



PREVALENCE OF DEPRESSION AND ASSOCIATED FACTORS AMONG HIV PATIENTS SEEKING TREATMENTS IN ART CLINICS AT SOME SELECTED CENTRES OF MAHARASHTRA STATE (INDIA)

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ABSTRACT

Depression HIV/AIDS and are projected to be the world's two leading causes of disability by 2030. Depression among people with HIV/AIDS is very high also affects 121 million people globally. The study was aimed at estimating prevalence of depression and associated factors among adult patients seeking ART treatment in Maharashtra state.

Method:- An institutional based cross-sectional study was carried out in 2016-2017. A total of 740 study subjects were included in the study. Proportionate stratified random sampling technique was used to select participants. Data was collected using pre-tested structured questionnaire by trained data collectors. Bivariate and multivariate logistic regression analyses were undertaken to identify predictors of depression. The association between explanatory and dependent variable was reported using odd ratio and its 95% confidence interval.

Results:- prevalence of depression among HIV patients was 45.8%. In multivariate models, independently associated with sex being male (AOR 1.633; 95% CI 1.138, 2.342) and Marital status being widowed (3.128; 95% CI 1.700, 5.757) and Monthly income earning 5000-10000 (1.924; 95% 1.159, 3.195) the last scheduled clinic visit in a month (AOR 22.729; 95% 2.450, 210.873) and last time missed any of medication (5.274; 95% CI 2.583, 10.768) and Teased, insulted or sworn at (AOR 2.286; 95% CI 1.216,4.297) Gossiped about (AOR 2.990; 95% CI 1.682,5.313) had significant association.

Conclusion:- From findings of this study, it emerged that depression is high among people living with HIV who participated in the study. Being male and lack of social support were statistically associated with depression. On the other hand, depressive morbidity is hence challenges to uptake of medical recommendations among PLWHA accessing care and treatment services, with potential implications for HIV treatment outcomes.

Keywords: Depression; HIV/AIDS; Adults; Maharashtra (INDIA)

INTRODUCTION

More than 33 million people are living with HIV throughout the world. The greatest burden of the disease is concentrated in developing countries. Mental health is highly intertwined with communicable diseases such as HIV.INDIA has the third HIV epidemic in the world. In INDIA on2016 total 2.1 million people living with HIV, the adult prevalence rate is estimated to be 0.3%, there are a total of people living with

