Title: Prevalence and Associated Factors of Depression among HIV/AIDS Patients Attending Anti-Retroviral Therapy Clinics at Gurage Zone Selected Government Hospitals, Southwest, South nations, Nationalities and Peoples' Region, Ethiopia, 2018

List of authors

Haile Workye Agazhu[1],Berhanu Wordofa Giru[2] and Teshome Habte Wurjine[3]

Faculty of the aforementioned authors

[1] Wolkite University, Faculty of Health Sciences, Department of Nursing, Wolkite, Ethiopia
[2] School of Nursing and Midwifery , College of Health Sciences, Addis Ababa University, Addis Ababa, Ethiopia
[3] School of Nursing and Midwifery , College of Health Sciences, Addis Ababa University, Addis Ababa, Ethiopia

Authors Email address and Telephone number

[1] Haile Workye (Email address: haileworkye21@gmail.Com)
Telephone number: +251935033409
[2]Berhanu Wordofa Giru: (Email address: w.berhanu@yahoo.com or berhanu.wordofa@aau.edu.et)
Telephone number: +251911050543
3Teshome Habte Wurjine: (Email address: teshome.habte@aau.et.edu or teshomeh497@gmail.com)
Telephone number: +251911436150

Corresponding author: Teshome Habte Wurjine: Addis Ababa University, School of Nursing and Midwifery

Abstract

Background: Currently HIV/AIDS is the major burden and public health problems globally and two third of the PLWHA are living in Sub-Saharan Africa. The prevalence of HIV/AIDS is also high in Ethiopia. Mental disorders particularly depression is the most prevalent among PLWHA and did not get any consideration. Depression can have negative impacts on their quality of life. **Objective:** to assess the prevalence and associated factors of depression among HIV/ AIDS patients attending ART clinics at Gurage zone selected government Hospitals, southwest, SNNPR(South Nations, Nationalities and Peoples' Region), Ethiopia. **Methods:** An institution based cross sectional study was conducted with a total of 328 HIV/ AIDS patients attending ART clinics at Gurage zone selected government Hospitals from March 1-30/2018.The collected data was entered into Epi-data 4.2.0.0 and exported to SPSS version 25 for analysis. Binary and multivariable Logistic regression was performed to determine each factor and to check the association between independent variable and depression. **Result**: The prevalence of depression among PLWHA attending attending ART clinics at Gurage Zone selected Government Hospitals, Southwest, SNNPR, Ethiopia, 2018 was 37.5%.This study confirmed that sex, monthly income, internally stigmatized, social support, duration of HAART and HAART interruption were associated with depression where as age category, ethnicity, religion, marital status, educational level, occupation, lost jobs, living condition, CD4 count, WHO HIV/AIDS clinical stages and drug regimen were not associated.**Conclusion and recommendation**: the prevalence of depression among PLWHA attending ART clinics at study area is highly prevalent. Sex, monthly income, internalized stigma, social support, duration of HAART and HAART interruption were significantly associated with depression.

Therefore there should be a priority care for PLWHA who are females, have low monthly income, internally stigmatized, have low social support and whodid not take theirART properly.

Keyword: Depression, HIV/AIDS

1. Introduction

Depression is a mental disorder which is manifested by the sign and symptoms of poor appetite, sadness, sleep disturbance, poor concentration and feelings of exhaustion [1].

Mental disorders particularly depression is the most prevalent among PLWHA than people without HIV/AIDS [2,3]. Depression disturbs the quality of life, social interactions, work, and influence on the adherence to medical care and survival of life [2].The prevalence of depression in PLWHA ranges from 7.2% to 71.9% and 2 times higher in PLWHA than people without HIV/AIDS [4].

The study conducted in Myanmar shows that the prevalence of depression among PLWHA was 30% [5]. The Majority of PLWHA were under diagnosed and untreated for depression. Depression is the significant disease burden and related with poor health outcomes like poor ART adherence, resulting for ART inefficient and reduced the quality of life and lifespan among PLWHA [5,6]. Lifetime prevalence of depression among PLWHA in the USA was 20-40%, up to two times higher than the general population [7]. The study in Delhi, India shows that the prevalence of depression among PLWHA under ART was 58.75%. The unemployed, unmarried, uneducated, having low family income and low social support are the most determinant factors for depression [8]. More than half of PLWHA that suffer from depression have not diagnosed properly as well as not treated [9]. The study in Korea shows that the prevalence of depression among PLWHA was 21% and it was associated with poor adherence. Among these only 4% of the depressive patients were referred to psychiatric evaluation and treatment. It indicated that there is low level of recognition and management of depression among PLWHA [10].

