Magnitude of Depression on HIV Patients and Associated Factors in Robe District Health facility, Arsi Zone, Oromia Regional State, Ethiopia

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ABSTRACT

Introduction: Depression is becoming major health problem among HIV patients. HIV/AIDS and depression are projected to be the world's two leading cause of disability by the year 2030.

Objectives: To assess the magnitude of depression and associated factors on ART patients at Robe health center and Robe didea general hospital.

Methods: Health facility based cross-sectional study was conducted. Systematic random sampling technique was used. The number of sample size for this study was 421.The collected data was entered in to EPI INFO Version -7 and then, exported, cleaned and analyzed using SPSS version 22. Data analysis technique such as descriptive and summary was used to present the finding. Association between dependent & independent variables was computed by using logistic regression model at 0.05 level of significance and odds ratio to measure the strength of association with 95 % CI.

Result: The magnitude of the depression in our study is 24.2 %. Female were more likely [AOR(95% CI):3.65(1.82,7.43)] to develop depression compared to male, those with clinical stage III patients were more likely to develop depression [AOR(95% CI): 8.87, (1.689, 46.95)] than clinical stage I, those who live alone were more likely to develop depression [AOR(95% CI): 2.3 (1.09, 5.51)], than those who live with family and those with CD4 count < 200 were more likely to develop depression [AOR(95% CI): 4.5 (2.15, 9.64)] than with CD4 count >400.

Conclusions: Depression is high among people living on ART. Socio demographic factors like sex, living alone and HIV related factors like CD4 count, HIV clinical stage were show significant association with depression among HIV positive patients. Improving chronic HIV care like early CD4 count and early treatment is recommended.

Key word: Depression, HIV, ART, Arsi Robe

1 INTRODUCTION

HIV is one of the biggest health crisis the world faces today. close to two - third of people living with HIV (PLWHIV) are living in sub-Saharan countries (WHO, 2012).

Depression is emerging as highly prevalent psychiatiric condition among people living with HIV/ patients .The prevalence of depression has been reported as high as 50% among HIV positive population (Chandra D, BMC, 2003) . People living with HIV/AIDS are two to four times at more risk of developing depression than people of HIV/ Negative population(Ciesla, Morrion .M, 2002) . Depressiion has wide range of negative health effects on

lives of PLWHA and on effient treatment and prevention of HIV infection. The PLWHA with depression have increased risk HIV disease progression .The depression also contributes to the non-adherent to anti-retroviral treatment (ART) (Lesserman J.2008) .

They are also less likely to follow the advice of health care provides. They also dare to engage in high risk sexual practice and also may develop suicide idea . in another way depressed HIV patients may loss many due to high amount expenditure of health cost. They also have poorer health related quality of life when compared to their non-depressed counters (Olley Bo, 2016).

Number of factors predispose PLWHA at risk of depression, such risk factors include higher HIV symptom burden, stress full life events ,current alcohol abuse and dependence ,current drug use. Likewise varieties of factors are also correlated with depression among PLWHA. Such factors include stigma, living alone, and lack of social support, having law income and high viral load or law CD4 count (Asch SM, 2013).

HIV and depression are projected to be the world's two leading cause of disability by the year 2030. Reports on the actual prevalence of depression on HIV infected person have varied widely from 22% to 71%. In Ethiopia studies were done on prevalence of depression on HIV infected people at Debra birhan Referral hospital ,Aksum town,Dilla town, Harer town and Debra Markos university (Chandra PS, 2003). In these studies the prevalence of depression in HIV infected person ranges from 11.2 to 38.94 . The current study was designed to know the magnitude of depression on ART patients and associated factors in Robe health center

and Robe Didea general hospital, which may indicate the prevalence of depression on ART patients and associated factors in Arsi zone.

1.2 Statement of the problem .

Depression is the most psychiatric disorder among HIV positive individuals especially anxiety disorder is frequently seen as comorbidity in people with HIV. Neuropsychiatric disorders such as depression, anxiety, and somatoform disorder account for 9.8% of the global burden of disease .The world health organization (WHO) estimates depression to be the leading cause of disability adjusted life years, contributing about 12% of all disabilities. Worldwide 33 million people are currently living with HIV .In 2009, there were an estimated 2.6 million new HIV infections and 1.8 million death due to AIDS (Morrison M, 2002).

