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MAGNITUDE AND PREDICTORS OF ANTI-RETROVIRAL TREATMENT (ART) ADHERENCE AMONG PERSON LIVING WITH HIV/AIDS (PLWHA) IN MIZAN TEPI UNIVERSITY TEACHING HOSPITAL (MTUTH), BENCH MAJI ZONE, SOUTH -WEST ETHIOPIA, 2017

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ABSTRACT

Background: HIV/AIDS is considered to be a major threat to the world's population, to its overall social, economic, and political wellbeing, as well as to the individual's health. However, the introduction of Antiretroviral Therapy (ART) has transformed HIV infection into a chronic manageable disease, with a major impact on the quality of life and prospects for extended survival in PLWHA. Non-adherence to ART, likewise, is common in all groups of treated individuals and lack of strict adherence to ART is considered to be one of the key challenges to AIDS care worldwide. Thus adherence to antiretroviral therapy (ART) is crucial to ensure viral suppression, decrease the risk of disease progression and drug resistance. **Objective:** The main objective of this study was to assess magnitude and predictors of ART adherence among adult PLWHA in Mizan Tepi University Teaching Hospital, South Western Ethiopia. **Methods and materials:** Hospital based cross-sectional study using quantitative methods was conducted in Mizan Tepi University Teaching hospital from January to August 2017. Data was collected using interviewer administered structured questionnaire. Collected data were entered and analyzed using SPSS version 20 computer software packages. **Results:** In this study a total of 245 PLWHA were included. Of the total study participants, 61.2% of them reported more than 95% adherence to antiretroviral treatment. It was found that religion (p=0.000) and duration of taking ART (p=0.031) was significantly associated with adherence to antiretroviral treatment. **Conclusion and recommendation:** The finding of this study revealed that adherence level to ART was slightly lower than other findings obtained from a finding obtained in other parts of the country. Therefore, it is better to apply various methods to improve current adherence level to ART among adult PLWHA in Mizan Tepi University Teaching Hospital.

KEYWORDS: *Adherence, Anti-retroviral treatment, Mizan, Ethiopia.*

INTRODUCTION

Human Immunodeficiency Virus (HIV) is an RNA retrovirus that causes immune deficiency disorder, predisposing to opportunistic infections and finally leading to a terminal illness called Acquired Immune Deficiency Syndrome (AIDS). HIV/AIDS is one of the most devastating pandemics humanity has ever faced. It is considered to be a major threat to the world's population, to its overall social, economic, and political wellbeing, as well as to the individual's health.[1]

HIV/AIDS infection is a global pandemic, with cases reported from almost every country at a time. For instance, a report from joint United Nations Program on HIV/AIDS (UNAIDS) revealed that at the end of 2009 alone, an estimated 33.3 million individuals were living with HIV infection. This report also showed that two-third of them, 22.5 million, live in Sub Saharan Africa while the least proportion, 57,000, is held by those who live in Oceania. More than 95% of people living with HIV/AIDS reside in low- and middle-income countries.[2]

Until the foundation of Antiretroviral Therapy (ART), prevalence of HIV/AIDS related death has been increased at alarming rate. However, the introduction of Antiretroviral Therapy (ART) has transformed HIV infection into a chronic manageable disease, with a major impact on the quality of life and prospects for extended survival in PLWHA. The introduction of ART resulted in a remarkable reduction of HIV-related mortality and morbidity as a result of rapid immunological restoration and viral suppression. Antiretroviral Therapy (ART) has been implemented worldwide in an effort to curb the epidemics as well as to improve the quality of life among HIV-infected people as part of one of multiple strategies to approach people living with HIV/AIDS (PLWHA).[3]

It has confirmed that adherence to antiretroviral drugs is the second strongest predictor of progression to AIDS and death, after CD4 count. However, incomplete adherence to ART is common in all groups of treated individuals across different countries. A report revealed that the average rate of adherence to ART globally, is approximately 70%, despite the fact that long-term viral suppression requires near-perfect adherence.[2]