As the majority of the world's PLWHA are living in SSA, the prevalence of depression among PLWHA is also high [11]. Even if depression may fasten the progression of HIV/AIDS and result for the development of ART resistance, diagnosis and treatment of depression among PLWHA has not been a priority in Africa.The prevalence of depression among PLWHA in Nigeria was 39.1% and it was 5 times more common among PLWHA than the general populations [12]. other study at Yaoundé, Cameroon shows that the prevalence of depression were 63% [13]. In Ethiopia studies show that the prevalence of depresion among HIV/AIDS Patents Attending ART Clinic was 38.94% at Debrebirhan Referral Hospital, North Showa, Amhara Region, Ethiopia [14], 44.4% at Zewditu Memorial Hospital, Addis Ababa ,Ethiopia[15],45.8% at Harar Town, Eastern Ethiopia [16] and 48% at Metu Karli Hospital Iluababor Zone , South West, Ethiopia [17]. If depression is diagnosed early, it is an avoidable and a separate illness that can be treated, even when PLWHA are under ART [18]. This study was identified the factors for the presence of high prevalence of depression among HIV/ AIDS patients. It would help for the policy makers to revise the health policies, law and regulation to reduce high prevalence of depression among PLWHA, to plan for the management of depression among PLWHA in addition to HAART and treatment of other opportunistic infections in the study based on the finding. Furthermore the study would possibly generate information in the area of the topic for other researchers to investigate further empirical evidences to control those factors attributable to high prevalence of depression among HIV/ AIDS patients in the study area.

2.Methods and Materials

2.1. Study setting and design

Institutional based cross-sectional study design was conducted in selected government hospitals of Gurage Zone, SNNPR from March1 to30, 2018.

2.2.Study population

The study population consisted of all adult HIV/AIDS patients who were attending ART clinics at Butajira General Hospital and Gunchire primary Hospital, Gurage zone, SNNPR, Ethiopia, 2018 during the study period and who

had at least one previous visit at ART clinics were included in the sample. All HIV/AIDS Patients who were seriously ill for interview were excluded from the study.

2.3. Sampling procedure

The sample size was determined by using a single population proportion formula considering the following assumptions: standard normal distribution with confidence interval (CI) of 95% ($Z\alpha/2=1.96$), absolute precision or tolerable margin of error (d=0.05), and the prevalence of depression at Harar Town, Eastern Ethiopia, 2013 was 45.8%(16).Assuming a 10 % non-response rate a total sample size of 340 HIV cases were selected. By lottery method 2 hospitals Butajira General and Gunchire primary Hospitals were selected among 4 governmental Hospitals. The study participants were selected from those two Hospitals by proportionally allocating then by simple random sampling from the appointment log of March.

2.4. Inclusion and Exclusion criteria

2.4.1. Inclusion criteria

All adult HIV/AIDS patients who were attending ART clinics at Butajira General Hospital and Gunchire primary Hospital during the study period and who had at least one previous visit at ART clinics.

2.4.2. Exclusion criteria

All HIV/AIDS Patients who were seriously ill for interview

2.5. Data collection tools and procedure

The data collection tool was translated from English language to local language Guragegna and Amharic language by different experts before data collection period. Data were collected by using pretested interviewer administered questionnaire, which containssocio demographic characteristics (age, sex, ethnicity, religion, educational level, occupation, marital status, monthly income and occupation), psychosocial factors (internalized stigmatized, social support, living condition and lost jobs) and HIV/AIDS related factors (CD4 count, WHO HIV/AIDS stages, ART interruption and drug regimen).

The internalized stigma scale consisted of 10 items rated on a 5-point response format ranging from “strongly disagree” (1) to “strongly agree” (5) based on the extent to which a respondent felt about him/herself since being diagnosed with HIV. A total score (possible range = 10-50) will be obtained by summing responses to all items. From the mean the higher scores indicating internallystigmatized and lower scores indicating not internallystigmatized. The cronbach alpha of these items was 0.92 (17).

Social support- assessed by (SSQ-6) it included 6- items scale that assessed the number of available social support. The number of persons available to provide the type of support described in each item was coded as either “no one” (0) or “one or more” (1). The total score is obtained by summing all 6 items with a possible range of 0 to 6. From the mean the higher scores indicates higher levels of available social support where as below the mean indicates lower level of available social support. The reliability coefficient for these items was 0.86(17).

A Patients Health Questionnaires- 9 was used to measure the depression status among HIV/AIDS patients and the depressed status was determined as depressed PHQ-9 score ≥ 5 or not PHQ-9 score ≤ 4.The PHQ-9 has acceptable reliability, validity and a sensitivity of 88% and a specificity of 88% for depression diagnosis (14).

2.6. Operational definition

Based on the Patient Health Questionnaire- 9 score the depressed status was determined as follows.

