



**PREVALENCE OF DEPRESSION AMONG PEOPLE LIVING WITH HIV/AIDS IN
SELECTED DISTRICTS IN KERALA, SOUTH INDIA.**

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ABSTRACT

Background: HIV infection has now become a chronic condition with the recent advances in treatment and resultant increase in life expectancy. PLHA (People living with HIV/AIDS) are in a state of chronic stress as they have to deal with the prospect of social stigma, prolonged physical illness and early death. Depression is the most frequently observed psychiatric disorder among PLHA and is often associated with poor adherence to treatment, higher morbidity and mortality. Mental health services are not routinely provided at HIV treatment centers presently, thus depression often goes undetected among PLHA. **Aim:** This study aims to determine the prevalence of depression among PLHA in selected districts in Kerala, South India. **Methodology:** A cross-sectional study was conducted amongst 100 PLHA during a period of 6 months. Seriously ill and PLHA with HIV dementia were excluded from the study. Depression was assessed using Nine-item Patient Health Questionnaire (PHQ-9), a validated depression screening tool which is based on (DSM-IV) criteria. **Results:** The age of study population ranged from 22 to 64 years and majority (68%) were males. Prevalence of depression was found to be 51%. Subjects of Female gender, those with higher education, and those Above Poverty Line (APL) were found to have higher prevalence of depression. Occupation was also found to have significant association with depression status. **Conclusion:** This study shows that depression is an important co-morbidity among PLHA and highlights the need to integrate efficient mental health interventions into routine HIV clinical care.

KEYWORDS: HIV/AIDS, Depression, Prevalence

INTRODUCTION

HIV infection has now become a chronic condition with the recent advances in treatment and resultant increase in life expectancy. PLHA (People living with HIV/AIDS) are in a state of chronic stress as they have to deal with the prospect of social stigma, prolonged physical illness and early death. Among patients with HIV infection, depression is the most frequently observed psychiatric disorder.^[1,2] Depressed PLHA frequently become less adherent with their treatment^[3-5] which may lead to higher HIV viral loads, higher infectiousness, and poorer clinical outcomes. Many studies have demonstrated a more rapid progression to AIDS, impaired cell-mediated immunity or an increase in mortality associated with depression among PLHA.^[6-11] Furthermore, studies have shown that the presence of depressive symptoms in PLHA is associated with earlier mortality and higher HIV-specific morbidity, in spite of access to Highly Active Anti Retroviral Therapy (HAART).^[8, 12-15] It has also been noted that depression symptoms rise as AIDS

progresses^[16] and its rates are 2-3 times higher than those of the general community.^[17, 18] Mental health services are not routinely provided at HIV treatment centers presently, thus depression often goes undetected among PLHA. There are no previous published studies available on prevalence of depression in PLHA of Kerala. This study aims to determine the prevalence of depression in PLHA in selected districts in Kerala, South India.

MATERIALS AND METHOD

A cross-sectional study was carried out amongst PLHAs at ART (Anti Retroviral Treatment) Centre of Kozhikode. The ART centre which was established in 2004 caters to around 3800 PLHAs of 5 districts of northern Kerala. Sample size was calculated to be 100, taking prevalence of depression in PLHA as 50%.^[19] The study population comprised of PLHAs aged 18 years and above attending outpatient department of the ART clinic during a period of 6 months from August 2012 to January 2013. Recruitment was pursued by consecutive

sampling of eligible subjects until desired sample size was reached. PLHAs with HIV dementia and those who were seriously ill were excluded from the study.

Depression was assessed using the nine-item Patient Health Questionnaire (PHQ-9), a validated depression screening tool which is based on the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) criteria. Depression severity is determined based on the PHQ-9 scores, which ranges from 0 to 27. A PHQ-9 score of greater than 9 has a sensitivity of 83% and a specificity of 92% for major depressive disorder diagnosis.^[20] PHQ-9 scores of 0-4, 5-9, 10-14, 15-19 and 20-27 represented minimal, mild, moderate, moderately severe, and severe depression, respectively (20). In this study, mild to severe depression (PHQ9 score \geq 5) was considered to estimate prevalence of depression in PLHA.

The clinical features of HIV dementia are often mistaken for depression. The HIV Dementia Scale (HDS) is a reliable and quantitative scale for identifying HIV dementia²¹. HDS scale was used in this study to exclude PLHA with HIV dementia. A score of \leq 10 was taken as HIV dementia and such individuals were excluded. Informed consent was taken from subjects and approval for the study was obtained from Nodal officer of ART Centre and from PLHA organization 'Prathyasha'.

