Depression and its associated factors among people living with HIV/AIDS: Can it affect their quality of life?

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ABSTRACT

Introduction: Depression, being the most common neuropsychiatric complication of HIV, is also associated with increased health-care utilization, decreased quality of life (QOL), and poor adherence to antiretroviral therapy (ART). Depression is a multidimensional disorder affected by a variety of biological, psychological, and social determinants and this relation becomes more complicated in HIV patients. The current study therefore aimed to investigate the sociodemographic and clinical determinants of depression and assess difference in the QOL of HIV patients not having depression and those suffering from depression. **Materials and Methods:** A cross-sectional study was conducted at an ART center in a tertiary care hospital in HIV/AIDS patients of 18 years of age. Sociodemographic and clinical characteristics were studied, depression anxiety and stress scale-21 was used to assess depression, and QOL assessment was done using WHOQOL-HIV BREF questionnaire. **Results and Conclusions:** Out of 754 study subjects, 377, i.e., 50% suffered from depression and nearly 75.9% of them were in the age group of 25–44 years. The prevalence of depression was higher in females, illiterates, and unemployed HIV patients as compared to males, literates, and employed subjects, respectively. HIV patients who were depressed had significantly lower QOL than the subjects not suffering from depression, more so in the environment and social relationships domains.

Keywords: Depression, depression anxiety and stress scale, HIV/AIDS, quality of life, WHO Quality of Life BREF scale

Introduction

India is estimated to have the third highest number of people living with HIV/AIDS, after South Africa and Nigeria which accounts to 20.89 lakh population.[1] Depression being the most common neuropsychiatric complication of HIV disease, its prevalence varies from 22% to 71%.[2] Still it remains underdiagnosed.[3] Discovery of infection has a dramatic psychological impact on the patients and even the virus itself being neurotropic, produces neuropathological changes in the gray matter and can lead to depression. Depression is associated with increased health-care utilization, decreased quality of life (QOL), and increased suicidal rate among patients with HIV. Moreover, depression increases the likelihood of HIV transmission, is associated with poor adherence to antiretroviral therapy (ART) leading to immunological failure, and may independently increase HIV progression.[4] It is therefore crucial to identify patients with depression for proper management of the disease.

The sociodemographic factors of age, gender, marital status, education, and income are important factors, in explaining the variability in depression prevalence rates.[5] The current study therefore aimed to investigate

- the sociodemographic and clinical determinants of depression
- difference in the QOL of HIV patients not having depression and those suffering from depression.

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Materials and Methods

Ethical considerations

Approval from the Institutional Ethics Committee was sought before commencing the study and written informed consent of each study participant was taken before starting the interview.

Study design and study setting

This study was conducted at an ART center in a tertiary care hospital, located in central India. This ART center was established in December 2008, and totally 1181 HIV/AIDS patients were registered there before the start of the study. The current cross-sectional study was carried out during January 2011–January 2012.

Study population and sampling

The target population was HIV/AIDS patients of 18 years of age and above and on ART for the past 6 months. First, 6 months of ART are critical. Some patients may not respond as expected or may even deteriorate clinically at first.[6] This would have adversely affected the current study, hence, patients on ART for 6 months and more were considered eligible for the study. Critically ill, patients with behavioral disorders and those who did not consent were excluded from the study.

Instruments and measures

- Sociodemographic and clinical characteristics studied were age, sex, education, employment status, marital status, place of residence, presence of symptoms of opportunistic infections, CD4 cell counts, and body mass index (BMI)
- Screening for depression: This was done using depression anxiety and stress scale-21 (DASS-21) which is a short version of DASS-42 and was developed by S. H. Lovibond and P. F. Lovibond, 1995.[7-9] Internal consistency reliability coefficient alphas for Depression, Anxiety, Stress subscales, and full Scale (DASS-21) were 0.88, 0.82, 0.90, and 0.93, respectively. This shows that the scale items were homogenous. The scale also had moderate discriminant validity ($P < 0.001$), i.e., the scale was able to distinguish between ill and well subjects.[7-9] Scores more than nine were indicative of depression and below nine were considered normal
- Quality of life assessment: This was done using WHOQOL-HIV BREF questionnaire.[10,11] It has 31 questions grouped under six domains such as physical domain, psychological domain, independence domain, social relationships domain, environmental domain, and personal beliefs domain. The instrument uses a five-point-interval response-Likert-scale where higher scores indicate better QOL. Domain-wise and total scores were calculated as per the guidelines. According to the WHO, Cronbach's alpha values for each of the domain scores ranged from 0.66 (for domain three) to 0.84 (for domain one), demonstrating good internal consistency. Test-retest reliability using Pearson *r* correlation test-ranged from 0.68 to 0.95 and the instrument