- **Not depressed**: PHQ-9 score was ≤ 4
- **Depressed:** PHQ -9 score was ≥ 5
- **Mild depression**: PHQ score was 5-9
- **Moderate depression:** PHQ score was 10-14
- **Moderately severe depression**: PHQ score was 15-19
- **Severe depression:** PHQ score was 20-27 (15, 21, 23-25).

2.7. Data quality Assurance

The quality of data was ensured through translation of instrument was made from English language to local language Guragega and Amharic language and back to English language by different experts who were familiar on the field of area in order to ensure its consistency. Methods and materials were pre-tested before the actual data collection period in 5% of the participants at Bue primary hospitals at Gurage Zone, SNNPR, Ethiopia and modifications were taken.Three data collectors and two supervisors who can speak both Amharic and Guragegna languages were recruited. The collected data was checked for completeness, accuracy, and consistency and two days training was given for the data collectors by Amharic language on how to ask and fill the questions, and how to approach the respondents. Based on the test result, some questionnaires were modified and clarities to the questionnaires were insured.

2.8. Data processing and analysis

Data was checked for completeness and cleaned before it was entered to a computer. Then it was coded and entered into EpiData version 4.2.0.0 and importing to SPSS version 25 software packages for data analysis. Frequencies and proportions were used to describe the study participants. The data was presented by using tables and graphs.

Bivariate analysis and crude odds ratio with 95% confidence interval (CI) was used to see the association between independent variable and the outcome variable by using binary logistic regression. Independent variables with p-value of ≤0.25 were included in the multivariate analysis to control confounding factors. Hosmer-Lemeshow's test was found to be insignificant (p-value = 0.99) and Omnibus tests was significant (P-value = 0.00) which indicate the model was fitted. Adjusted odds ratio along with 95% CI was estimated to identify the factor associated with depression among PLWHA using multivariable logistic regression analysis. Level of statistical significance was declared at P-value ≤ 0.05.

2.9. Ethical consideration

The study was reviewed and approved by Addis Ababa University College of Health science, department of nursing and midwifery. The ethical clearance was obtained from Addis Ababa University Institution Research Board. Letter was submitted to Gurage zone health office, Butajira general Hospital and Gunchire primary Hospital and then permission was obtained from those bodies. Prior to interview; all participants recruited to the study were receive written informed consent about the study. The participants did not gain any incentives and direct benefit, yet the result can be used as a baseline for further studies that can be done in the study area and identified problems associated to depression among HIV/AIDS in those hospitals as well as in our country. The result will be disseminated to different bodies. The study has no any risk for the participants and interview were private to make safe participants from any fear. Respondents were insured about the confidentiality of information obtained and the respondents did not ask to tell their names.

3. Result

3.1. Socio-demographic characteristics of the study participants

A total of 328 participants enrolled through face-to-face interviews with the response rate of 96.5%. Out of the total study subject 177(54%) were female. 143(43.6) were in the age group of 30-39 and the mean age of the participants' was 37.6 years with range from 18 to 68. From the study participants 257(78.4%) were Gurage in ethnicity, 140(42.7) were Muslim in religion, 205(62.5%) were married, 119(36.3%) were Illiterate and 98(29.9 %) were farmer. As depicated in Table 1 below monthly income of respondents involved in the study was less than or equal to 500 birr for 88(26.8%) clients and more than 2000 birr for 76 (23.2%) clients.

Table 1: Socio- demographic characteristics of study participants at Gurage zone selected government Hospitals, southwest, SNNPR, Ethiopia, 2018 (n=328).

Variable		Frequency	Percent (%)
Age	18-29	59	18.0
	30-39	143	43.6

	40-49	82	25.0
	≥ 50	44	13.4
Sex	Female	177	54.0
	Male	151	46.0
Ethnicity	Gurage	257	78.4
	Silte	34	10.4
	Amhara	22	6.7
	Oromo	5	1.5
	Others	10	3.0
Religion	Muslim	42.7	42.7
	Orthodox	40.9	40.9
	Protestant	15.2	15.2
	Catholic	1.2	1.2
Marital status	Single	49	14.9
	Married	205	62.5
	Widowed	55	16.8
	Divorced	19	5.8
Educational status	Illiterate	119	36.3
	1-4	79	24.1
	5-8	58	17.7
	9-12	50	15.2
	College or university	22	6.7
Occupation	Daily labor	53	16.2
	Government employee	48	14.6
	Farmer	98	29.9
	Merchant	48	14.6
	Student	13	4.0
	unemployed	39	11.9
	others	29	8.8
Income	≤500	88	26.8
	501-1000	75	22.9
	1001-1500	39	11.9
	1501-2000	50	15.2
>2000		76	23.2

3.2. Psychosocial factors of depression

Among the study participants 26(81.4%) were living with their family, 222(67.7%) were internally stigmatized, 257(78.4%) had high social support from their families or other supportive bodies and the majority 304 (92.7%) did not lose their jobs due to HIV/AIDS related illness.

