Global Scientific JOURNALS

GSJ: Volume 8, Issue 3, March 2020, Online: ISSN 2320-9186
www.globalscientificjournal.com

PREVALENCE AND CORRELATES OF DEPRESSION AND ANXIETY DISORDERS AMONG PATIENTS ON TREATMENT FOR HIV/AIDS IN MWANZA-TANZANIA

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Abstract

Background: Depression and anxiety disorders are the most frequently observed psychiatric disorders among HIV/AIDS patients, and are associated with key health behaviours including medication adherence (as positive behaviours), drinking and smoking (as

negative/riskbehaviours). They are also associated with disease outcomes and increased burdens on health care systems.

Aim: This study aims at determining the prevalence and correlation of depression and anxiety disorders among people living with HIV/AIDS in Mwanza-Tanzania.

Methods: This was a cross sectional analytical study, where a total of 275 patients aged 18 years and above attending Care and Treatment Centre at Bugando Medical Centre were recruited and interviewed by using Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI).Systematic random sampling method were used where every third patient was selected for inclusion**.**

Results: The mean age of participants was 42 ± 9.9 years with 74.2% being females 42.6% of the participants were married, 67.6% attained primary education and 71.6% found to be in the lowest income category with monthly income below 100,000/= Tanzanian Shillings. The overall prevalence of depression was 24% with mild, moderate and severe depression found to be 10.6%, 12% and 1.4% respectively. The prevalence of anxiety was found to be 45.1% with mild, moderate and severe anxiety found to be 26.9%, 13.1% and 5.1% respectively. Gender, age and income showed statistically significant correlation with depression and/or anxiety.

Conclusion: There is high prevalence of anxiety and depression among people living with HIV/AIDS, hence the importance of incorporating mental health services on the treatment guidelines of HIV/AIDS patients.

Introduction and background

The World Health Organization estimates over 350 million people worldwide experience depression which accounts for 4.3% of the global burden of disease and is among the largest single causes of disability worldwide [11 % of all years lived with disability globally][1].

It is estimated that thirty-seven million people live with HIV/AIDS worldwide. Sub Saharan Africa has borne the brunt of this pandemic with two thirds of all cases of HIV worldwide [2], with estimates that 5% of adults aged 15-49 are living with HIV/AIDS in Tanzania[3].

Up to 70% patients with HIV suffer from psychiatric complications at some point during the course of their illness [4]. Studies have shown high prevalence and correlation of depression, anxiety disorders and substance use among people with HIV/AIDS [5, 6].

Depression is the most common psychiatric disorder seen in people with HIV/AIDS[7]. Prevalence of depression among HIV/AIDS patients varies between 22% to 80% depending on the population studied, the period investigated, and the tools used[8].

The prevalence of anxiety disorder is higher among HIV/AIDS than the general population [9], and women are at higher risk than men to experience an anxiety disorder over their life time [10]. Female gender, family history of mental illness, negative coping style, alcohol use disorder, food insecurity and stress have found to correlate with anxiety and depression among HIV/AIDS population [11, 12].

The objectives of this study was to determine the prevalence and correlation of depression and anxiety disorders among people living with HIV/AIDS in Mwanza-Tanzania.

Study design and settings

This was a cross sectional analytical study among People Living With Human Immunodeficiency Virus and/or AIDS (PLWHA) attending Care and Treatment Centre (CTC) at

Bugando Medical Centre, located in Mwanza, north-western Tanzania. Bugando Medical Centre is a tertiary referral, teaching and research centre for the Lake and Western zones of the United Republic of Tanzania. It has more than 1000 beds, with catchment population of more than 15 million people[13]. BMC-CTC provides primary HIV prevention, care and treatment services, it also serves as the referral centre for patients who developed complications from ARVs from all over the Lake and Western zones of the United Republic of Tanzania, or who have failed the first line of treatment and require second line therapy. The centre serves an average of 1700 patients per month.

Sample size, Patients' enrolment and data collection

The study population consisted of all people living with HIV/AIDS attending BMC-CTC. A sample size of 275 was estimated by using Cochran's formula.

Inclusion criteria: A patient living with Human Immunodeficiency Virus attending at BMC-CTC, 18 years of age and above, able to speak and understand Kiswahili or English, willingness to participate in the study and sign a written informed consent.

Exclusion criteria: Unable to give written informed consent.

Patients who presented to BMC-CTC were invited to participate in the study where a briefing of the nature and aim of the study was reviewed and then inclusion and exclusion criteria were applied. Participants who met the inclusion criteria were asked to complete a research questionnaires. The researcher administered the questionnaires to the participants starting with the socio demographic (age, sex, religion, marital status, occupation, education level and income), followed by the Beck Depression Inventory and the Becks Anxiety Inventory. There was no drop outs.

