Depression and its role in adherence to anti-retroviral treatment in people living with HIV and AIDS in Chennai

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Abstract

Context: The AIDS epidemic has drastically reduced in India since it was first identified in 1986, largely due to the widespread availability of anti-retroviral treatment (ART). Management of HIV is currently more focussed on long term morbidities, including mental health. Depression is the most common co-morbidity seen in people living with HIV. Depression is found to negatively affect patient adherence to ART. Poor adherence to ART leads to drug resistance and susceptibility to opportunistic infections. **Aims:** The purpose of this study is to find the prevalence of depression among people living with HIV and to study the correlation between depression and adherence to ART. **Setting and Design:** The study was conducted in the ART centre at Rajiv Gandhi Government General Hospital in Chennai, between August and October 2022. **Methods and Materials:** Patient health questionnaire-9 (PHQ-9) was used to identify depression, and the Adult AIDS clinical trials group (AACTG) questionnaire was used to identify adherence. **Statistical Analysis Used:** Data were entered in MS Excel and were analysed using Statistical Package for Social Science (SPSS) Version 16. The association between categorical data were analysed using Chi-square and Fisher exact test. The correlation between adherence and depression was done using the Spearman correlation. **Results:** The prevalence of depression was found to be 20.2%. A mild negative correlation was found between depression and adherence. Depression was found to have a significant correlation with women, unemployed, widowed, divorced individuals, and those with diabetes mellitus and tuberculosis. **Conclusion:** Depression is an important risk factor for adherence to ART. Though severe depression was not found in this study, mild and moderate depression was associated with reduced adherence to ART. Treating depression is likely to improve adherence and the overall wellbeing of patients with HIV and AIDS.

Keywords: Adherence, depression, HIV

Introduction

Mental health illness remains a huge problem in India. This is due to a variety of factors, ranging from lack of psychiatric healthcare services, lack of trained individuals for treating mental illnesses, and social stigma.[1] Often less severe mental illnesses, that is, those that do not cause obvious symptoms can go undiagnosed. Mood disorders are rarely identified and treated.[1]

Depression is the most common psychological co-morbidity in people living with HIV and AIDS (PLHA).[2] The AIDS epidemic in India has reduced drastically since the peak of the epidemic in 1998 and the incidence has since declined by 60%.[3] However, the number of people living with HIV in India remains stable at 2.1 million, largely due to increased life expectancy as a result of anti-retroviral treatment (ART). Management is more focused on chronic problems like

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diabetes mellitus, systemic hypertension, and cardiovascular disease.

Depression has either genetic or environmental predispositions. In these individuals, the underlying depression may lead to drug abuse and risky sexual behaviour leading to high chances of acquiring HIV.[4] HIV diagnosis can lead to further depression, causing a vicious cycle. HIV diagnosis and its associated loss of social and financial support itself act as an environmental risk factor predisposing to depression. Other reasons for depression include social stigma and, in some cases, ART medication itself can cause depression as a side effect (e.g., efavirenz). Furthermore, studies have shown that depression causes reduced quality of life, faster progression to AIDS, and increased opportunistic infections.[5]

Studies have also shown that depression is linked to adherence to ART.[6] ART helps to reduce viral replication and lower viral load to a level where it cannot be transmitted and further reduces the CD4 count. Poor adherence to ART can cause the virus to mutate and lead to drug resistance and HIV treatment failure.[6] It ultimately leads the virus to multiply and destroy the immune system and cause increased opportunistic infections. Early detection and intervention of depression in this population at a primary care level can improve the overall quality of life of the patient. A recent review article showed that people living with HIV who were diagnosed with major depressive disorder and treated with antidepressants were more likely to be adherent to anti-retroviral medication.[7]

This study is focused on determining the prevalence of depression among people living with HIV and finding a correlation between depression and adherence to ART.

Materials and Methods

Setting

A cross-sectional study was conducted among people living with HIV attending the ART clinic at Rajiv Gandhi Government General Hospital (RGGGH), Chennai, who are aged above 18 and who have been on anti-retroviral treatment for more than 6 months. RGGGH is one of the oldest hospitals in India. It is a major tertiary referral care hospital and caters to more than 12,000 outpatients every day from various parts of Tamil Nadu and neighbouring states. The ART centre situated on the hospital campus is attached to Madras Medical College and ensures easy accessibility to speciality care. It provides comprehensive treatment to people, including 1st line, 2nd line, and 3rd line drugs. They provide life-long treatment for patients with HIV.

Study design

This study was approved by the Institutional Ethics Committee of Madras Medical College. Ethical clearance was obtained from the ART clinic and Tamil Nadu State AIDS Control Society (TANSACS) before starting the study.

