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Original Research Article

Risk factors associated with depression among HIV positive women at Mama Lucy Kibaki hospital in Nairobi County, Kenya

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ABSTRACT

Background: Globally, 280 million people are estimated to have depression. Depression has been associated with negative treatment outcomes and reduced quality of life. The study aimed to determine the prevalence and correlates of depression among HIV-positive women at Mama Lucy Kibaki hospital in Kenya.
Methods: A facility-based cross-sectional analytical study design that employed a mixed-method approach. The study employed systematic random sampling to select 183 HIV-positive women. The patient health questionnaire (PHQ-9) was used to screen for depression. Data analysis used statistical package for social sciences. Chi-square test and logistic regression were used to test and measure association.
Results: The prevalence of possible depression was 35.6%. Depression was significantly associated with food insecurity (AOR=8.186, C.I=2.950-22.718), low income (AOR=3.766, CI=1.088-13.030), physical exercise (AOR=64, CI=0.039-0.627), maladaptive coping style (AOR=9.585, CI=3.100-29.634), stressful life event (AOR=47, CI=0.005-0.088), intimate partner violence (AOR=36, CI=0.086-0.857), opportunistic infections (AOR=5.8, CI=0.081-0.366) and side effects of antiretroviral (AOR=7.6, CI=0.029-0.601). Themes from qualitative findings were; low socioeconomic status, stigma and opportunistic infections
Conclusions: The study revealed a high prevalence of depression but they were more likely to be depressed if they were food insecure, had low income, adopted maladaptive coping styles, experienced a stressful event, intimate partner violence, had opportunistic infections and experienced side effects of antiretroviral. Future mental health interventions should focus on these factors in the prevention and management of depression among HIV-positive women.

Keywords: Depression, Prevalence, HIV-positive women, Risk factors

INTRODUCTION

Depression is regarded as low interest in previously enjoyed activities, sadness, self-guilt, lack of self-worth, tiredness and poor concentration which can negatively impact the capacity to work and function normally.[1] Approximately 280 million people globally suffer from depression making it the leading cause of disability worldwide and a major contributor to the global burden of disease.[1] Mental disorders increase the risk of being infected with HIV and interfere with adherence to treatment; on the other hand, mental disorders could be attributed to HIV infection.[2] There exists a great burden of depression in people living with HIV than in the overall population but it is worse when it is common among the high-risk groups such as women.[3] HIV infected women are more likely to develop severe depression when matched to the HIV infected males and the HIV negative women.[1,4] The risk is amplified by factors such as poverty, single parenthood, gender violence and stigma. Depression has negative effects on HIV treatment outcomes and causes excess death among the HIV infected independent of HIV treatment success.[5]

Depression leads to poor adherence to drug regimens, low quality of life and greater than before stigmatization.[6,7]

In Sub-Saharan Africa which carries the great burden of HIV/AIDS, the prevalence rates are high. In South Africa a prevalence of 48.7%, Tanzania 25% and Kenya 48%.[8-10] Literature on risk factors of depression among HIV positive has generated inconsistent results. Socio-demographic factors such as marital status, employment, and income have been widely shown to be associated with depression.[11,12] However, age, level of education and number of children have shown diverse associations in different studies. Poor social support, stigma, stressful life events and intimate partner violence have been shown as major contributors to depression.[13-15] In Kenya, the prevalence of depression among persons with HIV is high yet mental health specialists are scarce and the mental health treatment gap is huge.[16] The prevalence and correlates of depression among HIV-positive women are untapped and data is scarce. Therefore, the goal of the study was to fill this knowledge gap by determining the prevalence and associated factors of depression among HIV-positive women.

METHODS

Research design

A facility-based analytical cross-sectional research design was utilized. The research combined qualitative and quantitative techniques for triangulation.

Study area

The research was conducted at Mama Lucy Kibaki hospital HIV clinic. It is a ministry of health county referral hospital situated in Nairobi County, Kenya. The hospital serves an estimated population of 187,020 and offers both inpatient and outpatient services. The HIV clinic serves 4083 registered patients receiving antiretroviral therapy.