Sub-Saharan Africa continues to bear the burden of the global epidemic. AIDS is one of the top three causes of mortality worldwide and the primary cause of death in sub-Saharan Africa. Almost two thirds (67.8%) of all adults and 90% of children with HIV globally live in Sub-Saharan Africa. Of all deaths due to AIDS in the world 1.6 million occurred here in sub Saharan Africa.[4] Introducing ART to sub-Saharan Africa was a topic of hot debate just a few years ago. Concerns about adherence and subsequent development of drug resistance, poor infrastructure, logistic and human capacity, and cost-effectiveness were the major issues.[5] Study shows typical adherence rates for medications prescribed over long periods of time are approximately 50-75%. Adherence is perceived as a significant barrier to the delivery of ART in Sub-Saharan Africa.[6]

Ethiopia is one of the hardest hit Sub-Saharan Africa countries by the HIV pandemic. The HIV/AIDS epidemic is a serious threat to Ethiopian social and economic development. Ethiopia's HIV/AIDS epidemic pattern continues to be generalized and heterogeneous with marked regional variations. The 2011 EDHS shows that the HIV prevalence varies from region to region ranging from 0.9% in SNNPR to 6.5% in Gambela.[7]

In response to the tremendous effect of HIV/AIDS iv various aspects of the country, Ethiopia was among the first few African countries to introduce ART in 2003 in selected health facilities following the issuance of the National Antiretroviral drugs (ARVS) supply and use policy in 2002. As of October 2013, the total number of patients ever started on treatment was 499,412 out of 822,531 patients ever enrolled in the 880 health facilities.[8] However, there is observable problem regarding ART adherence among different communities living with HIV/AIDS. Different studies reveal that ART adherence has shown variation across different regions. For instance, a research conducted in North Ethiopia showed that the level of adherence to antiretroviral treatment was 85.3%.[9] According to a research done in Shashemene general hospital the main adherence rate of a patient in the hospital has been observed to be 84.6%.[10]

It is fact that high levels of adherence have significance in reducing mortality and morbidity, suppressing the viral load and getting better quality of life of PLWHA. On the other hand poor adherence leads to clinical deterioration of the patient, progress of disease, and development of drug resistant viral strains. So in addition of the disease, it is essential to address the high adherence level of ART. To implement additional intervention regarding ART adherence it is imperative to have adequate data which reveals the magnitude and factors affecting ART adherence among PLWHA. However, there was lack of data related with the aforementioned issue. Therefore, the finding from this study would fill the existing information gap here in studied hospital. Also the result of this study would inform both program managers and clinicians about the existing challenges of patient related factors influencing adherence to ART and the possible solutions. It would also increase the understanding of health professionals in their important role of encouraging maintenance of healthy behaviors among their patients.

OBJECTIVES

General objective

- To assess prevalence of ART adherence and its associated factors among adult PLWHA on ART at Mizan Tepi University Teaching Hospital, SWE.

Specific objectives

- To determine the magnitude of ART adherence among adult PLWHA at Mizan Tepi University Teaching Hospital, SWE.
- To identify factors that affects ART adherence among PLWHA on ART at Mizan Tepi University Teaching Hospital, SWE.

METHODS AND MATERIALS

Study area and Study Period

This study was conducted from January to August 2017 at Mizan Tepi University Teaching Hospital. Mizan Tepi University Teaching Hospital (MTUTH) is located at Aman town and found in Bench Maji zone, Southern Nations Nationalities and People regional state (SNNPR). It is located at 565 km away from Addis Ababa, the capital city of the country. Anti-retroviral Treatment (ART) is one of the services currently provided by the hospital. Currently 1462 PLWHA are enrolled in HAART follow up. On average 50-75 patients are visiting the clinic in a day. From 1462 patents 888 are adult. The ART clinic staffed with one doctor, three nurses, one pharmacy technician, who have trained in ART services, and one data clerk.

Study design
Institution based, cross-sectional study design was used to assess magnitude of ART adherence and its determinants among PLWHA on ART at Mizan Tepi University Teaching Hospital.