The sample size was determined using the Cochran formula Z^2pq/e^2 where Z is = 1.96 for a 95% confidence interval, P is the prevalence of depression among people living with HIV/AIDS, Q is 100 - Q, and e is the margin of error. The prevalence of depression was estimated to be 15%

Z = 1.96, P = 15, Q = 85, e = 5

Sample size = $1.96 \times 1.96 \times 15 \times 85/5 \times 5 = 195$

Taking 10% non-response

=195 + 19.5 = 215

A list of patients on anti-retroviral treatment (ART) from Rajiv Gandhi Government General Hospital was obtained from the ART Medical Officer. Patients were grouped as follows: those alive on ART missed doses, lost to follow-up (LFU), those who opted out, transferred to another centre, and those who died. Missed doses are divided into missed doses for 1 month, missed doses for 2 months, missed doses for 3 months and those who missed doses for more than 3 months were categorised as lost to follow-up (LFU). After ruling out all patients who died, opted out, or transferred to another centre, the list was serially numbered. Using computer generated random numbers, 215 numbers were selected. The patients corresponding to these numbers were selected.

The selected participants from the sample size were approached on the day they came to the clinic to get their medications. An interview was conducted with the help of a questionnaire. Informed consent was obtained before starting the interview. The questionnaire consisted of demographic information, evaluation of depression, and adherence to ART.

Patient Health Questionnaire (PHQ-9) was used to assess depression. The tool was translated into Tamil as it was the native language of the patients. The subject was asked how many days in the preceding 2 weeks, common depression symptoms were felt. Answers ranging from not at all, several days, more than half the days, and all the days were assigned the score 0, 1, 2, and 3, respectively. The score for all 9 questions was added up. A score of 5–10 was classified as mild depression, 10–15 as moderate depression, 15–20 moderately severe depression, and above 20 severe depression. A score of ≥10 has a sensitivity of 70% and a specificity of 84% for major depression.[8]

The AACTG (Adult AIDS Clinical Trials Group) questionnaire was used to assess adherence after being translated into Tamil. The participants were asked how many ART doses they had missed in the last four days. Any missed doses were considered non-adherent. The adherence index was calculated by:

(total number of doses taken/total number of doses prescribed) ×100

Adherence was classified into 0%, 25%, 50%, 75%, and 100%.

Similar self-report adherence questionnaires were found to have a sensitivity of less than 10% and a specificity of more than 90%.[9]

Statistical analysis

Data were entered in MS Excel and were analysed using Statistical Package for Social Science (SPSS) Version 16. The association between categorical data was analysed using Chi-square and Fisher exact test. The correlation between adherence and depression was done using the Spearman correlation.

Observations and Results

Out of the 215 participants approached, 193 consented to participate in the study. The mean age was 44.83 with a standard deviation of 10.9. The minimum age was 18, and the maximum age was 73. Participants were on ART for a mean duration of 8.27 years. (SD = 5.7, minimum 0.5 years, maximum 20 years). Among the participants, 51.8% were male, 47.7% were female, and 0.5% were transgender. The majority of them studied until secondary school that is, 6th to 10th standard (43%). Degree holders were 21.2% of the study population, illiterate were 16.6%, those who completed primary school that is, 1st to 5th standard were 13.5%, and those who completed higher secondary school that is, 11th to 12th standard were 5.7%. Majority of them were employed (62.7%). Out of the 193 participants, 51.3% were married, 24.4% were widowed, 15.1% were unmarried, and 9.3% were divorced.

Prevalence of co-morbidities

Diabetes mellitus was the most common co-morbidity (14.5%). Hypertension was present in 6.7%, and tuberculosis was present in 1.6%.

Adherence

In this group, most of the participants were adherent to ART with 100% adherence present in 92.2%. Two of the participants had 0% adherence (one was lost to follow up and the other had missed medications for 1 month). 5.7% of participants had 75% adherence [Table 1].

Depression

The overall prevalence of depression was 20.2% in this group. Mild depression was detected in 16.1%, moderate depression in 3.6%, and moderately severe depression in 0.5%. None of them had severe depression.

Correlation between depression and adherence

There was a mild negative correlation between depression and adherence to ART. Spearman correlation was –0.207 ($P = 0.004$).

Depression and its associated factors

A positive correlation of depression was seen with women, and those who were illiterate, unemployed, divorced, or widowed [Table 2]. A positive correlation with depression was also seen with co-morbidities like diabetes and tuberculosis [Table 3].

Discussion

Depression is common among people living with HIV and AIDS. It has a negative effect on their treatment outcome as it may interfere with adherence to ART. In this study, the overall prevalence of depression was found to be 20.2% with 16.1% having mild depression, 3.6% moderate depression, 0.5% having moderately severe depression and none having severe depression. Bhat *et al.*[10] found the prevalence of depression to be 48.9%. A similar study from Lahore, Pakistan found the overall prevalence to be 32.2%.[11]

Table 1: Co-morbidities

	No. of participants	Percentage
Diabetes Mellitus		
Yes	28	14.5%
No	165	85.5%
Hypertension		
Yes	13	6.7%
No	180	93.3%
Tuberculosis		
Yes	3	1.6%
No	190	98.4%