Data analysis

Data was analysed using Stata version 13 software for Windows where an exploratory data analysis was conducted to summarize socio-demographic characteristics and patients with features of Anxiety and Depression. Categorical variables were summarized using frequencies and percentages and continuous variables were summarized using measures of central tendency.

Bivariate analysis was conducted to determine factors associated with depression and anxiety. Chi-squared tests for categorical variables were used to ascertain differences between the proportions where factors with P value of <0.05 on bivariate analysis was considered significant.

Ethics

Ethics approval to conduct and publish the findings from this study was sought from both the Catholic University of Health and Allied sciences/ Bugando Medical Centre joint ethical committee and the University of Nairobi/KNH Ethics and Research committee. Permission to conduct the study was granted by Bugando Medical Centre administration. Patients provided written informed consent for their participation.

RESULTS

Socio demographic characteristics of people living with HIV/AIDS attending BMC-CTC

A total of 275 participants were involved in this study. The mean age was 42 ± 9.9 years, with minimum and maximum age of 18 and 71 respectively. 204(74.18%) of the participants were females, resulting in a female to male ratio of 2.9:1. 29.5% and 34.9% of the participants were in the age groups of 30-39 and 40-49 years respectively. Table 1 summarizes the sociodemographic characteristics of the participants.

Table 1: Demographic characteristics of PLWHA attending BMC-CTC

Demographic characteristics	Frequency (n)	Percentage (%)
Gender		
Male	71	25.8
Female	204	74.2
Age		
18-29	27	9.8
30-39	81	29.5
40-49	96	34.9
50-59	56	20.4
60 and above	15	5.4
Marital status		
Married	117	42.6
Widowed	70	25.5
Divorced	13	4.7
Separated	58	21.1
Single	17	6.1
Religion		
Christians	218	79.3
Islam	52	18.9
Not known	5	1.8
Education		
None	37	13.5
Primary	186	67.6

Secondary	36	13.1
College	13	4.7
University	3	1.1
Occupation		
Employed	36	13.1
Self employed	141	51.3
Unemployed	95	34.5
Retired	3	1.1
Income (Tshs)		
<100,000	197	71.6
100,001-300,000	50	18.2
300,001-500,000	11	4.0
500 ,001-999,999	9	3.3
1,000,000 and above	8	2.9

The married patients (n=117) constituted 42.6% of the participants and represented the most common marital status; approximately one-quarter (25.5%, n=70) of patients were widowed, with 21.1% (n=58) reported to be separated with their spouse, where by a small number 6.1% (n=17) and 4.7% (n=13) reported to be single and divorced respectively.

More than half of the participants, 67.6% (n=186), only attained primary level education, followed by 13.5% (n=37) with no any formal education. 71.6% (n=197) of participants were in the lowest income category with monthly income of below 100,000/= Tanzanian Shillings (Tshs) with about one-half (51.3%, n=141) being self-employed.

Prevalence of depression among people living with HIV/AIDS attending BMC-CTC

Prevalence and severity of depression were classified using scores derived from the Beck Depression Index (BDI). Out of a possible maximum score of 63, the 275 study participants had an average (± SD) score of 8.12 (±7.48). The lowest score recorded in the sample was zero (n=24) and the highest score was 40(n=1). The prevalence of depression as co-morbidities in HIV/ AIDS is presented in Table 2**.**

Table 2: prevalence of depression among PLWHA attending BMC-CTC

Severity of depression	BDI score	Frequency (n)	Percentage (%)
No depression	0-12	209	76.0
Mild depression	13-16	29	10.6
Moderate depression	17-28	33	12.0
Severe depression	>28	4	1.4

The overall prevalence of depression was found to be 24%. Prevalence of the different levels of depression was as follows: 10.6% of patients had mild depression, 12% had moderate depression and 1.4% had severe levels of depression. Approximately three-quarters (76%) of all patients did not have depression (BDI score from 0 to 12).

Prevalence of anxiety among people living with HIV/AIDS attending BMC-CTC

The level of anxiety in HIV/AIDS patients was assessed using the Beck Anxiety Index (BAI). Out of a possible maximum score of 63, the 275 study participants had an average (± SD) score of 8.42 (±8.26). The lowest score recorded in the sample was zero (n=46) and the highest score was 39 (n=1). The prevalence of anxiety as co-morbidities in HIV/ AIDS is presented in Table 3.

