



## Study of Depression, Substance Abuse and Cognitive Impairment in HIV Patients and its Comparison with Other Std Patients

### KEYWORDS

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**ABSTRACT** HIV infection and psychiatric disorders have a complex relationship. Being HIV infected could result in psychiatric disorders as a psychological consequence of the infection or because of the effect of the HIV virus on the brain. Disorders may be as varied as depression, post-traumatic stress disorders, AIDS phobias, grief and the whole gamut of cognitive disorders. In addition, several psychiatric conditions may predispose individuals to acquiring HIV infection as a consequence of their influence on behavior. There is also strong evidence of the relationship of substance use disorders and severe mental illnesses with HIV infection. HIV related psychiatric disorders also offer a challenge to clinicians in issues of differential diagnosis and management. Majority of the work in India has focused on substance use and HIV, and to a lesser extent on the psychiatric and neuropsychiatric effects of HIV infection. Given the magnitude of the problem in the country and the multiple physical and psychological stressors that persons with HIV face in India, more research is needed. This article provides an overview of the epidemiology and clinical manifestations of HIV-associated cognitive and psychiatric manifestations and its comparison with other STD patients. In which, results shown that HIV patients have a higher chance to develop depression, more likely to consume substances and more severe cognitive impairment as compared to other STD patients.

### INTRODUCTION

HIV infection and psychiatric disorders have a complex relationship. Being HIV infected could result in psychiatric and neuropsychiatric disorders like MDD, PTSD, AIDS phobia, grief and various cognitive disorders as a psychological consequence of the infection or because of the direct effect of the HIV virus on the brain. In addition, several psychiatric conditions may predispose individuals to acquiring HIV infection because of their influence on behavior and there is a strong evidence of the relationship of substance use disorders and severe mental illnesses with HIV infection<sup>[1]</sup>. Nearly 20% to 59% of HIV-infected people suffer from one or more mental disorders, which is 2 or 3 times' general population<sup>[2]</sup>. People living with HIV experience depression at rates twice or more than that of uninfected individuals<sup>[3]</sup>. Majority of the work in India has focused on substance use and HIV, and to a lesser extent on the psychiatric and cognitive effects of HIV infection<sup>[4]</sup>. Most common neurologic manifestations of HIV are: - minor cognitive and motor disorder (MCMD) and HIV associated dementia (HAD). Most common psychiatric manifestations are: - Depressive spectrum disorders<sup>[5]</sup>. Depression is a risk factor for HIV by 1. Impact on behavior, 2. Intensification of substance abuse, 3. Exacerbation of self destructive behaviors and 4. Promotion of poor partner choice in relationships. Similarly HIV increases the risk of developing depression by 1. Direct injury to sub cortical areas of brain, 2. Chronic stress, 3. Social isolation, 4. Intense demoralization and 5. HIV related medical conditions and medications. Depression causes increase in cortisol levels in blood leads to decrease in circulating lymphocytes, reduce the ability of lymphocytes to produce lymphokines and increase expression of HIV by mononuclear cells. Substance abuse is a primary vector for spread of HIV. Patients with HIV are often demoralized, become hopeless and are more likely to engage in high risk behaviors. Patients with substance use disorders may not seek health care or may be excluded from it. Addiction and high risk sexual behavior have

been linked across a wide range of settings.

### AIMS

There is a dearth of Indian literature about this topic, so we decided to carry out the study, which compare depression, substance abuse and cognitive impairments between HIV and other STD patients.

### MATERIAL AND METHODS

Study population: - 30 patients of HIV and 30 patients of other STDs came at HIV and STD clinic of VS general hospital, Ahmadabad.

#### Scales used to carry out this study are:

BDI (Beck's Depression Inventory) which is self-rated questionnaire, consists of 21 questions, score ranges from 0 to 63, in which 21-30 (mild), 31-39 (moderate) and  $\geq 40$  indicate (severe) depression.