discriminated well between ill and well (using *t*-test - $P < 0.01$) showing good discriminant validity.[11]

Data analysis

STATA 10.1 version (StataCorp. 2007. Stata Statistical Software: Release 10. College Station, TX: StataCorp LP.) was used for statistical analysis. Categorical variables were measured using their frequencies and percentages. Odds ratios (OR) with 95% confidence interval (CI) were used to evaluate the factors associated with depressive symptoms. The unadjusted ORs were calculated by univariate logistic regression. Variables with $P < 0.25$ were included in multiple logistic regression analysis. The criterion for entering and removing the independent variables from the backward stepwise model was $P < 0.05$. The Hosmer–Lemeshow goodness-of-fit test was applied.

Results

Depression was dichotomized into two groups, i.e., the categories "mild," "moderate," "severe," and "extremely severe" were merged and renamed "depressed" while the other category was "normal." Out of 754 study subjects, 377, i.e., 50% suffered from depression and nearly 75.9% of them were in the age group of 25–44 years [Table 1].

Out of 754 patients, 61% were male and 39% were female. Nearly 12.5% patients were illiterate, 32.8% had no spouse, and 26% were unemployed. Almost 92.6% of depressed HIV patients and 83% of the nondepressed HIV patients belonged to lower socioeconomic class [Table 2].

The prevalence of depression was higher in females, illiterates, and unemployed HIV patients as compared to males, literates, and employed subjects, respectively. In addition, they were twice at the risk of suffering from depression. It was also observed that while those who were not having spouse to support were thrice at risk. Depression was significantly more prevalent in patients who belonged to lower socioeconomic class (50.7%) than those who belonged to middle and upper socioeconomic class (30.4%) [Table 2].

Symptomatic patients were those suffering from one or the other opportunistic infections and out of 165 patients, who were symptomatic, 113 (68.5%) were also suffering

Table 1: Age group-wise prevalence of depression in patients living with HIV/AIDS			
Age groups (years)	Patients living with HIV/AIDS (*n*=377)		Total (*n*=754)
	Normal	Depressed	
≤24	8 (2.1)	8 (2.1)	16 (2.1)
25-34	120 (31.8)	116 (30.8)	236 (31.3)
35-44	177 (46.9)	159 (42.2)	336 (44.6)
45-54	54 (14.3)	71 (18.8)	125 (16.6)
≥55	18 (4.8)	23 (6.1)	41 (5.4)