3.3. HIV/AIDS related factors of depression

Among the study participants 238(72.6%) of the respondents were WHO HIV/AIDS clinical stage I, 272(82.9%) had CD4 counts greater than 250, the most of the respondents 320(97.6%) have taking first line ART and 295(89.9%) had taking their HIV/AIDS medication properly without interruption (Table 2).

Table 2: HIV/AIDS related factors of study participants at Gurage zone selected government Hospitals, southwest, SNNPR, Ethiopia, 2018.

Variable	Frequency	Present

Stage	stage I	238	72.6	
	stage II	52	15.9	
	stage III	17	5.2	
	stage IV	21	6.4	
Recent CD4 count (cell/µl)	≤250	56	17.1	
>250	272	82.9		
Duration of HHART(in month)	≤6	62	18.9	
>6	266	81.1		
HHART interruption	Yes	33	10.1	
	No	295		89.9
Drug Regimen1st line	320	97.6		
2nd line	8	2.4		

3.4. The Prevalence and level of depression

The prevalence of depression among PLWHA at Gurage zone selected government Hospitals, southwest, SNNPR, Ethiopia, 2018 was 37.5% as shown in fugure 1 below.

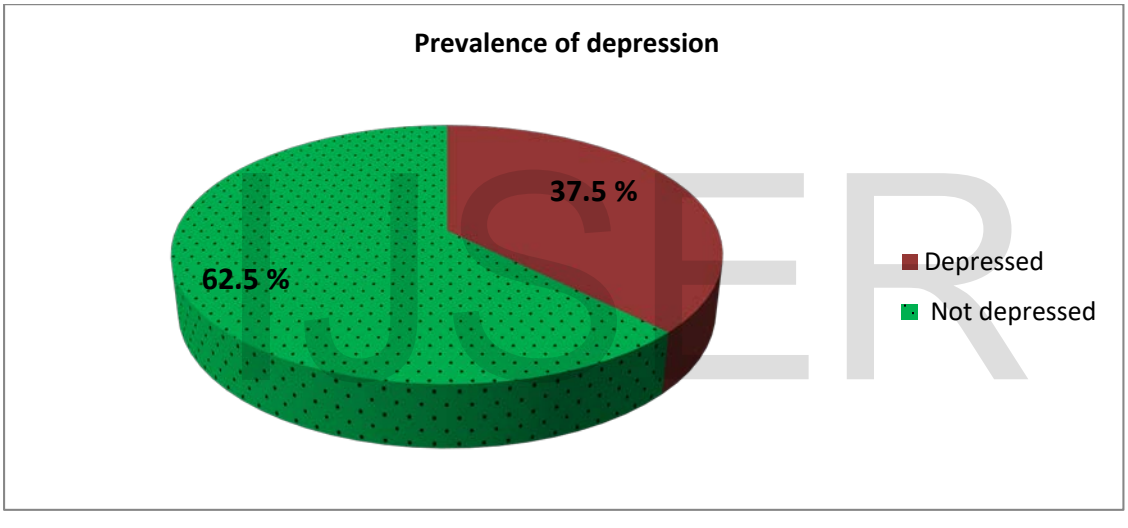

Figure1: prevalence of depression among PLWHA attending ART clinic at Gurage zone selected government Hospitals, southwest, SNNPR, Ethiopia, 2018 (n=328).

3.5. Factors associated with Depression among HIV/ AIDS patients

In multiple logistic regression analysis, the covariates: sex, monthly income, internalized stigma, social support, duration of HAART and HAART interruption were statistically significant at 5% level of significant and were found to be the associated factors of depression among HIV/AIDS patients.

Females were 2 times more likely to develop depression than males [AOR=2.43; 95%CI (1.27-4.64)].Those with income less than 500 birr were 4 times, income between 501-1000 birr were 3.6 times, income between 1001-1500 birr were 3.2 times and income between 1501-2000 birr were 3 times more likely to suffer from depression than those with income ≥2000 birr [AOR=4.07;95%CI (1.65-10.04)], [AOR= 3.62; 95%CI (1.44-9.09)], [AOR= 3.25; 95%CI (1.11-9.51)] and [AOR=2.90; 95%CI (1.02-8.27)] respectively. Those patients who had duration of ART ≤6 months were3 times more likely to develop depression than patients who had duration of ART >6 months [AOR=2.95; 95%CI (1.42-6.04)] and patients who had not taken their ART properly were 3.4 times more likely to develop depression than patients who have not taken their ART properly [AOR= 3.43; 95%CI (1.17-10.04)].