Population
Source population
The source population was all adult people living with HIV/AIDS who were on ART enrolled at Mizan Tepi University Teaching Hospital.

Study population
Sampled adult people living with HIV/AIDS who are on ART and had follow up ART unit during study period and who fulfill inclusion criteria.

Inclusion and Exclusion criterion
Inclusion criteria
The study participants included in this study were adult peoples living with HIV/AIDS with age of greater than 18 years and who were on treatment for at least 3 months.

Exclusion criteria
Patient who were seriously sick to be interviewed were excluded from this study.

Sample size determination and Sampling technique

The sample size was determined considering an estimate of 73.5% Adherence rate among PLWHA on ART (4). Giving any particular outcome to be within 5% marginal error and 95% confidence interval of certainty (alpha =0.05). Based on this assumption, the actual sample size for the study is computed using single population proportion formula as indicated below.

$$n = \frac{(Z\alpha/2)^2 P(1-P)}{D^2}$$

Where, n= Sample size
Z_{2}^{α}= Critical value =1.96
P = Adherence rate among PLWHA on ART, 73.5% prevalence was used to obtain the sample size, where adherence prevalence obtained from study at Addis Ababa, Ethiopia.
D=Precision (marginal error) =0 .05.

$$n = \frac{(1.96)^2\, 0.735(1-0.735)}{(0.05)^2} = 299.2 \sim 299$$

*299 study subjects will be taken but since the total number of source population was less than 10,000 which is (888 PLWHA on ART) finite population corrections will be used and the final sample size of the study will be

$$n = \frac{n_0}{1+\frac{n_0}{N}} n = \frac{299}{1+\frac{299}{888}} = 223.3 \sim 223$$

And to compute for non-response rate 10 % of the total sample will be added, thus

$$10\%\ (223) = 22.3 \sim 22$$
$$223+22=245$$

Sampling procedure
To obtain the required sample size illegible adult peoples living with HIV/AIDS visiting Mizan Tepi University teaching hospital were selected consecutively.

Study variables
Dependent Variable
- Adherence to ART

Independent Variables
- Socio demographic variables such as age, sex, literacy status, income,
- Patient- related factors substance abuse, knowledge about the drug regimen
- Duration of ART

Data collection tool and procedures
Data collection Instrument
A structured interview administered questionnaire was used to collect the data which adopted from different literatures. Questionnaire was prepared in English and translated in to Amharic and back translated in to English language by other individual to check any inconsistencies. The questionnaire was pre-tested on 10% of the study subject that was participating in the main study. Necessary modifications were made depending on the findings. Data on drug adherence was collected using patient self –report.

Data collection procedure
Quantitative method of structured interview administered questionnaire was used. And data was administered by 3 Graduate class nursing students'.

Operational definition and definition of terms
- **Adherence**: A respondent was said to be adherent if he/she took ≥95% of the prescribed doses in the previous week.

Data quality management
To keep the data quality continuous and onsite supervision was made by supervisors. Data from ART unit was checked for completeness, clarity and consistency by data collectors during data collection time. Data was intensively cross checked before analysis.

Data analysis
The collected data from each respondent were entered and analyzed using Epi-Data and SPSS version 20 computer software packages. Data cleaning was carried out, and frequency distributions and cross tabulations were made for each of the variables. The result/summary of data was presented using table and figure.

Ethical consideration

Formal letter was taken before actual data collection time from collage of medicine and health sciences, department of nursing. Oral consent was taken from each participant before interviewing. Information was given about purpose of the study, issues of confidentiality, procedure of data collection and risk and benefit of participation before proceeding to the interview. Additionally, participants were informed that they have a full right to refuse or discontinue participating in the survey at any time. Confidentiality of the respondents was maintained and the information taken from them was used for the study purpose only.

Plans for dissemination of the result

The finding of this study was disseminated to the Mizan Tepi University College of health sciences, department of nursing and hard copies of this research were given to Mizan Tepi University Teaching Hospital and other concerned stakeholders.