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HIV/AIDS and an estimated number of death due to AIDS is 62,000, new HIV infections 80,000. The age group 15-24 had the highest prevalence of 5%. Maharashtra detected the highest number of new HIV infections among states 2016-2017 accounting for the 16 % of the country's 1.84 lakh fresh cases. Among the infected were 1567 newborns who probably didn't get preventive drugs on time while 200 adults got the disease due to transfusion with infected blood. Not only do mental disorders such as schizophrenia and depression put people at a higher risk for contracting HIV, living with HIV and its accompanying stigmatization can lead to poor mental health outcomes. Depression is one of the most common mental health disorders people with HIV experience on year 2016. Depression is among the most frequently observed psychiatric disorder among HIV/AIDS patients. The overall prevalence is difficult to identify across the globe as a result of the wide variations of the problem. It is estimated to range from 20 to above 70% and also has been associated with increased risky behaviors, noncompliance to treatment, higher risk for co-morbid disorders and decreased survival. Therefore, failure to recognize and treat depression endangers the patient as well as the community at large. There are evidences that prevalence of mental illnesses in HIV- infected individuals is substantially higher than in the general population. In addition, HIV tends to be concentrated in highly vulnerable, marginalized and stigmatized populations; especially, sex workers, homosexuals, drug users and prisoners have higher levels of mental health disorders than the general population. Increased psychological distress among people with HIV infection is common. Many studies in both low- and high income countries have reported higher rates of depression in HIV-positive people compared with HIV negative control groups. The level of distress often seems to be related to the severity of symptoms of HIV infection. Mental disorders, including substance use disorders, are risk factors for contracting HIV, and the presence of HIV/AIDS increases the risk of development of mental disorders. The resulting comorbidity complicates help-seeking, diagnosis, quality of care provided, treatment and its outcomes, and adherence. This is why the diagnosis of mental health problems in HIV-infected individuals faces several barriers. The other reason why diagnosis of mental health problem come from Patients perception often do not reveal their psychological state to health-care professional for fear of being stigmatized further. Also, health-care professionals are often not skilled in detecting psychological symptoms and, even when they do, they often fail to take the necessary action for further assessment, management and referral. One meta-analysis looking at the relationship between HIV infection and risk of depressive disorders found that living with HIV posed a greater risk of having major depressive disorder. Furthermore, co-morbidity of mental illness and HIV lead to poor healthcare seeking patterns, diagnosis, and treatment. In a study investigating the effect of psychological factors on antiretroviral (ART) uptake, depression was highly associated with poor ART adherence. The interrelatedness of mental health and HIV make it important to consider adherence interventions that address both issues simultaneously. Especially in developing countries where mental health facilities are underdeveloped, HIV is an epidemic, and factors such as poverty exacerbate mental health problems. Mental health problems related with HIV/AIDS can result from the psychological impact of having a fatal disease; stem from the effects of psychosocial stressors associated with the illness like stigma and discrimination. It may result from actual neurological changes in the physical and chemical structures of the central nervous system that occur because of the HIV virus, opportunistic infections, and also due to treatments. Majority of HIV positive psychiatric patients actually suffer from many different disorders. Like other chronic patients, HIV/AIDS infected individuals face a number of the same stressors such as long-term discomfort, physical deterioration, physical and economic dependence and eventual death. HIV/AIDS may also lead to mood disorders. The prevalence of anxiety and depressive disorders is high among HIV/AIDS patients . The present study was aimed to estimating prevalence of depression and associated factors among adult patients seeking ART treatment in various selected places of Maharashtra state, in INDIA. Materials and Methods Study population and setting Facility based cross-sectional study was conducted in 2016-2017 in Maharashtra State, which is located in the country INDIA. As per the recent data of HSS 2010-2011 Maharashtra 13% have the highest HIV prevalence among MSM. Poor knowledge of HIV has been found in groups of MSM. As per the data of the Epidemic Scenario Estimated in Maharashtra state Adult HIV Prevalence total 0.42% among male is 0.49%, female

is 0.35%. Number of PLHA 3,15,852 among male 1,92,38 and female 1,23,714. Number of CLHA 28,982. Number of new infections 5,893. Number of AIDS related deaths 23,764.

In the last five years the data do show a decline in cases. In 2012-13 the state recorded 42,458 cases, which fell to 42,112 cases in 2013-14. The numbers fell further to 37,458 in 2014-15 and to 32,836 in 2015-16. Mother to child transmission still continues to be a worry. In 2016-17 total newborns were infected through their mothers. Currently Maharashtra state is at the top of the HIV positive list with 28,952 cases in 2016-17. Responding to the RTI query the Basic Services Division of NACO mentioned that in 2016-17 a total of 1,84,047 new HIV patients were identified at integrated Counselling and Testing Centres (ICTC) as opposed to 2,99,015 in 2008-09. There are 20,756 ICTC is a place where a person is counseled and tested for HIV. As per the India HIV Estimation 2015 report adult (15-49 years) HIV prevalence in India was estimated 0.26% (0.22% -0.32%) in 2015. In 2015 adult HIV prevalence was estimated at 0.30% among males and at 0.22% among females. People who inject drugs with an HIV prevalence of 9.9%. The source populations were HIV/AIDS patients who were enrolled to ART care clinic in public health facilities and the study populations were people aged above 18 years and older who were actively taking ARV drugs, and/or those who followed HIV/AIDS chronic care but not yet started ART. The required sample size was determined using two population proportion formula, where n is the sample size, z is the standard normal score set at 1.96, d is the desired degree of accuracy and p is the estimated prevalence of the target population. By taking $p_1=42.1\%$ (P_1 prevalence of stigma in patients started ART) and $P_2=31.9\%$ (P_2 prevalence of stigma in patients pre-ART treatment) $P_1 \& P_2$ prevalence of perceived stigma among HIV patients according to study conducted in various kinds of Hospital's where ART centre's are available.