MOCA (Montreal Cognitive Assessment) consists of following components :- Executive (5), Naming (3), Attention (6), Language (3), Abstraction (2), Delayed recall (5), Orientation (6). Total score is 30 and  $\geq 26$  is normal.

SAMISS (Substance Abuse and Mental Illness Symptoms Screener) consists of two substances alcohol and benzodiazepine and four mental illnesses include mania, depression, anxiety and PTSD, but in our study only the questions of substance abuse were used.

Study was conducted after getting IRB approval and written informed consent from patient.

#### Exclusion criteria were-

- ❖ Presence of severe medical, psychiatric, or neurological disorder, which would interfere with the ability to cooperate and undergo the clinical and psychometric evaluation.

- ❖ History of substance abuse and depression before diagnosis of HIV and other STDs.
- ❖ Cases with past and present opportunistic infections.

**RESULTS**

| Socio - Demographic Variables | HIV (N=30)/N (%) | STD (N=30)/N (%) | Chi square value | P value |
|-------------------------------|------------------|------------------|------------------|---------|
| Age                           |                  |                  | 0.073            | 0.787   |
| >40                           | 19(63.33)        | 20(66.66)        |                  |         |
| <40                           | 11(36.66)        | 10(33.33)        |                  |         |
| Gender                        |                  |                  | 0.000            | 1.000   |
| Male                          | 15(50)           | 15(50)           |                  |         |
| Female                        | 15(50)           | 15(50)           |                  |         |
| Marital Status                |                  |                  | 0.164            | 0.921   |
| Married                       | 23(76.66)        | 24(80)           |                  |         |
| Single                        | 3(10)            | 3(10)            |                  |         |
| Divorced/widowed/separated    | 4(13.33)         | 3(10)            |                  |         |
| Education                     |                  |                  | 0.223            | 0.894   |
| Not educated                  | 6(20)            | 6(20)            |                  |         |
| School education              | 22(73.33)        | 21(70)           |                  |         |
| Graduated/post graduated      | 2(6.66)          | 3(10)            |                  |         |

| Socio - Demographic Variables | HIV (N=30)/N (%) | STD (N=30)/N (%) | Chi square value | P value |
|-------------------------------|------------------|------------------|------------------|---------|
| <b>Domicile</b>               |                  |                  |                  |         |
| Urban                         | 11(36.66)        | 10(33.33)        | 0.073            | 0.787   |
| Rural                         | 19(63.33)        | 20(66.66)        |                  |         |
| <b>Religion</b>               |                  |                  |                  |         |
| Hindu                         | 24(80)           | 24(80)           | 0.000            | 1.000   |
| Muslim                        | 6(20)            | 6(20)            |                  |         |
| <b>Occupation</b>             |                  |                  |                  |         |
| Skilled work                  | 6(20)            | 6(20)            | 0.000            | 1.000   |
| Unskilled work                | 24(80)           | 24(80)           |                  |         |
| <b>Monthly Income</b>         |                  |                  |                  |         |
| <5000                         | 24(80)           | 24(80)           | 0.000            | 1.000   |
| >5000                         | 6(20)            | 6(20)            |                  |         |

➤ **MOCA - Montreal Cognitive Assessment**

| Scales    | HIV  |       | STD  |       | T value | P value |
|-----------|------|-------|------|-------|---------|---------|
| MOCA      | Mean | SD    | Mean | SD    |         |         |
| Executive | 2.33 | 0.922 | 3.27 | 0.691 | -4.435  | 0.000   |
| Attention | 2.77 | 1.040 | 4.37 | 0.556 | -7.431  | 0.000   |

|                |               |                |        |       |
|----------------|---------------|----------------|--------|-------|
| Abstraction    | 1.30<br>0.702 | 1.97<br>0.183  | -5.033 | 0.000 |
| Delayed recall | 1.20<br>0.805 | 2.67<br>1.446  | -4.853 | 0.000 |
| Naming         | 2.07<br>0.365 | 2.07<br>0.365  | 0.000  | 1.000 |
| Language       | 1.97<br>0.490 | 2.03<br>0.414  | -0.569 | 0.571 |
| Orientation    | 5.37<br>0.928 | 5.77<br>0.626  | -1.957 | 0.055 |
| Total          | 17<br>2.084   | 22.13<br>2.374 | -8.899 | 0.000 |