Study population

The study population consisted of 183 HIV-positive women attending the HIV clinic during the data collection period. All HIV-positive women aged 18-59 years who had been receiving ARVs for at least 6 months and had given informed consent were included in the study.

Sample size determination

The hospital comprehensive care clinic has a total of 4083 registered adult patients, 1790 being men and 2293 being women. During the data collection month, 400 women had an appointment at the clinic. Single population proportion formula using 25% prevalence from a previous study.[3] Fishers et al formula (1998) was employed.

$$n = (Z^2pq)/d^2$$

Where n=desired sample size, p=prevalence of depression, q=1-p, Z=The standard deviation at 95% confidence interval=1.96 and d= error of margin at 5%.

Therefore, $n = (1.96^2 \times 0.25 \times 0.75)/0.052 = 288$

As the population is a less than 10000, the reducing method was used.

$$nf = n/1 + (n)/(N)$$

Where nf= sample size if the study population is less than 10000, n=sample size when the study population is greater than 10000, N=population size, thus

$$nf = 288/1 + (288)/(400) = 167$$

Considering the non-response of 10%, the final sample size was 183 participants.

Sampling techniques

For participant selection, a sampling frame of all women booked for the clinic during the data collection period was obtained after which systematic sampling was employed to get the required sample size. To define the sampling interval, the total number of women scheduled during the data collection period of 400 was divided by the total sample size of 183. The k value was 2 and from the first two participants, the second patient was randomly selected. All HIV-positive women assigned even numbers were interviewed in quantitative research. In qualitative research, respondents who were assigned odd numbers participated in the focus group discussions. Two focus group discussions each with eight HIV-positive women were done. A clinical psychologist working at the HIV clinic was purposefully selected to participate in the key informant interview.

Data collection tools and procedures

Quantitative data was collected through face-to-face interviews with the participants in the HIV clinic**.** Two research assistants were recruited, and trained on interviewing techniques and proper research ethics. A semi-structured interviewer-administered questionnaire was used in data collection. A pilot study was carried out whereby the questionnaire was pre-tested on 10 percent of the sample size to check for ambiguities. A psychiatrist reviewed the tool before data collection. Cronbach's alpha reliability was calculated and the degree of internal consistency of the tool was 0.79 meaning the tool was consistent.

The questionnaire had the following sub-sections: Section A was a socio-demographic questionnaire, section B was a nine-item patient health questionnaire for screening

depression, section C collected data on psychosocial factors while section D was a data extraction tool for retrieving clinical factors from the patients' medical records. The food insecurity access scale was used to evaluate the level of food insecurity. This variable was later dichotomized into never food insecure and sometimes food insecure.[13] The 9-item patient health questionnaire (PHQ-9) was used to assess depressive symptoms. The Kenyan ministry of health's latest guidelines recommends screening for depression using the PHQ-9.[14-16] It is one of the most widely used scales and has been validated in African countries including Kenya and Nigeria.[17,18] Social support was assessed using the Oslo-3 social support scale which has a score range from 3-14. [19, 20] Level of perceived stigma was evaluated using the HIV stigma scale that has 12 items.[17] In qualitative research, a focused group discussion (FGD) guide and key informant interview (KII) guide structured based on the objectives were used. The FGD was conducted in one counselling room at the facility with the researcher being the moderator and research assistants note-takers. Key informant Interview was conducted with a clinical psychologist at the facility. Data was captured in an audio recorder.

Data processing and analysis

Statistical package for social sciences (SPSS) version 26 was used for data analysis. Descriptive statistics including percentages and frequencies were used to summarize categorical variables. Chi-square tests (X^2) were done to test for association between the dependent and independent variables and those with $p \leq 0.005$ were considered significant. Significant variables from the Chi-square test were fitted into a binary logistic regression model to measure the strength of association using the odds ratio. Qualitative data in audio format was transcribed into text format and transcripts imported into Nvivo software for coding. Similarities and differences were identified followed by generation of themes, sub-themes and finally triangulation with quantitative findings.