Statistical Analysis: Data obtained were entered into MS Excel sheet and Statistical analysis was done using R software. Results were expressed in rate, ratio and proportion. Prevalence of depression was estimated as the ratio of the number of individuals meeting the screening of criteria on the PHQ9 depression scale of \geq 5 (mild depression and above) to the number of individuals

completing the respective screening instrument at baseline. The Pearson's chi-squared test (χ^2) and Fischer Exact tests were used for finding out association between various categorical variables. p value $<$ 0.05 was considered statistically significant.

RESULTS

Baseline characteristics of study population

Ages of 100 subjects ranged from 22 to 64 years with a mean of 38.64 years (SD = 8.3). About two-fifths (39%) of the subjects belonged to 31 – 40 age group. Based on residing districts, majority of the participants 33(33%) were residents of Kozhikode district, 31(31%) were from Malappuram, 27(27%) from Kannur and 4 (4%) from Wayanad district. Most of the subjects had education up to high school (43%), 82 (82%) subjects were BPL (Below Poverty Line) and 18 (18%) belonged to APL families (Above Poverty Line). Eighty six (86%) of the subjects were 'living with spouse' and 14 (14%) were 'living without spouse'. According to occupation of subjects, about one-third 36 (36 %) of study subjects were Skilled workers, 23 (23 %) of study subjects were unemployed, 20 (20%) were unskilled workers, eight (8%) were semi-skilled workers, seven (7%) were Shop-Owners or Clerks, four (4%) professionals and two (2%) were semi-professionals. Sexual orientation of 90 (90%) subjects was heterosexual and remaining 10 (10%) subjects were MSM (Men Having Sex with Men). Diagnosis of HIV infection of 25 (25%) subjects had occurred within one year prior to study period and 75 (75%) had their diagnosis earlier than one year. One fourth (25%) had severe baseline immune suppression with a CD4 count at diagnosis $<$ 100 cells and 92% were on HAART at the time of study. Baseline characteristics of the study subjects are depicted in Table1.

Table No.1 Baseline Characteristics of Subjects

VARIABLES		N=100	Percentage
Gender	Females	32	(32%)
	Males	68	(68%)
Age Group (years)	18 -30	20	(20%)
	31-40	39	(39%)
	41-50	36	(36%)
	51-60	3	(3%)
	60-70	2	(2%)
Education	Primary School or less	8	(8%)
	Secondary School	34	(34%)
	Higher Secondary	43	(43%)
	College and above	15	(15%)
Economic Status	APL	18	(18%)
	BPL	82	(82%)
Treatment Status	On HAART*	92	(92%)
	Not on HAART	8	(8%)
Baseline CD4	$<$ 100	25	(25%)
	100-350	65	(65%)
	$>$ 350	10	(10%)

*Highly Active Anti Retroviral Therapy

Prevalence of depression among PLHA was found to be 51% in this study.

Severity of depression in study subjects based on PHQ9 scoring is depicted in Table 2.

Table 2: Severity of depression in study subjects based on PHQ9 score

Depression Severity	N	percentage
Absent	10	(10%)
Minimal	39	(39%)
Mild	34	(34%)
Moderate	13	(13%)
Moderately Severe	4	(4%)
Severe	0	(0%)
Total	100	(100%)

In this study, females were found to have higher risk of having depression than males (P value = 0.046, OR = 2.42, 95 % CI = 1.01 - 5.79). A statistically significant association was seen between occupation of the subjects and prevalence of depression (p value = 0.024). According to economic status, subjects who belonged to Above Poverty Line (APL) had higher prevalence of depression than subjects of Below Poverty Line (BPL) (p value=0.002, OR= 6.39, 95 % CI = 1.72 - 23. 8). Subjects with an educational status of Higher-secondary and above were found to have higher prevalence of depression than those who were educated up to 10th class

or less. This was found to be statistically significant. (P value = 0.028, OR= 2.47, 95 % CI = 1.09 - 5.59).

Other factors like Age group (p value =0.46), district of residence (p value =0.06), marital status (p value =0.51), sexual orientation (p value = 0.741), years since diagnosis (p value =0.56), treatment status (p value = 0.15) or severity of immunosuppression (p value =0.14) had no significant association with depression status. Association between depression and various clinical and socio-demographic factors is depicted in Table 2.

Table No.3: Prevalence of Depression According To Various Clinical & Socio-demographic Variables.

