RaiI.Reasons for Nonadherence to Antiretroviral Therapy Among Adult Patients Free Treatment at a Tertiary Care Hospital in Delhi, Indian Journal of community medicine. 2010. 35.
12. Guidance on operations and service delivery: Adherence to ART WHO Consolidated ARV guidelines. 2013.
13. Margaret A. Chesney. Factors Affecting Adherence to Antiretroviral Therapy, Oxford Journals the Journal of Clinical Infectious Diseases. 2000. 30.
14. Mitiku H, Abdosh T, Teklemariam Z. Factors Affecting Adherence to Antiretroviral Treatment in Harari National Regional State, Eastern Ethiopia, ISRN AIDS. 2013.
15. Li L, Sung J, Chuleeporn J. Antiretroviral Therapy Adherence among Patients living with HIV/AIDS in Thailand, Nursing and HealthSciences. 2010. 12.
16. Karl P, Natalie F, Shandir R, Jane A. Antiretroviral treatment adherence among HIV patients in KwaZulu-Natal, South Africa, BMC Public Health. 2010. 10.
17. Visanou H, Pattara S, Vanphanom S, Kongmany C, Suwanna B, et al.Adherence to Antiretroviral Therapy (ART) among People Living With HIV (PLHIV): a cross-sectional survey to measure in Lao PDR, BMC Public Health. 2013. 13.
18. Yao P, Kpatcha T, Agnon B, Vincent P, Innocent G, et al. Knowledge and Adherence to antiretroviral Therapy among adult people living with HIV/AIDS treated in the health care centers of the association "Espoir Vie Togo" in Togo, West Africa, BMC Clinical Pharmacology. 2010. 10.
19. Shumba C, Atuhaire L, Imakit R, Atukunda R, Memiah P. Missed Doses and Missed Appointments: Adherence to ART among Adult Patients in Uganda, ISRN AIDS. 2013.
20. Olubusoye, Olusanya E, Teklu A, Meshesha.Determinants of Adherence to Antiretroviral Treatment among HIV Patients in Ethiopia, African journals online. 2008. 2.
21. Markos E., Work A., Davey G. Adherence to ART in PLWHA at Yirgalem Hospital, South Ethiopia, African Journal Online. 2008. 22.
22. Samwe N, Zipporah W, Gabriel G. Factors associated with Adherence to highly active antiretroviral therapy in Nairobi, Kenya, AIDS research And Therapy. 2011. 8.
23. Sharada P, Wasti M, Padam S, Julian R, Jennifer F, et al.Factors Influencing Adherence to Antiretroviral Treatment in Nepal: A Mixed-Methods Study, PLOS ONE. 2012. 7.
24. World heritage list, UNESCO World Heritage Center retrieved. 2009.
25. Castro A. Adherence to ART. Merging the clinical and social course of AIDS. Journal Pub Med. 0020338. 2005. 2.