Depression on other hand affects 121 million people globally (Ciesla JA, 2011). Numerous studies have been conducted with widely varying samples and measures to determine the prevalence of depression. Studies both from low and high in come countries show that depressive symptoms are frequently seen in HIV-positive person than in HIV negative persons. For example the prevalence of depression among HIV/AIDS patients ranges from 12% in south India to 54.4% in Italy .in Brazil it is 29.4% (Lesserman J, 2008). And in USA it is 37%. (6). In Africa countries it is also high .for example in south Africa it is 25.4 % (10).In Uganda and Botswana the prevalence of depression 0n ART patients is 8.1% and 28% respectively. Study in Nigerian university teaching hospital showed among 310 HIV-infected participants assessed for depression 14.2% had current depressive disorder (Morrison M, 2002).Another study from yaonde Cameroon among HIV infected patients showed that 63% of the study population had

depressive symptoms, most of them having symptoms corresponding to moderate depression (46% of the entire sample and 73% of the depressed (Asch. SM, 2013). In Ethiopia the prevalence of depression ranges from 11.2% to 38.9% (Chandra D, BMC, 2003) . The study done in different countries shows that the contributing factors for the high prevalence of depression in HIV positive patients than HIV negative patients are stigma and discrimination, low positive social support, low income and high viral load or low CD4. This study was designed to know the magnitude of depression on HIV positive patients who took ART and associated factors in Robe Health center and Robe Didea hospital which may indicate the prevalence of depression on HIV positive patients who took ART and associated factors in Arsi zone.

1.3. Justification of Studies

HIV the virus that causes AIDS is one of the world's most serious health and developmental challenges. Even though so many efforts has been done and so many resource has been wasted to decrease HIV transmission, there is still rapid increase of HIV infection (Dessalegn A, Eshetu S, et al., 2013) In Ethiopia since 1994 there has been coordinated effort to halt HIV transmission .from time to time there is improved effort of patient screening, diagnosis and treatment. Regardless of these efforts there is still high HIV transmission, poor adherence to treatment .As stated on many literatures one of neglected health problem of ART patient is depression. So that to decrease the transmission of HIV and to control its rapid expansion, as well as to reduce resistance to HAART high quality research is mandatory globally, nationally and locally. The finding of the study will serve as clinical reference to HIV care provider who may use the findings to offer

comprehensive clinical care for their patients. Since little is known about the prevalence of depression and the factors associated with depression in a population of PLWHA in Ethiopia, this study could serve as a foundation for future public health area, thus deepening the understanding of issue.

4.METHODS

4.1. Study area

The study area was Arsi robe district, which is 100km at south east, away from Assela town which is capital town of Arsi Zone. It is 275 km at south east, away from Addis Ababa. According to the 2007 GC Ethiopian census report, Arsi robe has a total population of 168,200 but now the woredas population is estimated to 234780 by projection and 51039 households. The district has 28 rural Kebeles and six Urban Administrative kebeles. Arsi robe has also dega and Wayne dega climate condition. This district also known by production of wheat,teff,bean and other food productions. Arsi robe district has one zonal hospital, six health centers and 28 health posts. Among these health facilities two of them are providing ART service (Robe health center and Robe Didea general hospitals) .In these two health facilities there are eight hundred patients, (three hundred seventy in Robe health center and four hundred thirty in Robe Didea general hospitals. The health coverage of the district is almost estimate to 85%. Even though the health coverage of the district is better, there is many obstacles to delivery better health service to community, like poor quality service due to low skill of health professions, absence of some medical equipment, low coverage of community based health insurance, failure to avail drugs on time and poor leader ship at health facility.

4.2 Study design and period

Health facility based cross-sectional study design, with quantitative method was conducted at Robe Health center and Robe Didea general hospitals, in Arsi robe Woreda, Oromia region, Ethiopia from august 26 to September 12, 2019

4.3. Source and Study population

4.3.1 Source population

All HIV positive patients who take ART, attending Robe health center and Robe didea general hospital at Arsi robe town

4.3.2. Study population

Systematically, selected HIV positive patients who took ART in Robe Health center and Robe Didea general hospitals

Inclusion criteria: - All ART patients and not critically ill.

Exclusion criteria: All ART patients who took ART for less than one month.

4.4. Sample size and sampling procedures

4.4.1. Sample size determination

Sample size for the first objective was determined using a single population proportion formula by considering 50% prevalence of depression on ART patients which may include all of them, with 95% level of confidence and 5% margin of error and finally it comes__384 individuals. And by adding 10% non-respondent rate it comes 422.