RESULTS

The study administered 183 questionnaires to HIV-positive women at Mama Lucy Kibaki hospital HIV clinic. The response rate was 98% indicating that 180 questionnaires were deemed fit for data analysis. Almost half of the respondents 49.4% were aged between 30 and 39 years. The sociodemographic factors are summarized in (Table 1).

Prevalence of depression

The prevalence of depression among HIV-positive women was found to be 35.6% (Figure 1). About 17.1% of participants reported thoughts of self-harm. On the severity of depression, 1.6%, 68.8%. 29.7% had mild, moderate and severe depression respectively.

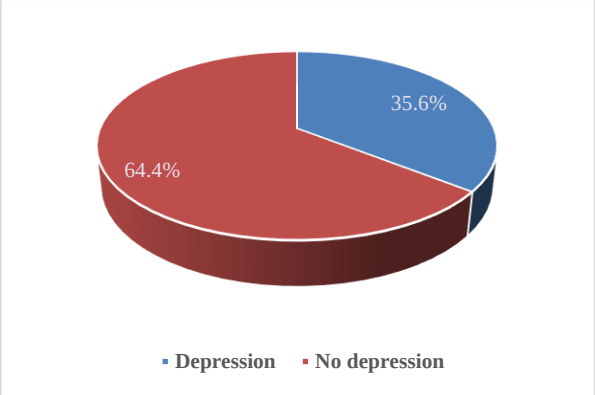

Figure 1: Prevalence of depression among HIV positive women.

Table 1: Sociodemographic characteristics of the respondents.

Independent variables	Category	N	%
Age (years)	18-29	17	9.5
	30-39	103	57.2
	40-49	44	24.5
	50-59	16	8.8
Marital status	Married	82	45.6
	Single	58	32.2
	Separated	26	14.4
	Divorced	5	2.8
	Widowed	9	5.0
Number of children	0-2	120	66.7
	3-5	56	31.1
	>5	4	2.2
Highest level of education	Never attended	2	1.1
	Primary	62	34.4
	Secondary	66	36.7
	Tertiary	50	27.8
Employment status	Employed	61	33.9
	Self-employed	70	38.9
	Unemployed	49	27.2
Level of income	0-9999	87	48.3
	10000-19999	65	36.1
	>20000	28	15.6
Food insecurity	Never	56	31.1
	Sometimes	124	68.9
Family history of depression	Yes	41	22.8
	No	139	77.2

Factors associated with depression

In bivariate analysis two sociodemographic factors level of income (X^2=19.557, df=2, p<0.001) and food insecurity (X^2=21.892, df=1, p<0.001) were significantly associated with depression. The was no significant association between depression and age (X^2=1.189, df=2, p=0.552), marital status (X^2=1.949, df=4, p=0.769), number of children (X^2=2.819, df=2, p=0.242),

occupation (X^2=1.137, df=2, p=0.566), level of education (X^2=1.064, df=3, p=0.839) and family history of depression (X^2=2.696, df=1, p=0.101). Further analysis in the multivariable logistic regression showed, for respondents with an income level of between Kshs 10000-19999 and those who were food insecure, the odds of depression were 3.77 (AOR=3.77, 95% CI 1.09,13.03, p=0.036) and 8.19 (AOR=8.19, 95% CI 2.95, 22.72, p=<0.001) times higher compared to those earning an income of more than Kshs 20000 and those who were food secure respectively (Table 2). The findings corroborate with qualitative findings in which low socioeconomic status was cited as a risk factor. In my opinion, not having a good amount of income can bring a lot of stress.

Table 2: Logistic regression results for significant socio-demographic factors

		B	SE	Wald	Df	Significance	Exp (B)	95% CI for Exp (B)	
								Lower	Upper
Step 1a	Monthly income			15.017	2	0.001			
	Monthly income Kshs (0-9999)	-0.224	0.579	0.149	1	0.699	0.800	0.257	2.486
	Monthly income Kshs (10000-19999)	1.326	0.633	4.383	1	0.036	3.766	1.088	13.030
	Monthly income Kshs (>20000)					-	Reference		
	Never food insecure	2.102	0.521	16.298	1	0.000	8.186	2.950	22.718
	Food insecure sometimes					-	Reference		
	Constant	-0.201	0.559	-0.129	1	0.719	0.818		

a. Variable(s) entered on step 1: Monthly income, household food insecurity access scale score.