Table 2: Unadjusted sociodemographic determinants of depression in HIV patients				
Sociodemographic and clinical factors	Normal, *n* (%)	Depressed, *n* (%)	OR (95% CI)	*P*
Sex				
Male (*n*=460)	259 (46.3)	201 (43.7)	1.9 (1.42-2.58)	0.00001
Female (*n*=294)	118 (40.1)	176 (59.9)		
Education				
Literate (*n*=660)	345 (52.3)	315 (47.7)	2.1 (1.34-3.33)	0.001
Illiterate (*n*=94)	32 (44)	62 (66.0)		
Marital status				
Unmarried/widowed/separated/ divorced (*n*=247)	77 (31.2)	170 (68.8)	3.2 (2.32-4.42)	0.00001
Married (*n*=507)	300 (59.2)	207 (40.8)		
Employment status				
Employed (*n*=558)	305 (54.6)	253 (45.4)	2.1 (1.48-2.90)	0.00001
Unemployed (*n*=196)	72 (36.7)	124 (63.3)		
Socioeconomic class				
Lower class (*n*=662)	313 (47.3)	349 (52.7)	2.5 (1.59-4.07)	0.0001
Middle and upper class (*n*=92)	64 (69.6)	28 (30.4)		
Place of residence				
Urban (*n*=593)	291 (49.1)	302 (50.9)	1.2 (0.83-1.69)	0.374
Rural (*n*=161)	86 (53.4)	75 (46.6)		
Clinical status				
Asymptomatic (*n*=589)	325 (55.2)	264 (44.8)	2.7 (1.83-3.93)	0.00001
Symptomatic (*n*=165)	52 (31.5)	113 (68.5)		
CD4 cell count (cells/mm^3)				
<500 (*n*=628)	311 (49.5)	317 (50.5)	1.121 (0.76-1.64)	0.5582
≥500 (*n*=126)	66 (52.4)	60 (47.6)		
BMI (kg/m^2)				
<18.5 (*n*=343)	88 (25.7)	255 (74.3)	6.86 (4.97-9.46)	0.0001
≥18.5 (*n*=411)	289 (70.3)	122 (29.7)		

BMI: Body mass index; OR: Odds ratio; CI: Confidence interval

from depression. Moreover, they were 2.7 times at the risk of suffering from depression than their asymptomatic counterparts. Place of residence (whether residing in rural area or urban area) had no effect on depression in HIV patients. Similarly, CD4 counts did not show any significant difference on the mental state of the patients. This might be because though the CD4 counts seemed lower, they were actually increasing as the patients were on ART. However, nutritional status, as denoted by BMI, had significant difference on the mental state of the HIV patients as out of 343 patients who had BMI <18.5, 255 (74.3%) patients suffered from depression whereas out of 411 patients who had BMI ≥18.5, only 122 (29.7%) patients suffered from depression. It was clear that undernourished patients experienced more depression than the properly nourished ones [Table 2].

All those variables which were found significant in the previous analysis with *P* < 0.25 were entered in the full model of multiple logistic regression [Table 3]. Stepwise, backward elimination procedure was followed to eliminate nonsignificant variables from the model. Final reduced model included only those variables which were found with *P* < 0.05 [Table 4].

QOL assessment showed that QOL of all the HIV patients was poor as all of them scored very low scores in the QOL assessment. However, overall QOL of depressed HIV patients was compromised as denoted by the total QOL score. They scored significantly lower scores in all the six domains of QOL than their nondepressed counterparts. Most affected domains in case of depressed patients were social and environmental domains [Table 5].

Lower scores in the social domain indicated that patients were comparatively unhappy with their social relationships, felt dependent, and a bothering to others, were not able to concentrate on their work and were not satisfied with themselves.

Lower scores in the environmental domain indicated that our patients were not satisfied with the conditions of their living places or the physical environment in their locality, had poor financial resources, did not feel safe, felt oppressed, and were unhappy with the transport and access to health care.

Discussions

Depression and anxiety significantly impair work functioning, social functioning, and health of an individual and his QOL, more so than the patients with congestive heart failure, diabetes, and myocardial infarction.[12] This situation becomes worse if the individual is HIV positive and on ART. ART prolongs the life

but morbidities such as depression impair the QOL. Hence, an effort was made in the present study, to find out the correlates of depression and compare the QOL of HIV patients who had depression and those who had no depression.

In the current study, depression was seen in 50% of the patients. Shacham *et al.*[13] reported that 43% of their subjects suffered from depression (major depression + other depressive disorders) which was quite close to our observations. With univariate analysis, depression was found more prevalent in females than males, as is also seen in general population. Women having more depression, anxiety, and stress were also reported by Gordillo *et al.*,[14] Wisniewski *et al.*,[15] Rapaport *et al.*,[16] and Othman *et al.*[17] Other important correlates found in this study were illiteracy, unemployment, lower socioeconomic status, presence of opportunistic infections, not having life-partner and BMI <18.5 kg/m². Similar findings were reported by Shittu *et al.*,[5] Unnikrishnan *et al.*,[18] and Ibrahim *et al.*[3] Income is the most significant social determinant of health because it determines one's overall living conditions, affect one's psychological condition, and help shape one's diet and eating habits. Low-income people living in poverty, cannot afford healthy food, sufficient clothing and good housing all of which are necessary preconditions of good health.[5] Similarly, low social support causes more stress and can accelerate the progression from HIV to AIDS.