The sample size of the general objective is large and can cover objective of our study, we can use the sample size which is calculated from prevalence of depression on ART patients. So the sample size of our study will be 422.

4.4.2. Sampling procedure

Systematic random Sampling procedure was used to reach the study participants. 421, HIV positive individuals was selected by using systematic random sampling procedure among 800 HIV positive individuals who are getting chronic care (on ART) service at Robe health center and Robe Didea hospital. We included every two interval from patients follow

4.5 Variables of the study

4.5.1 Dependent variable

Prevalence of depression on ART patients

4.5.2. Independent variables

Socio demographic factors: Sex, Age, Ethnicity, Religion, Marital status, Educational status, Occupation and Monthly income.

Medical factors: Viral load, CD4 level, HIV clinical stage, and opportunistic infection.

Health Promotion factors: like, early testing, early initiation of treatment, good adherence support and follow advice of health workers

Personal factors: felt stigmatized, Living alone, Substance use, excessive alcohol consumption.

4.6. Operational definitions

Patients who has depression is assessed by using PHQ -9 (patient health questionnaire-9) tools are used to screen patients. This PHQ are scored out of 27.

Patients who score 1-4 has no depression
Patients who score 5-9 has mild depression
Patients who score 10-14 has moderate depression
Patients who score 15-19 has moderately severe depression
Patients who score 20-27 has severe depression (Asch 2003).

Practice

Any patients who are screened by PHQ-9 and score more than or equal to 5 are labeled as having depression and those who score less than 5 are labeled as not having depression.

4.7. Data collection tools and procedures

Data was collected using structured and pre tested questionnaire on socio demographic characteristics, HIV disclosure, social support, Income and level of CD4 count. Standard structured questionnaire which was modified for this study used for recording the responses of interviewee. One supervisor from BSC nurse, who is ART focal person and four clinical nurses was participate in data collection processes .Training for data collectors and supervisor was given for one day by investigator. The questionnaire was pre tested to identify potential problem of the questionnaires, unanticipated interpretations and cultural objection to any question in 5% (21 respondents) at Ticho health center which has similar characteristics with the study participants. Based on the pretest result, the questionnaire was additionally adjusted contextually and terminologically. To minimize recall bias data collectors used 2 weeks recall period for PHQ-

9. This two weeks of period was the last two weeks from start of interview for every patients. This was to help patients to remember their felling.

4.8. Data quality assurance

The questionnaire was prepared originally in English and translated to Afan Oromo and back to English by language experts to keep the consistency of the questions. Training of data collectors and supervisor was given for one day by investigator. Pre testing of questionnaire on 21 ART patients at Ticho health center was done. Checking on spot and double data entry on EPI INFO-7 done to ensure completeness and consistency of the information collected.

4.8. Data processing and analysis

Data was entered, cleaned and edited using EPI INFO version-7 statistical software and then exported to SPSS Version 21 for further analysis. Descriptive statistics of the collected data was done for most variables in the study using statistical measurements. Frequency tables, graph, percentages, means and standard deviation was used .Bi variable logistic regression analysis was conducted primarily to check which variable have association with the dependent variable individually.Hosmor lemoshow goodness of- fit statistics is used to assess whether the necessary assumptions for the application logistic regression is full filled. Variable found to have association with the dependent variable at 0.2 probability will be entered in to multiple logistic regression for controlling the possible effect of confounders and finally the variables which have significant association will be identified on the basis of OR, with 95%CI and 0.05 p-value to fit in to the final model.

4.9. Ethical considerations

The study was carried out after getting permission from the ethical review board of school of public health, Arsi University. Then an informed consent will obtained from each responsible institution and study participants to participate in the study. Those individuals who refuse to participate in the study will not be forced. Each respondent was informed about the objective of the study. Confidentiality was granted for information collected by keeping the privacy of respondents while filling the questionnaire. Those individuals who has sign and symptom of depression will be treated accordingly.