$z= 1.96$ the computed sample size included 10% non-response rate, the total sample size computed was 763. From the total of public health facilities which provides the ART facility, three public hospitals and 4 health centers which provide ART service were selected. From selected health facilities the number of patients served at each clinic per day was determined on the basis of client/patient flow and then the total number of client/Patients during the whole study period calculated by summing up at each ART clinic and the calculated sample size was distributed proportionally stratified by the seven public health institutions. Then systematic random sampling was used to select the study subjects. From seven health facilities average patient loads per day were 80, so the total number of client load in one month is 1760. Using these two parameters the sampling interval every third clients were selected as the study unit. Finally adding the sampling interval to the preceding number the next client was selected consecutively till sample size is completed. Whenever the sampled client did not fulfill the inclusion criteria, immediately the next client who fulfilled the criteria were interviewed. Those who were actively following HIV/AIDS chronic care in 7 ART clinics and aged 18 years and older were included in the study while patients who were not able to communicate or critically ill and Patients taking ARV prophylaxis for the sole purposes of prevention of mother-to-child transmission were excluded. Prior to data collection, ethical approval was obtained from the patient that they give their consent for this study and for all participants informed consent was obtained.

DATA COLLECTION TOOL AND PROCEDURES

Depression

It is having a depressed mood on a daily basis for a minimum duration of two weeks. It can be also manifested in the form of loss of interest or pleasure in nearly all activities including enjoyable activities.

Table 1. Demographic and Socio Economic characteristics of people living with HIV on ART program, in Maharashtra state at ART centres, India, 2016.

Minimal depression	PHQ score of 1-4
Moderate depression	PHQ score 10-14
Moderately severe depression	PHQ score 15-19
Severe depression	PHQ score 20-27.

ADHERENCE

The extent to which a person's behaviour in taking medications, following a diet and/or executing lifestyle changes, corresponds with agreed recommendations from a healthcare provider (WHO 2003:3). In this study, adherence refers to compliance of the patient's behaviour in taking ARV medication. The data was collected in the year 2016 using structured interviewer administered questionnaire. Three data collectors counselors, HIV/AIDS specialist nurse and supervisor of the various centres were helped for the data collection. The data collection process was followed daily at the ART centres where they got the ART drugs. Questionnaires were checked for completeness, coded, and entered into SPSS version 16 statistical package. Descriptive analysis was used to describe the socio-demographic characteristics of the study participants. Logistic regressions analysis was computed to assess the associations of the various factors against the level of depression. Variables with a p-value of less than 0.25 in the bivariate analysis were entered into the final model. P-value ≤ 0.05 at 95% CI was considered for strength of statistically significant association between predictors and outcome variable.

Result

Socio-demographic characteristics of respondents A total of 740 study participants interviewed, giving a response rate of 97%. About 468(63.2%) were female and majority of the clients were in the age category of 30-39 years old followed by age category of greater than 40 years old were 211(28.5%) respectively. Most of the respondents were married 341(46.1%) and regarding education level of the respondents 298(40.3%) were attended 1-8th class education.

Table 2. Factors assessing depression in PHQ scale among people living with HIV on ART program in Maharashtra State of India at Various centres in 2016

Characteristics	Options	Frequency	%
Little interest or pleasure in doing things	Yes	426	57.6
	No	314	42.4
Feeling down, depressed, or hopeless	Yes	481	65.0
	No	259	35.0 staying
asleep, or sleeping too much	Yes	471	63.6
	No	269	36.4
having little energy	Yes	537	72.6
	No	203	27.4
overeating	Yes	470	63.5
	No	270	36.5
Feeling bad about yourself, or that you are a failure or have let yourself or your family down	Yes	382	51.6
	No	358	48.4
Trouble concentrating on things, such as reading the newspaper or watching TV	Yes	402	54.3
	No	338	45.7
Moving or speaking so slowly that other people could have noticed.	Yes	395	53.4
	No	345	46.6
Thoughts that you would be better off dead, or of hurting yourself in some way.	Yes	353	47.7
	No	387	52.3
Trouble concentrating on things, such as reading the newspaper or watching TV	Yes	402	54.3
	No	338	45.7
Moving or speaking so slowly that other people could have noticed.	Yes	395	53.4
	No	345	46.6
Thoughts that you would be better off dead, or of hurting yourself in some way.	Yes	353	47.7
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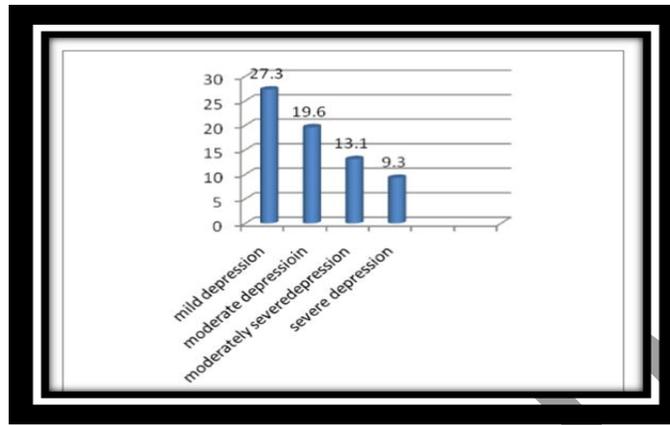