Regarding to internalized stigma, patients who were internally stigmatized were 4 times more likely to develop depression than patients who were not internally stigmatized [AOR=4.16; 95%CI (2.21-7.84)].Those patients who

had low social support were 4 times more likely to develop depression than patients who had high social support [AOR= 4.00; 95%CI (1.72-9.27)].

Variable	Depression		COR (95%CI)	AOR (95%CI)
	Yes	No		
Sex				
Female	80(45.2%)	97(54.8%)	2.07(1.306-3.285)	**2.43(1.27-4.64)***
Male	43(28.5%)	108(71.5%)	1.00	1.00
Average monthly Income				
≤500	44(50%)	44(50%)	5.33(2.53-11.23)	**4.07(1.65-10.04)**
501-1000	31(41.3%)	44 (58.7%)	3.76(1.74-8.11)	**3.62(1.44-9.09)***
1001-1500	17(43.6%)	22 (56.4%)	4.12(1.70-9.97)	**3.25(1.11-9.51)***
1501-2000	19(38.0%)	31(62.0%)	3.27(1.41-7.58)	**2.90(1.02-8.27)***
≥2000	12(15.8%)	64(84.2%)	1.00	1.00

Table 3: Binary and multivariable Logistic regression analysis of factors associated with depression among PLWHA at Gurage zone selected government Hospitals, SNNPR, Ethi, 2018

Duration of ART(in months)				
≤ 6 months	35(56.5%)	27(43.5%)	2.62(1.49-4.61)	**2.95(1.42-6.04)***
>6 months	88(33.1%)	178(66.9%)	1.00	1.00
HHART interruption				
Yes	22 (66.7%)	11 (33.3%)	3.84 (1.79-8.24)	**3.43(1.17-10.04)***
No	101(34.2%)	194 (65.8%)	1.00	1.00
Internally stigmatized				
Yes	66(62.3%)	40(37.7%)	4.78(2.91-7.84)	**4.16(2.21-7.84)*****
NO	57(25.7%)	165(74.3%)	1.00	1.00
social support				
Low social support	44(62.0%)	27(38.0%)	3.67(2.12-6.35)	**4.00(1.72-9.27)****
High social support	79(30.7%)	178(69.3%)	1.00	1.00

*p-value<0.05, **p-value<0.001 and ***p-value<0.000

4. Discussion

4.1.Prevalence of Depression

The prevalence of depression in this study was 37.5%. This finding was relatively comparable with study reported from Alert hospital AA, Ethiopia, Teaching Hospital in Imo State, South East Nigeria and Debrebirhan Referral Hospital, North Showa Ethiopia in which prevalence of depression among PLWHA were 41.2%,39.1% and 38.94% respectively [3.12.14].

This prevalence was lower than the studies conducted at Zewditu Memorial Hospital, AA, Ethiopia, Harar Town, Eastern Ethiopia and Metu Karli Hospital, South West, Ethiopia and Tigray, North Ethiopia that shows the prevalence of depression were 44%, 43.9% 45.8% and 48% respectively [15,17,19]. This result was also lower than findings reported from studies done at Yaoundé, Cameroon, Guru Teg Bahadur Hospital in Delhi Indiaand Khartoum Hospital, Sudan shows that the prevalence of depression were 63%, 58.75%and 63.1 % respectively [13,20,21]. The variation might be due to the change and modification of management protocol. Currently there is a great modification and changes have been done regarding to HIV/AIDS screening, diagnosis and management protocol. In addition to this currently better attention has been given for PLWHA patients regarding to covering the range of services needed, covering the populations in need of services and covering the costs of services and accessibility of the infrastructures which leads to decrement of the prevalence of depression among PLWHA.
But this prevalence was higher than the study conducted at Debre Markos Town North West Ethiopia that shows the prevalence of depression were 11.7% [2].The variation might be occured due tothe study conducted at Debre Markos Town North West Ethiopia was community based but this study was institutional based so even if the population were the same the study settings were differs. This result was also higher than findings reported from studies doneat Yangon region, Myanmar, Southwest Regional Hospitals of Cameroon, at Korean university hospitals, Entebbe district, Uganda and University of Nigeria Teaching Hospital, Ituku-Ozalla, Enugu, Southeast Nigeria shows that the prevalence of depression were 30.12%, 26.7%, 21%, 8.1% and 23.1% respectively [5,22,23]. This variation might be occurred due to differ in tools, sampling technique, sample size and socioeconomic characteristics. The studies which were conducted at Korean university hospitals and at University of Nigeria Teaching Hospital, Ituku-Ozalla, Enugu, Southeast Nigeriaused the difference tools that wre the Beck Depression Inventory (BDI) with a 21-item tool with scores of ≥21 and Hospital Anxiety and Depression Scale (HADS) with a 7-item tool with scores of ≥11 indicating depression and used small sample size only 82 and 122 HIV-infected patients respectively with convenient (non-probability sampling techniques). But this study had 340 study participants and it used PHQ-9 items tool with score of ≥5 indicating depression.