Table 2: Demographic factors associated with depression

	No. of participants	Percentage of depression	Fisher's scale	P
Gender				
Male	10	10%	14.286	0.001
Female	29	31.5%		
Education				
Illiterate	9	28.1%	14.508	0.004
1st to 5th standard	7	26.9%		
6th to 10th standard	18	21.7%		
11th to 12th standard	4	36.4%		
Degree	1	2.4%		
Employment				
Yes	18	14.9%	5.717	0.017
No	21	29.2%		
Marital status				
Married	13	13.1%	13.557	0.003
Unmarried	3	10.3%		
Divorced/Separated	7	38.9%		
Widowed	16	34%		

Table 3: Co-morbidities associated with depression

Co-morbidity	No. of participants	Percentage of depression	Fisher's scale	P
Diabetes				
Yes	10	35.7%	4.884	0.027
No	29	17.6%		
Hypertension				
Yes	1	7.7%	1.354	0.245
No	38	21.1%		
Tuberculosis				
Yes	2	66.7%	4.079	0.043
No	37	19.5%		

There was a mild negative correlation between depression and adherence to ART with Spearman correlation –0.207 ($P = 0.004$) in the present study. A study from South Africa found that patients having non-perfect adherence were three times more likely to have moderate to severe depression.[12]

Demographic factors play a role in the prevalence of depression. This study found a correlation among gender, education level, employment status, marital status, and the presence of co-morbidities. All of them were found to be statistically significant using Fisher's exact test. Women, with lower levels of education, unemployment, divorced or widowed status as well as co-morbidities like diabetes mellitus and tuberculosis had a positive correlation with depression. In a similar study, living in a rural area, fear of stigma and discrimination, having worked abroad, and history of substance abuse were significantly associated with depression.[11]

Several studies have found depression to be a barrier to ART adherence. Detecting and treating depression may improve adherence and the long term survival of people living with HIV/AIDS.

Conclusion

The prevalence of depression in people attending ART clinics is 20.2% in RGGGH, Chennai. Depression is an important risk factor for adherence to ART. Though severe depression was not found in this study, mild and moderate depression was associated with reduced adherence to ART. There was a mild negative correlation between depression and adherence to ART. Treating depression is likely to improve adherence and the overall wellbeing of patients with HIV and AIDS. Further studies are needed to assess the treatment effects of depression on adherence.

Conflicts of interest

There are no conflicts of interest.

References

1. Roberts T, Shidhaye R, Patel V, Rathod SD. Health care use and treatment-seeking for depression symptoms in rural India: An exploratory cross-sectional analysis. BMC Health Serv Res 2020;20:287.

2. Zewudie BT, Geze S, Mesfin Y, Argaw M, Abebe H, Mekonnen Z, *et al.* A systematic review and meta-analysis on depression and associated factors among adult HIV/AIDS-positive patients attending ART clinics of Ethiopia: 2021. Depress Res Treat 2021;8545934. doi: 10.1155/2021/8545934.

3. Paranjape RS, Challacombe SJ. HIV/AIDS in India: An overview of the Indian epidemic. Oral Dis 2016;22(Suppl 1):10-4.

4. Tran BX, Ho RCM, Ho CSH, Latkin CA, Phan HT, Ha GH, *et al.* Depression among patients with HIV/AIDS: Research development and effective interventions (GAPRESEARCH). Int J Environ Res Public Health 2019;16:1772. doi: 10.3390/ijerph 16101772.

5. Arseniou S, Arvaniti A, Samakouri M. HIV infection and depression. Psychiatry Clin Neurosci 2014;68:96-109.

6. Cauldbeck MB, O'Connor C, O'Connor MB, Saunders JA, Rao B, Mallesh VG, *et al.* Adherence to anti-retroviral therapy among HIV patients in Bangalore, India. AIDS Res Ther 2009;28;6:7.

7. El-Halabi S, Cooper DH, Cha DS, Rosenblat JD, Gill B, Rodrigues NB, *et al.* The effects of antidepressant medications on antiretroviral treatment adherence in HIV-positive individuals with depression. J Affect Disord 2022;300:219-25.

8. Levis B, Benedetti A, Thombs BD, Depression Screening Data (DEPRESSD) Collaboration. Accuracy of Patient Health Questionnaire-9 (PHQ-9) for screening to detect major depression: Individual participant data meta-analysis. BMJ 2019;9;365:l1476. doi: 10.1136/bmj.l1476.

9. Da W, Li X, Qiao S, Zhou Y, Shen Z. Evaluation of self-report adherence measures and their associations with detectable viral load among people living with HIV (PLHIV) in China. PLoS One 2018;13:e0203032. doi: 10.1371/journal.pone. 0203032.

10. Bhat AG, Babu R, Abhishekh HA. Prevalence of depression among HIV patients on antiretroviral therapy: A study from India. Asian J Psychiatr 2013;6:249-50.

11. Junaid K, Ali H, Khan AA, Khan TA, Khan AM, Khan A, *et al.* Prevalence and associated factors of depression among patients with HIV/AIDS in Lahore, Pakistan: Cross-sectional study. Psychol Res Behav Manag 2021;14:77-84.

12. Nel A, Kagee A. The relationship between depression, anxiety and medication adherence among patients receiving antiretroviral treatment in South Africa. AIDS Care 2013;25:948-55.