Figure 1: Depression score of people living with HIV on ART Clinics in selected centres in Maharashtra state , India, 2016.

Frequency of clinical symptoms in PHQ scale among people living HIV

The most common depressive symptoms that were presented by depressed respondents were little interest or pleasure in doing things 426 (57.6%), feeling down, depressed or hopeless 481(65.0%); staying a sleep, or sleeping too much 471(63.6%), feeling tired or having little energy 537 (72.6%), poor appetite or over eating 470(63.5%) (Table 2). Depression scoring among the study participants revealed the following results, 27.3% experienced mild depression, 19.6% moderate and 9.3% experienced severe depression (**Figure 1**).

Bivariate analysis of associatison between socio-demographic characteristics and depression

Bivariate analysis of was done to identify variables that associated with depression in the study. Being Males were found to be 44% more likely to be depressed compared to females (COR=1.445, 95% CI 1.068, 1.956). Another variable that found associated with depression were marital status of the clients, being widowed individuals were 2.6 times more likely to develop depression than Single (COR=2.676, 95% CI 1.510, 4.745) and being Self-employed were 3 times more likely depressed compared to being Unemployed (COR=3.185, 95% CI 1.306, 7.765). Respondents who earned less than 5000 Rupees per month were found to be 1.4 times more likely to develop depression than to those who earned more than >15000 Rupees. (COR=1.437, 95% CI 0.956, 2.160) (Table 3).

Factors associated with depression among people living with HIV

An adjusted multivariable model was created by forward stepwise logistic regression using the factors that were significant with the bivariate model, clients who are males were found to be 1.6 times more risk of developing depression than females (AOR=1.633, 95%CI; 1.138, 2.342). Those individuals who have been widowed were 3 times more likely to develop depression than those who have been single (AOR=3.128, 95% CI 1.700,5.757).Clients who were income less than 5000 rupees were 92% more risk of developing depression than who had income greater than 15000 rupees (AOR=1.924, 95% CI 1.159,3.195). The proportion of respondents was last time missed any of medication. Of the respondents who were missed one to two weeks ago were 5 times (AOR=5.274, 95%CI; 2.583, 10.768), more likely to develop depression than to with those missed any of medication within the past week. The adjusted odd ratio showed that the odds number of whose had verbally stigmatized were found to be 2.7 times higher risk to depression when compared with respondents whose had no teased, insulted or sworn at (AOR=2.705, 95%CI; 1.445, 5.063). The adjusted odd ratio showed that the odds number times of scheduled for clinic visit in a who were attend once in a month were found to be were 22 times more likely to develop depression than who never scheduled for clinic visit in a month (AOR=22.729,95%CI;2.450, 210.873) (Table 4).

DISCUSSION

The overall prevalence rate of depression and verbal stigma among people living with HIV who participated in this study was 45.8% and 46.6% respectively. The total of depressed participants is in the range between 42.4% and 49.5%. The study revealed that being male, widowed, less than 5000 rupees, teased or sworn at, gossiped about missed any of medications and frequent of scheduled for clinic visit in a month were associated factors identified in this study. This prevalence of depression among people living with HIV in this study is closer to the prevalence of 53%. On the other hand, the rate is significantly lower than the 81% prevalence for clinically significant depression among the HIV infected women on antiretroviral therapy. Similarly in patients with HIV attending a community support group were assessed using the PHQ-9, revealed 34% and 32%. Of the respondents had depressive morbidity at any level of severity. This study showed that 27.3% of respondents had mild forms of depression and 42% reported moderate to severe depression. These rates of depression are consistent with observations in which show 30% of people with HIV/AIDS indicating mild depression and Our finding shown that male living with HIV in were more likely to develop depression, the finding was differ with other the study conducted in urban, Female has been found to be associated with scoring positive to depression. Research on depression in the general population have also found that gender is significantly associated with depression this means that females being more likely to have depression than males. Like other studies conducted the prevalence in this study is greater than that found in South African and American HIV-infected populations may suggest that depression among HIV-infected patients is higher in low income countries (such as India,Bangladesh, Uganda, Kenya than in upper middle income countries and higher income countries. This underscores the importance of a comparative study of prevalence of depressive disorders among HIV- infected people across countries.