4.2. Factors associated with depression among HIV/AIDS Patients

In this study females were ststically significance with depression.Females were 2 times more likely to develop depression than males This was similar with studies conducted at Debrebirhan Referral Hospital, Ethiopia, Entebbe district, Uganda and Olabisi Onabanjo University Teaching Hospital, Sagamu, Nigeria [14,23,24]. The reason why females were more depressed than males might be due to biological (females have strong genetic predisposition and more subjected to fluctuating hormone), psychological (more ruminative and more invested in relationship) and sociocultural (more stressful) variation. But this result was contradicted with other study which was conducted at Harar Town, Eastern Ethiopia[16]. This difference might be occurred due to sociocultural difference.

Those with income less than 500 birr were 4 times, income between 501-1000 birr were 3.61 times, income between 1001-1500 birr were 3.25 and income between 1501-2000 birr were 2.90 times more likely to suffer from depression than those with income≥2000 birr. This finding was consistent with studies conducted at Debrebirhan Referral Hospital, North Showa Ethiopia, Harar Town, Eastern Ethiopia, Tigray, North Ethiopia and Guru Teg Bahadur Hospital in Delhi, India [14,16,19].The possible explanation for this might be PLWHA who have low income cannot easily fulfill their needs, have difficult to get balanced diet and to cover health expense. In addition to their disease status, financial hardship leading to psychological distress and frustration, so they might easily develop depression.

Duration of ART was highly significant with depression. Those patients who had duration of ART ≤6 months were3 times more likely to develop depression than patients who had duration of ART >6 months This finding is similar with studies conducted at Guru Teg Bahadur Hospital in Delhi, India (20). The reason might be PLWHA who started ART might be worry to adapt ART and face different adverse effects with in the first 6 months and this might be leads to depression.

ART interruption was highly significant with depression. Patients who had not taken their ART properly were 3 times more likely to develop depression than patients who interrupt their ART. The possible explanation might be as PLWHA interrupt the ART, there might be increment of diseases progression, probability of occurrence of opportunistic infections and burden.

Internalized stigma was highly and positively significant with depression. patients who were internally stigmatized were 4 times more likely to develop depression than patients who were not internally stigmatized.This finding was consistent with studies done at Debre Markos Town Northwest Ethiopia, Alert hospital Addis Ababa, at Debrebirhan Referral Hospital, North Showa Ethiopia, Zewditu Memorial Hospital, AA, Ethiopia, Harar Town, Eastern Ethiopia and Metu Karli Hospital, South West, Ethiopia [2,3,14-17].This might be occurred as PLWHA were internally stigmatized, they fear and frustrate about gossip from others and decrease their social network.

Social support was highly significant with depression. Those patients who had low social support were 4 times more likely to develop depression than patients who had high social support. This was similar with studies conducted at Debre Markos Town Northwest Ethiopia, Alert hospital Addis Ababa, Ethiopia, Metu Karli Hospital, South West, Ethiopia and Guru Teg Bahadur Hospital in Delhi, India [2,3,17,20].This might be occurred due to social support were significantly influenced the mental health status of the respondents. When PLWHA got high social support, the probability of developing depression was less likely because they might be more confidential, free from psychosocial distress, resulting in a better quality of life.

Generally, the study assessed the prevalence of depression among PLWHA and identified its associated factors and it can be an input for health institutions to give an integrated HIV/AIDS treatment with depression management for PLWHA. In the future the researcher should conduct a prospective study in which depressed patients are followed to determine whether they are subsequently depressed or not.

5. Strengths and Limitations

5.1. Strengths;

variables were assessed to identify factors associated to depression among PLWHA and new varibables were assessed and Standard and valid questionnaires used in other studies was adopted and adapted for the study.

5.2. Limitations;

The study did not include PLWHA who were attending at health centers and private health institutions and who did not visit any health institutions and the study was cross-sectional, it did not show the real cause-effect relationship.

6. Conclusion and Recommendations

6.1. Conclusion

The prevalence of depression among PLWHA who were attending at Gurage zone selected government Hospitals, southwest, SNNPR, Ethiopia, 2018 were 37.5%. Sex, monthly income, internalized stigma, social support, duration of HAART and HAART interruption were significantly associated with depression among HIV/AIDS patients.