Table 3: Logistic regression model for psychosocial factors.

		B	SE	Wald	Df	Significance	Exp (B)	95% CI for Exp (B)	
								Lower	Upper
Step 1[a]	Physical exercise-yes	-1.858	0.710	6.847	1	0.009	0.156	0.039	0.627
	No physical exercise					-	Ref		
	Adaptive Coping style	2.260	0.576	15.401	1	0.000	9.585	3.100	29.63
	Maladaptive coping					-	Ref		
	Social support			1.250	2	0.535			
	Poor	-0.910	0.873	1.086	1	0.297	0.403	0.073	2.227
	Moderate	-0.512	0.935	0.300	1	0.584	0.599	0.096	3.743
	Strong					-	Ref		
	Stressful life event	-3.844	0.722	28.324	1	0.000	0.021	0.005	0.088
	No stressful life event					-	Ref		
	Disclosure	17.5	22350.1	0.000	1	0.999	4284673	0.000	
	Nondisclosure					-	Ref		
	Stigma	-18.63	22350.1	0.000	1	0.999	0.000	0.000	
	No stigma					-	Ref		
	IPV	-1.303	0.586	4.948	1	0.026	0.272	0.086	0.857
	No IPV					-	Ref		

a. Variable(s) entered on step 1: Engagement in physical exercises, coping strategies, social support, stressful life event in the last one month, disclosure, stigma, intimate partner violence

If you do not have enough money, then you cannot take care of yourself and the children. You are unable to eat a balanced diet and this disease requires you to eat well. Lack of employment consequently leads to lack of income and this income is what allows these patients to eat the required diet as well as live in proper houses so all

these factors contribute to stress and ultimately depression.

Regarding psychosocial factors, disclosure (X^2=14.524, df=1, p<0.001), stigma (X^2=18.054, df=1, p<0.001), intimate partner violence (X^2=15.426, df=1, p<0.001), stressful life event (X^2=92.153, df=1, p<0.001), social support (X^2=23.498, df=2, p<0.001), coping style (X^2=47.152, df=1, p<0.001) and physical exercise (X^2=4.771, df=1, p=0.029) had significant association with depression in bivariate analysis. There was no statistical association between alcohol consumption and depression (X^2=0.030, df=1, p=0.862). In the multivariable model, only four variables were significant as shown in (Table 3). The odds of depression were 9.56 (AOR=9.56, 95% CI 3.10,29.63, p<0.001) times higher among respondents with maladaptive coping styles than those with adaptive coping styles.

Table 4: Binary logistic regression model for clinical factors.

		B	SE	Wald	df	Sig	Exp(B)	95% C. I for EXP(B)	
								Lower	Upper
Step 1[a]	Presence of opportunistic infection	-1.75	0.38	20.967	1	0.000	0.172	0.081	0.366
	No opportunistic infections					-	Ref		
	Side effects of ARTs	-2.03	0.77	6.852	1	0.009	0.132	0.029	0.601
	No side effects of ARTs					-	Ref		

a. Variable(s) entered in step 1: the presence of opportunistic infections as a result of HIV, side effects from ARVs