Table 3. Bivariate analysis between Socio Demographic and Economic variables with depression among people living with HIV on ART program in Various centres in Maharashtra state, India in 2016

Characteristics	Depression		COR (95% CI)
	YES (%)	NO (%)	NO (%)
Sex			
Male	109(40.1)	163 (59.9)	1.445(1.068,1.956)*
Female	230 (49.1)	238(50.9)	1
Age			
<20 years	3 (50.0)	3(50.0)	1
21-30 years	82(47.4)	91(52.6)	1.110(0.218,5.652)
31-39 years	164(46.9)	186 (53.1)	1.134(0.226,5.697)
>=40years	90 (42.7)	121(57.3)	1.344(0.265,6.817)
Education level			
Can't read and write	21(6.2)	39(9.7)	1
Read & Write only	68(20.1)	94(23.4)	0.774(0.402,1.377)
1-8 th class	142(42.2)	155(38.7)	0.584(0.328,1.039)
9-12 th class	38(11.2)	35(8.7)	0.496(0.246,1.000)
Above 12 th class	69(20.4)	78(19.5)	0.609(0.327,1.133)
Marital status			
Single	39(59.1)	27(40.9)	1
Married	167(49.0)	174(51.0)	1.505(0.882,2.569)
Widowed	68(35.1)	126(64.9)	2.676(1.510,4.745)*
Divorced /separated / cohabiting	65(46.8)	74(53.2)	1.644(0.909,2.976)
Occupation			
Unemployed	92(58.6)	65(41.4)	1
Farmer	58(54.7)	48 (45.3)	1.171(0.713,1.926)
Merchant	55(44.0)	70(56.0)	1.801(1.120,2.897)*
Self-employed	76(38.2)	123(61.8)	3.185(1.306,7.765)*
Govt.Employee	8(30.8)	18(69.2)	2.291(1.494,3.512)*
Day laborer	28(48.3)	30(51.7)	1.516(0.828,2.777)
Others	22(31.9)	47(68.1)	3.024(1.663,5.497)*
Monthly Income			
<5000 rupees	166(51.9)	154(48.1)	1.437(0.956,2.160)
5000-10000 rupees	84(40.6)	123(59.4)	1.578(1.108,2.248)
10000-15000 rupees	32 (40.0)	48(60.0)	1.617(0.982,2.661)
>15000 rupees	57(42.9)	76(57.1)	1

Table 4. Multivariable logistic regression about depression among people living with HIV on ART program at various ART centres in Maharashtra state, INDIA in the year 2016

Characteristics	Depression		COR (95%CI)	
	YES (%)	NO (%)		
Sex				
Male	109(40.1)	163 (59.9)	1.445(1.068,1.956)*	1.633(1.138,2.342)*
Female	230 (49.1)	238(50.9)	1	1
Marital status				
Single	39(59.1)	27(40.9)	1	1
Married	167(49.0)	174(51.0)	1.505(0.882,2.569)	1.562(0.888,2.748)
Widowed	68(35.1)	126(64.9)	2.676(1.510,4.745)*	3.128(1.700,5.757)*
Divorced/ Separated /cohabiting	65(46.8)	74(53.2)	1.644(0.909,2.976)	1.837(0.962,3.509)
Monthly Income				
<5000 rupees	166(51.9)	154(48.1)	1.437(1.956,2.160)*	1.924(1.159,3.195)*
5000-10000 rupees	84(40.6)	123(59.4)	1.578(0.108,2.248)	2.946(0.538,5.645)
10000-15000rupees	32 (40.0)	48(60.0)	1.617(0.982,2.661)	1.366(0.715,2.609)
>15000 rupees	57(42.9)	76(57.1)	1	1
Verbal stigma				
Yes	95(23.4)	324(77.3)	1	1
No	244(22.7)	77(24.0)	11.143(7.873,15.770)*	2.705(1.445,5.063)*
When was the last time you missed any of your medications				
Within the past week	54(54.5)	45(45.5)	1	1
One to two weeks ago	16(21.6)	58(78.4)	4.350(2.203,8.589)*	4.135(1.871,9.139)*
Two to four weeks ago	20(20.8)	76(79.2)	4.560(2.424,8.577)*	5.274(2.583,10.768)*
One to three months ago	9(31.0)	20(69.0)	2.667(1.105,6.433)*	3.715(1.390,9.933)*
More than 3 months ago	28(45.9)	33(54.1)	1.414(0.745,2.683)	1.537(0.781,3.027)
Never skipped				
Medications Within				
the past week	169(63.1)	99(36.9)	0.703(0.441,1.121)	0.670(0.383,1.170)
How frequent are you scheduled for clinic visit in a month				
Never	15(93.8)	1(6.2)	1	1
Once in a month	153(44.9)	188(55.1)	18.431(2.408,141.106)*	19.033(2.095,172.878)*
Twice a month	36(55.4)	29(44.6)	12.083(1.506,96.961)*	13.784(1.430,132.871)*
>=3 times in a month	135(42.5)	183(57.5)	20.625(2.690,158.145)*	22.729(2.450,210.873)*