5 RESULTS

5.1 Socio demographic characteristics of the Respondents.

From the total of 421 ART patients 401 were included in analysis making the response rate 96%, of which majority 195 (48.6%) of the respondents were between sixteen to thirty one years , followed by those between thirty two to fourteen seven years old and 251 (62.6%) are females whereas 150 (37.7 %) males. When we see ethnicity 253 (63.1%) are Oromo whereas 66 (16.5%) are Amara, 12 (3%) are Tigre and 68 (17%) are gurage, silte and sumale. More than half of respondent 214 (53.4%) were orthodox Christians and 140 (34.9%) are Muslims and 46 (11.5%) are protestant. Among 401 respondents one hundred thirty five (33.7%) can't read and write, seven two (18%) can read and write, sixty eight (17%) complete primary school, one hundred five (26.2%) completed secondary school. and twenty (5%) have diploma and above as indicated in Table 1

Table 3: Socio-demographic characteristic of ART patients attending ART clinic at Robe District Arsi zone Ethiopia, 2019, N=421

Variable	Category	frequency	Percent (%)
Sex	M	150	37.7
	F	251	62.6
Ethnicity	Oromo	253	63.1
	Amara	66	16.5
	Tigre	1	0.2
	Other	81	20.2
Religion	Muslim	140	34.9
	Orthodox	214	53.4
	Protestant	46	11.5
	Other	1	0.2
Marital status	single	76	19
	married	231	57.6
	Divorced	49	12.2
	Widowed	45	11.2
Educational status	Can't read and write	135	33.7
	Read and write	72	18
	Primary school	68	17
	Secondary school	105	26.2
	Diploma and above	20	5
Job	Government employ	25	6.2
	merchant	105	26.2
	Daily lab our	84	20.9
	H/wife	66	16.5
	other	121	30.2
Income	450-1450	324	80.8
	1451-2450	56	14
	2451-3450	14	3.5
	3450	7	1.7
Age	16-31	195	48.6
	32-47	136	33.9
	48-63	68	17
	64-79	2	0.5

5.2: Medical characteristics of HIV patient on ART at Robe district health facility.

Among four hundred twenty one, majority of respondents have CD4 count one hundred fourteen five (362%). Two hundred eight one (70.1%) of the respondents have viral load less than 1000 copies/mm3.Finally two hundred six respondents (51.4%) have HIV clinical stage TI. Regarding opportunistic infection three hundred seventy one (92.8%) have no opportunistic infection and twenty nine (7.2%) developed opportunistic infection.

Table 4; Medical characteristics of HIV patient on ART at Robe district health facility Arsi, Ethiopia

Factors		**frequency**	**%**
CD4	<200	34	8.5
	201-300	128	31.9
	301-400	145	36.2
	>401	94	23.4
Viral load		**frequency**	**%**
	<1000/mm3	281	70.1
	>1000/mm3	120	29.9
TI		206	51.4
TII		174	43.4
TIII		21	5.2
Opportunistic infection	yes	29	7.2
	no	371	92.8

5.3: Personal and behavioral factors of HIV positive patients on ART at Robe district health facility.

When we see personal factors 63 (15.7%) of respondents were live alone, due to this, 18% of them use substance with ART drug. More over 2.7% drink alcohol others are presented in table below (Table 5).

Table 5: Personal and behavioral factors of HIV positive patients on ART at Robe district health facility Arsi, Ethiopia.

S/N	Variable		frequency	%
	With whom do you live	Alone	63	15.7
		With family	333	83.1
		With friends	5	1.2
	Do you use substance	Yes	72	18
		No	329	82
	Do you feel stigmatized	Yes	32	8
		No	369	92
	Do you use excessive alcohol	Yes	11	2.7
		No	389	97.3

5.4: Health promotion factors of HIV positive patient who are on ART at Robe district health facility.

Regarding health promotion, among four hundred twenty one two hundred twenty one (55.9%) respondents were diagnosed early and two hundred seventy eighty (69.2%) had started treatment early. On the other hand three hundred fifty (87.3%) respondents follow advice of health care workers. While three hundred fourteen eight (86.8%) respondents take their treatment appropriately.

Table 6: Health promotion factors of HIV positive patient who are on ART at Robe district health facility Arsi, Ethiopia

S/N	Variable		Frequency	%
1	Do you diagnosed early	yes	221	55.9
		No	179	45.1
2	Do you start treatment early	yes	278	69.2
		No	123	30.8
3	Do you follow advice of health workers	yes	350	87.3
		No	48	12.7
4	Do you take treatment appropriately	yes	348	86.8
		no	53	13.2

5.5. Prevalence of Depression

During the study the sampling shows the prevalence of the depression in our study is 24.2 %.This study result is range of the study done in Debra markos and Dera birhan which was between 11.7% and 38.9% as it is shown by graph below.