Poor QOL can be a consequence of depression as well as its precursor. Regardless of the interrelationship, there have been very few attempts to conduct research to understand the relationship between QOL and depression. The three-dimensional theory developed by de Leval situates both depression and QOL as part of a continuum in time rather than as independent phenomena. The greater the gap between past and present, the greater the depression and poorer the QOL.[19] Many a times, QOL impairments associated with depression are equal to or greater than those seen with other chronic disorders.[16] In the present study, patients who were depressed had significantly lower QOL than the subjects not suffering from depression more so in the environment and social relationships domains. Similar findings were reported by Campos *et al.*,[20] who found that patients who lacked or had mild symptoms of depression had 4.91 times higher chances of having good QOL as compared to those having severe depression (OR 4.91, 95% CI - 1.85–12.98, *P* = 0.001).

Conclusions

The prevalence of depression was higher in HIV patients in our study and its important correlates were illiteracy, unemployment, lower socioeconomic status, presence of opportunistic infections, not having life partner, and BMI <18.5 kg/m². In addition, patients suffering from depression had poor QOL than those HIV patients who did not have depression. This indicates the dire need to incorporate mental health care including screening and management of depression, in the HIV care guidelines as its prevalence is as high as those of other HIV associated conditions such as tuberculosis and hepatitis B infection. Routine screening of this more common psychiatric condition among HIV positive subjects should be practiced to optimize patient care and improve clinical outcomes. Given the availability of effective pharmacological and psychotherapeutic interventions for depression, neglect of this aspect of care for persons with HIV infection is reprehensible.

Limitations

Our study did have certain limitations. Since it was a cross-sectional study, the issue of temporality is a barrier in understanding the association of various factors such as low BMI and physical ailments with depression. Whether depression preceded or succeeded these factors is difficult to delineate. Ours was a quantitative enquiry to assess depression levels in HIV patients.

Table 3: Multiple logistic regression analysis of depression and sociodemographic and clinical factors affecting depression (full model)			
Variables	OR	95% CI	*P*
Age	1.03	0.95-1.11	0.4734
Sex	2.14	1.06-2.23	0.0004
Education	2.86	1.77-3.96	0.0076
Occupation	2.14	1.03-2.33	0.0142
SES	1.03	0.92-1.14	0.5909
BMI	0.97	0.89-1.05	0.5079
Clinical status	0.95	0.87-1.05	0.3333
Marital status	0.98	0.90-1.07	0.6733

BMI: Body mass index; OR: Odds ratio; CI: Confidence interval; SES: Socioeconomic status

Table 4: Multiple logistic regression analysis of Depression and sociodemographic and clinical factors affecting depression (final model)			
Variable	OR	95% CI	*P*
Education	2.86	1.77-3.96	0.008
Occupation	2.14	2.03-2.33	0.012
Sex	2.14	1.06-2.23	0.000

OR: Odds ratio; CI: Confidence interval

Table 5: Domain-wise quality of life scores in normal and depressed patients								
Psychological morbidity	*n* (%)	Domain-wise QOL scores (mean±SD)						Total QOL score (mean±SD)
		Physical	Psychological	Independence	Social relationships	Environmental	Personal beliefs	
Normal	377 (50.0)	11.0±1.85	11.9±1.62	13.3±1.91	13.7±2.20	12.1±1.71	11.2±3.59	11.8±1.26
Depressed	377 (50.0)	10.7±1.50	10.6±1.82	11.9±2.12	10.6±3.03	9.8±2.05	10.3±2.76	10.8±1.65
Z		2.61	10.21	9.8	15.93	16.21	4.0	10.56
P		0.0045	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001

QOL: Quality of life; SD: Standard deviation

Along with quantitative design, qualitative approach like focus group discussions and in-depth interviews would have put forth some more facts of the disease.

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Conflicts of interest

There are no conflicts of interest.

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