RESULTS

Socio-demographic characteristics of respondents

In this study a total of 245 study participants were included. Out of the total respondents half, 136 (55.5%), of them were females and 59 (24.1%) of the respondents belongs to age group of 29-33. Majority, 89 (36.3%), of them were followers of Christian Orthodox religion. Nearly half, 121 (49.4%), them were married. Regarding educational level, 30 (12.2%) of them were unable to read and write, 26 (10.6%) could read and write, 106 (42.4%) had completed elementary school education, 54 (22.0%) had attended high schools and 31(12.7%) of them were diploma and above *(Table 1).*

Table 1: Socio demographic characteristics of PLWHA in Mizan Tepi University Teaching Hospital (MTUTH), SWE, 2017.

Variable	Category	Frequency	Percent
Sex of respondents	Male	109	44.5
	Female	136	55.5
Age of respondents	19-23	24	9.8
	24-28	55	22.4
	29-33	59	24.1
	34-38	45	18.4
	39-43	34	13.9
	44-48	15	6.1
	>49	13	5.3
Ethnicity	Bench	55	22.4
	Keffa	49	20.0
	Sheko	25	10.2
	Amhara	88	35.9
	Oromo	26	10.6
	Other	2	0.8
Marital status	Married	121	49.4
	Unmarried	76	31.0
	Divorced	20	8.2
	Widowed	28	11.4
Religion	Protestant	69	28.2
	Orthodox	89	36.3
	Muslim	77	31.4
	Other	10	4.1
Occupational status	House wife	53	21.6
	Government employed	47	19.2
	Merchant	89	36.3
	Daily laborer	52	21.2
	Unemployed	4	1.6
Educational status	Can't read and write	30	12.2
	Read and write	26	10.6
	Elementary	104	42.4
	High school	54	22.0
	Diploma and above	31	12.7
Monthly income	<500	22	9.0
	500-1000	126	51.4
	>1000	97	39.6

Substance use

Most of the respondents, 134 (54.7%), had no history of substance use whereas 111(45.5%) had history of substance use. Out of the total substance users 85 (34.7%) of them were chat user, 23 (9.4%) of them use alcohols and 4 (1.6%) of them use cigarette *(figure 1).*

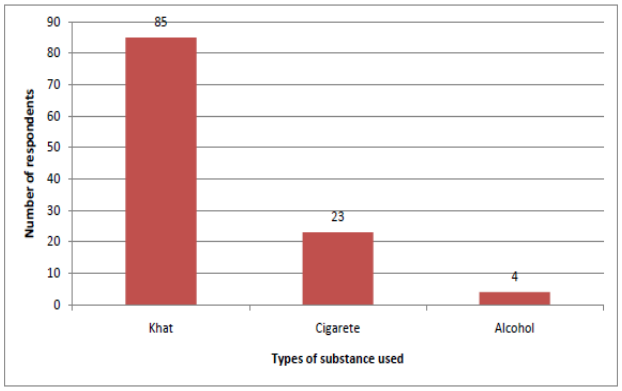

Figure 1: Status of substance use among respondents in Mizan Tepi University Teaching Hospital (MTUTH), 2017.

Duration of taking ART among PLWHA

Only 94 (38.4%) of study participants know about ART drugs while the rest 151 (61.6%) of them did not know about ART drugs. The finding of this study revealed that ART adherence among studied participants was 61.2 %. Regarding duration of taking the drugs majority of the respondents 61(24.9%) used the drug for 36 months and above *(Table 2).*

Table 2: Knowledge and adherence towards ART drugs and duration of taking ART among PLWHA in Mizan Tepi University Teaching hospital (MTUTH), 2017.

Variable	Category	Frequency	Percent (%)
Respondents know about ART drugs	Yes	94	38.4
	No	151	61.6
ART drug adherence	Yes	150	61.2
	No	95	38.8
Duration of treatment (in month)	1-6	26	10.6
	7-12	55	22.4
	13-24	52	21.2
	25-36	51	20.8
	>36	61	24.9

Factors associated with ART adherence among PLWHA

Variables which had shown a significant association with ART adherence among studied groups were religion *(P=0.000)* and duration of taking ART *(P=0.031).* Other variables which are included in the analysis were not found to show a significant association with ART adherence.