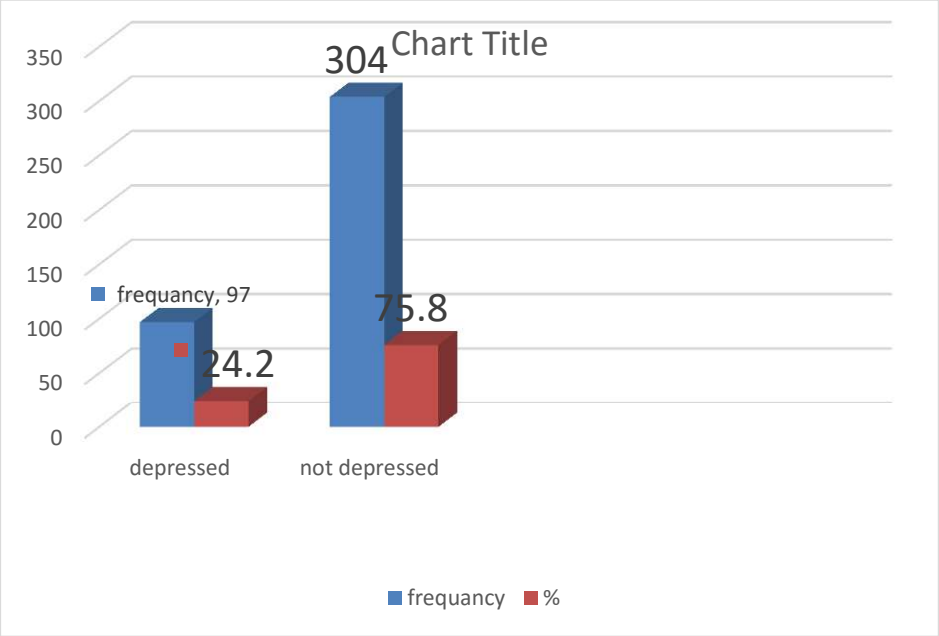

Figure 2. Prevalence of depression Among ART patients in Robe District health facility, Arsi Ethiopia October 2019

5.6. Factors associated with depression

By using bivariate logistic regression analysis factors like sex, living alone, presence of opportunistic infection feeling stigmatize, alcohol consumption and taking treatment appropriately have association with depression. When we see sex being female is more likely to develop depression by3.2 (1.817, 7.43 with 95% CI at p-value 0.001 (3.2 times than male).Those who live alone develop depression more likely by 7.85 (AOR=7.85 (3.915, 15.74)) with 95% CI at p-value 0.00 than those who live with others. Regarding

opportunistic infection those who had opportunistic infection develop depression more likely by 3.2 (AOR=3.2(1.50, 6.98)) with 95% CI at p-value 0.003 than those without opportunistic infection. On other hand those who feel stigmatized develop depression more likely by 4 (AOR=4(1.92, 8.42 with 95% CI at p-value 0.00 than those who didn't feel stigmatize. Those who consume alcohol develops depression more likely by 9(AOR=9 (2.33, 34.6)) with 95% CI at p-value 0.001 times than those who didn't consume alcohol. Taking ART drug appropriately more likely decrees depression by 0.67 (AOR=0.67 (0.355, 1.28)) with 95% CI at p-value 0.228 than those who didn't take ART drug appropriately. Those who have CD4 count <200 develop depression by 4.55 (AOR =4.55 (2.15, 9.63)) 95% CI at p-value 0.00 than those whose CD4 count are >400 on. When we see HIV clinical stage those who are on clinical stage I can decrease depression by 0.017 (AOR=0.017 (0.004, 0.078)) with 95% CI at p-value 0.00.