significant association (p< 0.05)

In this study, marital status of the respondents was an important factor associated with depressive morbidity. Widowed PLWHA were more likely to have depression than patients who are single, Similarly, finding was found to be in consistence with study done in Maharashtra state those who were widowed and who were divorced, were more likely to be depressed(59.3% and 42.9% respectively) than those who were single was found to be in differ with study done in the South India married PLWHA were 6 times more likely to have depression as compared to single PLHA found that married PLWHA were more likely to have depression and the potential reasons could be the responsibility to take care of the children and family and fear of disclosing the status to the family members due to concerns of losing social and economic support. This study also highlighted several forms of internalized stigma reported by PLWHA. The most Prevalent losses were reported within the forms of verbal stigma. Of the two items assessing teased, insulted or sworn at, who 89.0% perceived they had gossiped about various qualitative studies support presence of patterns that reflect negative attitudes towards PLWHA in the community and from health care providers that would support these high reported levels of internalized stigmatizing. The study sites at the clinic that was required that mild depressive symptoms 18.8% missed the last time medication did 39.1% of those with moderate to severe depression. The other variable that is statistically significant in multiple logistic regression analysis patients who were last time missed their time medication had risk of depression using categories such as has one to two weeks ago, two to four weeks ago and one to three month ago (4,5 and 3 times respectively) were more likely to be depressed this study

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revealed a that 48.5% missed their last time medication. Similarly, in 52.2% on antiretroviral medication skipped their doses antiretroviral medication skipped their doses due tiredness of taking medication. Respondents who scheduled to visit clinic within a month was assessed using categories such as has never been to the clinic, has been to the clinic once, has been to the twice clinic 3 times or more. 3 times or more found to be 22 times more likely to be depressed than never scheduled to visit ART clinic this finding was found to be in contrast with the study conducted.

LIMITATION OF THE STUDY

The interpretation of the findings of this study should consider the following potential limitations;

- 1) Firstly, the cross sectional nature of this study may limit the causal and effect interpretation of the factors observed Therefore, the data collected might not be as accurate there might be recall bias from participants.
- 2) Secondly, since the study was institutional based it might not generalized to the total population of people living with HIV in the region.
- 3) Collection of the data and obtaining the consent from the patient of HIV positive patient is very difficult procedure, obstacles come in it.
- 4) Patient are so much conscious about their identity, that's why they does not co-operate in the study conducted at the ART centres.

CONCLUSION

From the findings of this study, it emerged the prevalence of depression was 48.5% and verbal stigma 56.6% among people living with HIV who participated in the study. The majority of participants who scored positive to depression had mild to moderate depression and very few had severe depression. Socio-demographic factors and HIV medical related factors that were studied, being a male and lack of social support were statistically associated with depression. On the other hand, in this study depressive morbidity was more consistently associated with poor uptake of medical recommendations including missed their last time medication and patients to attend an individual counseling session. Other predisposing factor for development of depression was stigma through impacts on teased, insulted or sworn at and gossiped about. Future research to better understand the mechanisms of associations between stigma and depression in PLWHA are necessary; as well as studies to inform development of stigma and depression reduction interventions.

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