The overall prevalence of anxiety was 45.1%. Prevalence of the different levels of anxiety was as follows: 26.9% of patients had mild anxiety, 13.1% had moderate anxiety and 5.1% had severe levels of anxiety.

Table 3: prevalence of anxiety among PLWHIV attending BMC-CTC

Severity of anxiety	BAI score	Frequency (n)	Percentage (%)
No anxiety	0-12	151	54.9
Mild anxiety	13-16	74	26.9
Moderate anxiety	17-28	36	13.1
Severe anxiety	>28	14	5.1

Correlates of depression

Association between socio demographic factors and depression

Female patients were at significantly higher risk to have depression compared to male patients (27.4% versus 14.1%, p value of 0.023). The group aged 30-39 years were more likely to have depression (32.1%) followed by oldest group aged 50 years and above, 22.5%, with p value of 0.224). There was an association between marital status and depression whereby those who were

single were more likely to have depression (29.4%) followed with those who reported to be either separated, divorced or widowed (24.1%). Those who were married were less likely to have depression (23.1%, p value 0.85). Muslims were more likely to have depression (30.8%) followed by Christians (22.5%) with p value of 0.44.

Association of depression and education showed that patients with no formal education were more likely to have depression (32.4%), followed by those with primary education (26.7%). While those with post primary education (secondary, college or university) had 19.2% chance of having depression with a p value of 0.349.

Table 4: Association between socio demographic factors and depression

Socio-demographic characteristics	**Depression**			
	No	**Yes**	**Chi2 (df)**	**Pvalue**
	n (%)	***n (%)***		
Gender			5.15(1)	0.023
Female	148(72.6)	56(27.4)		
Male	61(85.9)	10(14.1)		
Age (years)			4.37(3)	0.224
18-29	22(81.5)	5(18.5)		
30-39	55(67.9)	26(32.1)		
40-49	77(80.2)	19(19.8)		
>=50	55(77.5)	16(22.5)		
Marital status			0.32(2)	0.85
Married	90(76.9)	27(23.1)		
Single	12(70.6)	5(29.4)		

Widowed/divorced/separated	107(75.9)	34(24.1)		
Education			2.10(2)	0.349
None	25(67.57)	12(32.4)		
Primary	142(76.3)	44(23.7)		
Post-primary	42(80.7)	10(19.3)		
Employment			4.81(2)	0.090
Employed/retired	35(89.7)	4(10.3)		
Self employed	105(74.5)	36(25.5)		
Unemployed	69(72.6)	26(27.4)		
Income (Tshs)			4.43(1)	0.035
<100,000	143(72.6)	54(27.4)		
>100,000	66(84.6)	12(15.4)		
Religion			1.62(2)	0.44
Christians	169(77.5)	49(22.5)		
Islam	36(69.2)	16(30.8)		
Not known	4(80.0)	1(20.0)		

There was significant association between income and depression, with those with an income of <100,000 Tshs were more likely to have depression compared to those with income of >100,000 Tshs (27.4%, 15.4% respectively with p value of 0.035). Employment factor showed that patients who were not employed were more likely to have depression (27.4%), while those who were employed were less likely to develop depression (10.3% with p value of 0.090).

Correlates of Anxiety

Association between socio demographic factors and anxiety

Female patients were significantly more likely to have anxiety compared to male patients (50.5%, 29.6% respectively, with p value 0.002). Young adults 18-29 years were more likely to develop anxiety followed by those on their 30s (63%, 53.1% respectively, p value 0.003). Those who were not Muslims or Christians (Not known religion group) showed high prevalence of anxiety followed by Muslims (60%, 57.7 respectively, p value 0.092).

There was an association between marital status and anxiety with 64.7% of those who were single were more likely to have anxiety followed by those who were widowed, separated or divorced (46.1%). Among those who were married, only 41.1% were likely to have anxiety, p value 0.175. Of those with no formal education 56.8% were more likely to have anxiety compared to those with primary education or post primary education (43.5%, 42.3% respectively with p value 0.31).

There was significant association between income and anxiety. Participants with low income of <100,000 Tshs were more likely to have anxiety compared to those with income of >100,000 Tshs (48.7%, 35.9% respectively with p value of 0.036). Employment factor showed patients who were not employed were more likely to have anxiety (53.7%), while those who were employed were less likely to develop anxiety (35.9% with p value of 0.092). Table 5 summarizes the association between socio demographic characteristics and anxiety.