➤ **BDI - Beck's Depression Inventory**

| Depression      | HIV (N=30)/N (%)       |        | STD (N=30)/N (%)       |       |
|-----------------|------------------------|--------|------------------------|-------|
| Mild(21-30)     | 7(23.33)               |        | 4(13.33)               |       |
| Moderate(31-40) | 9(30)                  |        | 2(6.66)                |       |
| Severe(≥40)     | 4(13.33)               |        | 1(3.33)                |       |
| Total patient   | 20(66.66)              |        | 7(23.33)               |       |
| Scales          | Mean                   | SD     | Mean                   | SD    |
| BDI             | 29.33                  | 10.889 | 20.60                  | 9.856 |
|                 | <b>T value = 3.257</b> |        | <b>P value = 0.002</b> |       |

➤ **SAMISS – Substance Abuse and Mental Illness Symptoms Screener**

| Scale        | HIV N=30/N (%) | STD N=30/N (%) | Chi square value | P value |
|--------------|----------------|----------------|------------------|---------|
| SAMISS       |                |                |                  |         |
| Alcohol -yes | 8(26.66)       | 0(0)           | 9.231            | 0.002   |
| -no          | 22(73.33)      | 30(100)        |                  |         |
| BZD -yes     | 6(20)          | 1(3.33)        | 4.043            | 0.044   |
| -no          | 24(80)         | 29(96.66)      |                  |         |

**DISCUSSION**

One study compared HIV and other STD patients attending STD clinic at Madurai. Both the groups had similar prevalence rate for common mental disorders. No patient with cognitive deficit was noted<sup>[6]</sup>. However, in our study there is more cognitive deficit and depression in HIV patients. Psychiatric manifestations are more in HIV individuals as compared to other STDs<sup>[7]</sup>, which support our study. Clinical depression appears to be more common among HIV patients than the general population and symptoms of anxiety are widely reported<sup>[8]</sup>. 60.5% of HIV patients have mild to moderate cognitive deficits in the domains of word fluency, working memory, and learning<sup>[9]</sup>. Substance use is relatively common in HIV, with prevalence estimated from one nationally-representative sample at approximately 40% for use of illicit drugs, 12% for drug dependence, and 18% for "heavy" or "frequent heavy" alcohol consumption<sup>[10]</sup>. In our study, 26.66% were alcoholic and 20% were benzodiazepine abusers among HIV patients.

**SUMMARY**

When compared with other STD patients, HIV patients endorsed higher levels of depression (20 out of 30 had a de-

pression among HIV and only 7 out of 30 among STDs). Similarly, HIV patients has a higher rate of substance abuse (8 were alcoholic and 6 were benzodiazepine abusers out of 30) compared to (no alcoholic and only 1 benzodiazepine abuser out of 30) STD patients. In addition, there is more cognitive impairment in HIV patients in domains of executive, attention, abstraction and delayed recall as compared to other STD patients, while no significant difference was found in domains of naming, language and orientation.

### CONCLUSION

HIV patients have a higher chance to develop depression, more likely to consume substances and more severe cognitive impairment as compared to other STD patients.

### LIMITATIONS

1. Small sample size.
2. WHO clinical stages, CD 4 count and duration of illness in HIV patients had not been taken into account.
3. Relationship between depression, substance use & its direct effect on cognition were not tested.

### FUTURE DIRECTIONS

Early and periodic neuropsychological screening of HIV positive asymptomatic individuals is necessary to spot the cognitive deficits at an early stage. It helps in arresting the progression of the disease by early institution of ART therapy as HIV dementia is an indication for ART. This will improve quality of life, increase longevity of life and arrest further deterioration of brain function. Given the magnitude of the problem in the country and multiple physical and psychological stressors that persons with HIV face in India, more research is needed.

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