Table 7: Factors associated with depression among HIV positive patient taking ART from Robe District health facility Arsi Zone, Ethiopia, 2019

S/N	Variables		Depression Yes	No	COR 95% CI	AOR(95% CI)	P-value
1	sex	F	79	172	3.2(1.48,6.74)	**3.65(1.82,7.1)***	0.001
		M	19	131		1.	
2	Living alone	Yes	27	14	7.9(3.9,15.74)	**2.3(1.0,5.5)***	0.06
		No	71	289		1	
3	Opportunistic infection	Yes	14	15	3.24(1.5,6.9)	0.4(0.3, 2.5)	0.67
		No	83	288			
4	Stigmatized	Yes	17	15	4.0(1.93,8.42)		0.00
		No	81	288			
5	Do you use alcohol	Yes	8	3	8.9(2.34,34.6)		0.001
		No	89	300			
6	Do you take drug appropriately	Yes	82	266	0.67(0.34,1.3)		0.228
		No	16	35			
7	<200 CD4	29	5	48.72	(15.34,154.4)	**4.6(2.2,9.6)***	**0.001**
						1	
	201-300	45	83	4.554	(2.153,9.635)		0.00
	301-400	14	131	0.898	(0.381,2.14)		
	>400	10	84				
8	TI	29	177	0.017	0.004,0.078	**8.87(1.7, 46.5)***	0.00
	TII	50	124	0.042	0.01,0.189		
	TIII	19	2	9.5			

6: DISCUSSION

The prevalence of depression was assessed using PHQ-9.The scale constitutes a total score of 27.A score 0-4 was considered as no depression and the score = or > 5 was considered as having depression. Multiple logistic regression were used to decrease the risk of confounders, like socio demographic status, CD4 status, Clinical stage, substance use, and perceived stigma. Based on this cut point the prevalence of depression among ART patients who are at Robe health center and Robe didea general hospital was 24.4% with 95% CI (20.4, 28.9). This study result is much larger than the result of the study done in Debre Markos University and Aksum University which was 11.7 and 14.6 respectively. It is also larger than finding of the study done in India which was 12%, Uganda 8.1% (Joyce G, 2005). It is relatively low when compared to the Alert hospital Addis abebe which was 41.2%, in Debre Birhan university which was 38.9% (Chandra PS, 2003), in Harer it was 45.8% (Charlis B BMC,2012),in Botswana 28% (Pappin M,BMC, 2012), Peru 32%,USA 37% (WHO,2012), Italy 54.4% (Morrison M, 2002). However it is in line with the study which was done in south Africa 25.4% (Joyce G, Pubmed, 2006),and in Brazil which was 29.4%(Olley Bo,2006) . The reason for this discrepancy might be attributable to several factors like population being studied, the study periods, the depression diagnostic tools difference, and the sample size and study design used. The association between these factors and depression were tested from socio demographic characteristics. Being female, clinical stage, living alone and CD4 number has significant association with depression. Male to female ratio of depression was found to be 3.675 (AOR=3.657 (1.817, 7.43)) with 95% CI at p-value 0.001.This finding is to some extent in agreement with the study done in Debre markos university hospital. Those with clinical stage III patients are (AOR =8.867, (1.689,

46.948)) with 95% CI at p-value 0.00 times more likely to develop depression than clinical stage I. This finding is consistent with study done at Aksum university and the study done at Addis Abeba University (Gupta R 2010).Those who live alone are more likely to develop depression by 2.3 (AOR=2.3 (1.086, 5.513)) with 95% CI at p-value 0.006 than those who live with family. This study result is also comparable with the study done in Aksum university which indicated that depression is by 2.4 times more likely to occur in those who live alone than who live with family .The study done in Debra markos university hospital also indicates that depression is by 2.5 more likely to occur in those who live alone than those who live with family (Castrighini C, 2010).When we see CD4 count those with CD4 count < 200 can develop depression by 4.5 (AOR =4.5 (2.153,9.635)) with 95 % CI at p-value 0.00 than with CD4 count >400.

7 .STRENGTH AND LIMITATION

Strength

- Factors that have a potential to influence prevalence of depression were included and multivariable regression analysis was used to control the confounders.
- High response rate

Limitation

- Absence of triangulation with qualitative study
- Patient may want to answer according to what they think are socially acceptable, and introduce information bias. This condition can either cause over estimation or under estimation effect.
- Since appointment spacing strategy was introduced it was difficulty to get patients.

8. CONCLUSION AND RECOMMENDATION.

Conclusion

From the finding of this study it emerged that depression is high among people living on ART attending at Robe health center and Robe Didea general hospital. Socio demographic factors like sex, living alone and HIV related factors like CD4 count, HIV clinical stage were variables which show significant association with depression among HIV positive patients.

Recommendation

Since prevalence of depression is high in ART patient routine screening of patient for depression and improving chronic HIV care like early CD4 count and early treatment was recommended.

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