6.2. Recommendations

Based on this finding the following recommendations were forwarded;

- **To Gurage Zone health beaureau:** The Zone health beaureau should link those PLWHA with different governmental, NGO or any other supportive groups to get economical support, social support, training related to stigmatization and for other care
- **To Gurage zone government Hospitals:** Those health care provider should give special consideration for PLWHA; who are females, have low monthly income, are internally stigmatized, have lower social support, with in the first 6 month of ART duration and who did not taken their ART properly. There should be proper routine psychiatric screening.
- **To Ministry of Health:** MOH should support PLWHA by supporting economically and by giving training regarding to stigmatization and ART addherance.
- **Nursing practice**: Nurses should connect PLWHA with different Governmental and non Non-governmental organizations to get economical and social support. Nurses should alsogive training and health education for PLWHA and their family, particularly by giving emphasis on how to recognize depression, how to help the clients and how to report them.
- **To researcher:** Further research that might include private health institutions and health centers to solve the problems of HIV/AIDS comorbidity with depression. In addition to this prospective study should be conducted about deprehealthssion among PLWHA.

Abbreviations and Acronyms

AAU	Addis Ababa University
AOR	Adjusted Odds Ratio
ART	Anti-Retro Viral Therapy
BSC	Bachelor of Science
COR	Crude Odds Ratio
CI	Confidence Interval
CSA	Central Statistical Agency
EDHS	Ethiopia Demographic Health Survey
ETB	Ethiopian Birr
IHRERC	Institutional Health Research and Ethical Committee
HAART	Highly Active Anti-Retro Viral Therapy
HIV	Human Immunodeficiency Virus
PHQ	Patients Health Questionnaires
PLWHA	People Living With HIV/AIDS
SNNPR	South Nations, Nationalities and Peoples' Region
SPSS	Statistical Package for Social Sciences
SRS	Simple Random Sampling
SSA	Sub-Saharan Africa
SSQ	Social Support Questionnaires

UNAIDS	United Nations Programme on Human Immune Deficiency Virus
WHO	World Health Organization

Computing Interest and Funding

Funding for this study was made possible through grants offered by Addis Ababa University post graduate office. The authors declare that there is no competing interests.

Acknowledgment

Firstly We would like to say thanks to AAU, College of health Science, School of Nursing and midwifery, Department of Nursing and Midwifery and Wolkite University for providing fund to conduct this thesis.

Finally, our grateful appreciation extends for Gurage Zone Health office, Butajira General Hospiatal and Gunchire PrimaryHoaspital staffs and for the study participants.

Ethics approval and consent to participat

The ethical clearance was obtained from Addis Ababa University Institution Research Board. Letter was submitted to Gurage zone health office, Butajira general Hospital and Gunchire primary Hospital and then permission was obtained from those bodies. Prior to interview; all participants recruited to the study were receive written informed consent about the study. Respondents were insured about the confidentiality of information obtained and the respondents did not ask to tell their names.

Authors'contributions

Haile Workye conceived the study and developed the study design, analysis, report writing and drafted the manuscript. Berhanu Wordofa and Teshome Habte were involved in reviewing the study design,analysis and the manuscript . All authors read and approved the final manuscript.

References

[1]. World Health Organization,Depression and Other Common Mental Disorders 2017.

[2]. Salilih GDKaSZ. - Prevalence and Associated Factors of Depression among HIV Infected Patients in Debre Markos Town Northwest Ethiopia. International Journal of Emergency Mental Health and Human Resilience. 2015;17(4):714-6.

[3]. Tesfaw Getachew AG, Ayele Tadesse, Assefa Dawit, Birhanu Zelalem, Miheretie Getenet ,Abebe Genet. Prevalence and correlates of depression and anxiety among patients with HIV on-follow up at Alert Hospital, Addis Ababa, Ethiopia2016.

[4]. Jeffrey A. Ciesla MAJER, Ph.D. Meta-analysis of the relationship between HIV infection and risk for depressive disorders. American Journal of Psychiatry. 2011;158(5):725-30.

[5]. Thandar M BS, Khaing CT, Laohasiriwong W. . Prevalence of depression and its associated factors among PLHIVs attending the Public ART centers, Yangon region, Myanmar. . Ann Trop Med Public Health. 2016;10(1):216-21.

[6]. Ngu PANPNFRC. Depression Among HIV/AIDS Patients on Highly Active Antiretroviral Therapy in the Southwest,Regional Hospitals of Cameroon: A Cross Sectional Study. Neurol Ther 2017;6:103-14. America psychiatric association. 2016.