Variables		Depression Status		P value	Odds Ratio (95% CI)
		Present N(%)	Absent N(%)		
Gender	Females	21 (66)	11 (34)	* 0.045	2.42 (1.01-5.79)
	Males	30 (44)	38 (56)		
Education	Higher Secondary & Above Class 10 th or less	35 (60) 16 (38)	23 (40) 26 (62)	* 0.028	2.47 (1.09-5.59)
Occupation	Professional	3 (75)	1 (25)	** 0.024	
	Semi professional	2 (100)	0 (0)		
	Shop Owner/Clerk	3 (43)	4 (57)		
	Skilled	18 (50)	18 (50)		
	Semi-skilled	7 (88)	1 (12)		
	Unemployed	5 (25) 13 (57)	15 (75) 10 (43)		
Economic Status	APL	15 (83)	3 (17)	* 0.002	6.39 (1.72-23.8)
	BPL	36 (44)	46 (66)		
Marital Status	Living without spouse	6 (43)	8 (57)	**0.51	0.68 (0.22-2.13)
	Living with spouse	45 (52)	41 (48)		
CD4 count	<100	9 (36)	16 (64)	* 0.083	0.44 (0.17-1.13)
	≥100	42 (56)	33 (44)		

* p value determined using Pearson Chi-square method **p value determined using Fischer Exact method

DISCUSSION

Mean age of the subjects of this study (38.64±8.3) was comparable to other studies conducted in Delhi, Nigeria and Cameroon.^[22-24] Gender distribution of the study subjects was also comparable to that of studies conducted in Guntur and Denmark.^[25, 26] In India, Men account for 61% of all HIV infections and a similar gender distribution is observed in this study also.^[27] Educational status of the subjects was better in this study when compared to that of studies in Guntur and Nigeria.^[23, 26] This is consistent with the high literacy rate observed in Kerala.^[28]

The prevalence of depression of this study (51%) was comparable to the 48.9% found by AG Bhat and Ramesh Babu^[29] in their study in Raichur, Karnataka and 47% in a study in Uganda.^[30] Study in Delhi^[22] had estimated a prevalence of 58.75%. A higher prevalence of 90.24% was detected in the study conducted by N U Jyothi et al^[26] in Guntur, South India. A study in Cameroon done by R M L'akoa et al^[24] also showed a higher prevalence of 63% while another study in Atlanta, USA by Ann N. Do et al^[31] had estimated a lower prevalence of 25.6%.

In this study majority (38%) had minimal depression and 35 % had Mild depression. In the Cameroon study, majority of the subjects (46%) had moderate depression.^[24] One-eight (12.4%) of subjects in the US study showed major depression, but this study had none with major depression.^[31]

The socio demographic factors of age, gender, marital status, education and income are important factors in explaining the variability in depression prevalence rates.^[32-34] Higher prevalence of depression in females of this study has also been reported in many other studies including those of Nogueira et al, R Bhatia and F.Kaharusa et al.^[30,35,36] But the Delhi study has not demonstrated significant variability in depression status with gender.^[22] Prevalence of depression in general population has also been shown to vary considerably based on gender.^[36, 37] Consistently, women are found to have nearly double or triple prevalence rates than men even in general population.^[35]

Subjects with higher educational status were found to have higher risk of having depression in this study. Many studies have shown contradictory result of higher prevalence among less educated.^[22, 23] This disparity may be due to better awareness about HIV infection and its complications in subjects with higher education which in turn puts them at higher risk for depression.

This study has demonstrated a higher prevalence of depression among subjects from APL families which is contradictory to finding of studies by MS Bhatia, Shittu RO et al and Richardson et al, all of which have shown higher prevalence of depression in lower economic strata.^[22, 23, 38] This may be because subjects from APL families might have higher educational status and hence better awareness about the disease.

Sexual orientation has not shown to have significantly contributed to depression in this study and similar observation was found in studies by J Ciesla et al and Ann Do et al.^[17, 31] Even though factors such as 'living without spouse' and recent diagnosis of HIV.^[24, 26] have shown to strongly contribute to depression in PLHA, in this study these factors were not significantly associated with depressive symptoms, probably pointing to the greater psychological burden of the HIV status itself in the study subjects.

LIMITATIONS

Since this was a hospital based study, PLHA who did not access HIV healthcare facility could not be assessed for depression. Multiple contributing factors of depression such as psychosocial, behavioural and biological could not be studied.

CONCLUSION

It is evident from this study that depression is an important co-morbidity among PLHA with a prevalence of 51%. This study also demonstrates significant association of female gender, higher educational status,

occupation and better economic status with higher prevalence of depression among PLHA. WHO report on HIV/AIDS and mental health states the need for integration of mental healthcare into HIV care, especially in developing nations.^[39]

This study highlights the need for efficient mental health interventions to be integrated into routine HIV clinical care. Early screening and appropriate treatment of depression should be a major objective as it might improve adherence to treatment, quality of life, and retention of PLHA in HIV treatment centres.

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