Table 5: Association between socio demographic factors and anxiety

Socio-demographic characteristics	Anxiety			
	No	**Yes**	**Chi2 (df)**	**Pvalue**
	n (%)	***n (%)***		
Gender			9.30(1)	0.002
Female	101(49.5)	103(50.5)		
Male	50(70.4)	21(29.6)		
Age (years)			15.76(4)	0.003
18-29	10(37.0)	17(63.0)		
30-39	38(46.9)	43(53.1)		
40-49	64(66.7)	32(33.3)		
50-59	27(48.2)	29(51.8)		
>=60	12(80.0)	3(20.0)		
Marital status			3.48(2)	0.175
Married	69(58.9)	48(41.1)		
Single	6(35.3)	11(64.7)		
Widowed/divorced/separated	76(53.9)	65(46.1)		
Education			2.37(2)	0.305
None	16(43.2)	21(56.8)		
Primary	105(56.5)	81(43.5)		
Post-primary	30(57.7)	22(42.3)		
Employment			4.76(2)	0.092
Employed/retired	25(64.1)	14(35.9)		
Self employed	82(58.2)	59(41.8)		

Unemployed	44(46.3)	51(53.7)		
Income (Tshs)			3.71(1)	0.036
<100,000	101(51.3)	96(48.7)		
>100,000	50(64.1)	28(35.9)		
Religion			4.77(2)	0.092
Christians	127(58.3)	91(41.7)		
Islam	22(42.3)	30(57.7)		
Not known	2(40.0)	3(60.0)		

DISCUSSION

This study was conducted at the main referral and consultant hospital for the Lake and Western zones of the United Republic of Tanzania hence highlights the magnitude and correlates of depression and anxiety among HIV/AIDS patients in Tanzania.

The findings showed that a significant number of people living with HIV/AIDS attending the clinic are experiencing mood and anxiety. Similar findings on the burden of depression and anxiety among these patients have been reported in previous local and global studies[14-16].

The female to male ratio in this study was 2.9:1 with the majority been in the age group of 40-49 years followed by 30-39. The findings could be explained by the fact that women have more health seeking behaviours compared to men. This findings correlate with the Tanzania HIV indicator survey which indicates prevalence of HIV been higher among women than men, with increased prevalence from young adults peaking at the age of 45-49 for women and 30-49 for men[3]. Local studies has shown higher prevalence of HIV/AIDS among females [17-19], with

the age prevalence of 40-49 been the same to that reported in the same study settings in Kenyatta national hospital in Nairobi[20], Rwanda and Zambia[21]. A combination of factors including biological, social, behavioral, culture and economics has led to the disparate increase in HIV infection rates in Sub Saharan Africa among women compared to their male counterparts[22]. The prevalence of HIV/AIDS continues to be high among married group, findings comparable to those found by the same study setting in rural Tanzania[23], Kenya and Namibia [24].

There is a variation of education level among HIV/AIDS patients in Sub-Saharan Africa, 67.6% of the studied participants had primary level of education, this can be explained by the high levels of illiteracy of the country, the same findings was observed on the rural area of Tanzania[23], southern Uganda [25], Ethiopia [26] and Cameroon[27]. In contrast, higher level of education among HIV/AIDS patients have been observed in Kenya[20], Nigeria [9] and South Africa [28].

Employment and income continue to be a major concern among HIV/AIDS patients in Sub-Saharan Africa. The majority of the studied participants reported to be engaged in self-employment activities such as petty traders, hawking, tailoring, bodaboda riders with income of less than 100,000/=Tshs per month. The low socioeconomic status of the majority of participants may affect the likelihood of contracting HIV and developing AIDS, determine the quality of life after being affected by the virus, determine the drug and treatment adherence, which may all precipitate to depression and anxiety. The same study findings have been found in different local studies showing majority of HIV/AIDS patients live in poverty, poor economic status, are unemployed or depends on their relatives for food [16, 18, 19, 29].

The prevalence of depression and anxiety continues to be high among HIV/AIDS population, in this study the prevalence of 24% for depression was observed and found to be consistent to that

observed in previous studies [19, 30]. The prevalence of 45.1% for anxiety was higher to what have been observed in previous local and sub-Saharan studies [31, 32]. The higher prevalence of depression and anxiety observed can be contributed by underutilized of psychological services among HIV/AIDS population in our settings which highlights the importance of incorporating specific mental health services to this population including identification, evaluation, pharmacological and non-pharmacological treatment, such as counselling, group or individual psychotherapy.

Conclusion

This study showed high prevalence of anxiety and depression and their correlates among people living with HIV/AIDS. It emphasizes the importance of policy makers to incorporate mental health services on the treatment guidelines of HIV/AIDS patients.

Conflict of interest

Authors declare no conflict of interest.

Acknowledgement

The authors would like to thank the administration and all the staff members at BMC-CTC for their support during this study, all the participants who gave willingly their time and shared their life experience with us.

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