[7]. Bhatia MS, Munjal S. Prevalence of Depression in People Living with HIV/AIDS Undergoing ART and Factors Associated with it. Journal of Clinical and Diagnostic Research : JCDR. 2014;8(10):WC01-WC4.

[8].S. K. Depression and coping mechanism among HIV/AIDS patients under anti-retroviral therapy. Indian J SocPsychiatry 2016.

[9]. Kee M-K, Lee S-Y, Kim N-Y, Lee J-S, Kim JM, Choi JY, et al. Anxiety and depressive symptoms among patients infected with human immunodeficiency virus in South Korea. AIDS care. 2015;27(9):1174-82.

[10]. Olagunju AT, Ogundipe OA, Erinfolami AR, Akinbode AA, Adeyemi JD. Toward the integration of comprehensive mental health services in HIV care: an assessment of psychiatric morbidity among HIV-positive individuals in sub-Saharan Africa. AIDS care. 2013;25(9):1193-8.

[11]. M. Aguocha C, U. Uwakwe, Richard,B. Duru, Chukwuma,C. Diwe, Kelvin,K. Aguocha, Justine,O. Enwere, Okezie,O. Olose, Emmanuel. Prevalence and Socio-demographic Determinants of Depression among Patients Attending HIV/AIDS Clinic in a Teaching Hospital in Imo State, Nigeria. American Journal of Medical Sciences and Medicine. 2015;3(6):106-12.

[12]. L'akoa RM, Noubiap JJN, Fang Y, Ntone FE, Kuaban C. Prevalence and correlates of depressive symptoms in HIV-positive patients: a cross-sectional study among newly diagnosed patients in Yaoundé, Cameroon. BMC Psychiatry. 2013;13(1):228.

[13]. Eshetu DA, Meseret S, Kebede MA, Techane GN, Gizachew KD, Tegegne MT, et al. Prevalence of depression and associated factors among HIV/AIDS Patients attending ART Clinic at Debrebirhan referral hospital, North Showa, Amhara Region, Ethiopia. Clinical Psychiatry. 2015;1(1).

[14].Gebremariam EH, Reta MM, Nasir Z, Amdie FZ. Prevalence and Associated Factors of Suicidal Ideation and Attempt among People Living with HIV/AIDS at Zewditu Memorial Hospital, Addis Ababa, Ethiopia: A Cross-Sectional Study. Psychiatry Journal. 2017;2017:2301524.

[15]. Mohammed M MB, Dessie Y, Godana W Prevalence of Depression and Associated Factors among HIV Patients SeekingTreatments in ART Clinics at Harar Town, Eastern Ethiopia. . Jornal of AIDS & Clinical Research 2015;6(6).

[16]. Geremew Tolessa Dugul FB, Melese Workneh. Depression and Associated Factors Among Adult People Living with HIV/AIDS Attending Metu Karli Hospital Iluababor Zone, South West Ethiopia. . Indo American Journal of Pharmaceutical Research. 2016;6(12).

[17]. Kessler rc cW, Demler o, merikangas Kr,, ee W. national institute of mental Health available online,nhttp://niaid.nih.gov. 2011.

[18]. Bayray HBaA. PREVALENCE OF DEPRESSION AND ASSOCIATED FACTORS AMONG PEOPLE LIVING WITH HIV/AIDS IN TIGRAY,NORTH ETHIOPIA: A CROSS SECTIONAL HOSPITAL BASED STUDY. IJPSR. 2013; 4 (2):761-71.

[19]. Bhatia MS, Munjal, Sahil. Prevalence of Depression in People Living with HIV/AIDS Undergoing ART and Factors Associated with it. Journal of Clinical and Diagnostic Research : JCDR. 2014;8(10):WC01-WC4.
[20]. Abdulateef Elbadawi HM. Depression among HIV/AIDS Sudanese patients: a cross-sectional study The Pan African Medical Journal. 2017;26(43).

[21]. Joon Young Song JSL, Yu Bin Seo, In Seon Kim, Ji Youn Noh, Ji Hyeon Baek,Hee Jin Cheong, and Woo Joo Kim. Depression Among HIV-infected Patients in Korea:Assessment of Clinical Significance and Risk Factors. InfectIion and Chemotherapy 2013;45(2):211-6.

[22]. Kinyanda E, Nakku, Juliet,Nawaz, Saira,Hoskins, Susan,Patel, Vikram. Prevalence and risk factors of major depressive disorder in HIV/AIDS as seen in semi-urban Entebbe district, Uganda. BMC psychiatry. 2011;11(1):205.

[23]. Obadeji A OA, Adebowale TO. . Prevalence and predictors of depression in people living with HIV/AIDS attending an outpatient clinic in Nigeria. . Iran Psychiatry Behave Sci. 2014; 8(1):26-31.