Table 3: Factors associated with ART adherence among the study participants in Mizan Tepi University Teaching Hospital (MTUTH), SWE, 2017.

Variable	Category	ART drug adherence status		P-Value
		Adherence	None adherence	
Religion	Orthodox	58	31	0.000
	Protestant	27	42	
	Muslim	60	17	
	Others	5	5	
Monthly income	<500	16	6	0.384
	500-1000	73	53	
	>1000	61	36	
Marital status	Married	77	44	0.065
	Unmarried	38	38	
	Divorced	14	6	
	Widowed	21	7	
Educational status	Can't read and write	8	22	0.055
	Read and write	10	16	
	Elementary	24	80	
	High school	25	29	
	Diploma and above	26	5	
Knowledge on ART drug	Yes	62	32	0.230
	No	88	63	
Duration of treatment	1-6	21	5	0.031
	7-12	16	39	
	13-24	20	32	
	25-36	24	27	
	>36	30	31	
Substance use	Yes	36	75	0.640
	No	75	59	

DISCUSSION

This study assessed the magnitude and factors associated with ART adherence in Mizan Tepi University Teaching hospital among adult PLWHA. Based on the self-report questionnaire, the study result indicated that the prevalence of adherence to ART among adult PLWHA in MTUTH was 61.2%. This finding was found to be higher than a result obtained in Zambia,[11] India[12] and Leo PDR.[13] However, it was lower than a finding reported from Nepal[14] and other findings reported in different studies conducted in different region of Ethiopia.[15] This might be happened due to the methodologies used to measure adherence to ART among study participants by different studies.

It was found that there were no significant association between marital status of respondents and their adherence level *(P=0.065).* However, adherence level to ART regimen was higher for women than men in this area. This finding was supported by a similar finding obtained in Addis Ababa[4] where women were more adhered than men, based on self-reported data.

According to the finding of this study educational level of respondents had showed a significant association with ART adherence *(P=0.055).* It revealed that higher adherence rate was observed among PLWHA with higher educational level. This finding was found to be coherent with a finding obtained in Harare, Ethiopia, where respondents who had high school and above education were more adhered than those who were illiterate.[16]

In the present study, income was not found to have statistically significant association with adherence level *(P=0.384).* This may be because treatment was provided free of cost. Income has been shown to have an impact on adherence in other studies. For instance a research review finding in Ethiopia identified that income was a significant contributor of adherence.[17]

Adherence to ART in our study associated with socio-demographic and history of treatment or duration of taking ART. Religion was significantly associated with adherence level *(P=0.000)* among studied PLWHA in Mizan Tepi University teaching hospital. These finding was found to be concurrent with a finding obtained in Nepal.[14]

Unlike other studies some variables were not found to be significantly associated with adherence to ART among PLWHA. These variables include knowledge about ART drugs, substance use and type of substance and others which were considered to be significant predictors of adherence in other studies.

The finding of this study also identified that duration of taking ART (history of taking ART) and adherence level were significantly associated with adherence level *(P=0.031).* This finding was supported by finding from a Leo PDR study which revealed that there were a significant association between duration of taking ART and adherence level.[13]

LIMITATION OF THE STUDY

This study was focused only on PLWHA at one hospital which might affect its generalizability to other similar health care facilities. Also PLWHA adherence was assessed based on self-report of missed the question (missed the dose) which might be vulnerable to social desirability and recall biases.

CONCLUSION AND RECOMMENDATION

According to the finding of this study, the rate of adherence among studied PLWHA in the studied area was found to be lower in contrast to other studies conducted within the country. Variables which showed a significant association with adherence level among studied PLWHA were religion, educational level of study participants and duration since the initiation of ART.

Based on the finding of this study it was recommended that different interventions are needed to improve adherence to ART among PLWHA in Mizan Tepi University Teaching Hospital. Additionally, further researches should be needed to better understand health care provider and health care system determinants of treatment adherence.

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