Similarly, for participants who reported stressful life events and intimate partner violence, the odds of depression were 48 (AOR=48, 95% CI 0.00,0.09, p<0.001) and 36 (AOR=36, 95% CI 0.09,0.86, p=0.026) times higher than those who did not experience stressful life events and intimate partner violence respectively. Those who did not engage in physical exercise were 6.4 (AOR=6.4, 95% CI 0.04,0.63, p=0.009) times less likely to be depressed as compared to those who engaged in physical exercise of any intensity. Intimate partner violence, lack of social support, disclosure and stigma were identified as risk factors for depression in qualitative research.Marital conflicts among partners also contribute in that it leads to increased anger and stress beyond control which can lead to depression. Most HIV positive women who have experienced domestic violence develop fear, they are emotionally, sexually and physically abused and these factors can trigger severe depression. When someone is HIV positive, social support is important so that they can cope with issues such as disclosure, pill burden and stigma. When these women lack support especially from their spouses and family members, they tend to lose hope and this can lead to depression. When family members know your status they start avoiding you, they can chase you from their homes, they tell their children to avoid you and they cut all the support. Even at work, the other employees may sideline you and the employer can fire you. Like for me, I am a house help but my employer does not know my HIV status because I fear that if I tell her she will fire me. On clinical factors, opportunistic infections (X^2=27.331, df=1, p<0.001) and side effects of Antiretrovirals (ARTs) (X^2=11.682, df=1, p=0.001) had statistical difference with depression. Drug regimen ((X^2=1.654, df=1, p=0.284), CD4 count ((X^2=0.003, df=1, p=0.956), comorbid chronic disease (X^2=1.683, df=1, p=0.553), clinical staging (X^2=1.683, df=1, p=0.553), body mass index (X^2=1.089, df=1, p=0.790) and viral load (X^2=0.543, df=1, p=0.657) had no significant association with depression. Subsequently, those who had opportunistic infections had 5.8 (AOR=5.8, 95% CI 0.08-0.37, p<0.001) times higher odds of depression than those without opportunistic infections. Women who had side effects of antiretrovirals had 7.6 (AOR=7.6, 95% CI 0.03-0.60, p=0.009) times higher odds of depression than those without side effects (Table 3). The results are supported by qualitative findings from the focus group discussions. Opportunistic infections like tuberculosis can lead to depression because it comes with cough and extreme weight loss. You also have to swallow TB drugs apart from the ARVs and sometimes you have to isolate as you can infect your family members. I can say having bad side effects from ARVs such as headache, nausea and vomiting that persist for a long time can discourage someone from swallowing the medication. Because at the same time you cannot stay without the drugs yet they still bring really bad side effects.

DISCUSSION

Prevalence of depression

This study showed that the prevalence of depression was 35.6% as measured by the patient health questionnaire-9. This revealed the significant burden of depression implying that it could be undiagnosed and treated. This prevalence rate falls within the range of those reported by other studies in Sub-Saharan Africa like one done in Ethiopia which reported a 32.5% prevalence.[9] However, this prevalence was lower than in other studies done in South Africa that reported a higher prevalence rate of 48.7%, Kenya at 48% and Ethiopia at 50.5%.[8,21,22] The prevalence rate was higher than in a study done in Kenya that reported a 13.8% prevalence rate and Canada at 15.1%.[17,23] The variances in prevalence could be ascribed to the dissimilarities in the study population as some studies were conducted among pregnant and post-partum women who are more susceptible. The rates also vary because of different screening tools that have varying psychometric properties. For instance, some studies used the Edinburgh postnatal depression scale and others used

the hospital anxiety depression scale. Additionally, sample size and study designs differences could explain the varying rates.

Sociodemographic factors associated with depression

In this study, those with low income were more likely to develop depression and this was supported by qualitative data. This shows that low socioeconomic status is a risk factor for depression. This might be because low income is related to poverty which prevents access to basic needs, and causes frustration, low self-esteem and feelings of being unworthy. These results are consistent with other literature which reported an increased risk of depression among those with low income.[11,24] Those who were food insecure were 8 times more likely to develop depression as compared to those who were food secure and this was substantiated by qualitative data. Lack of sufficient food for her and the household members especially her children as well as not being able to eat a well-balanced diet as advised by her health care provider increases the risk of depression. The findings are in line with results from other studies.[9,13,25]

Psychosocial factors associated with depression

The odds of developing depression were 36 times greater among women who had experienced intimate partner violence than those who had not experienced it. Intimate partner violence causes traumatic stress due to physical, emotional and sexual abuse leading to fear, low self-esteem and isolation hence increasing the risk of depression. The findings relate to other studies that reported a positive relationship between partner violence and depression.[8,13,26]

Women who had reported a stressful life event had higher odds of depression. Stressful events such as the loss of a loved one, conflicts within the family, marital issues such as separation and divorce as well as violence and crime which are difficult to cope with can trigger depression among these vulnerable women. The findings are analogous to two studies done in Zimbabwe and South Africa.[11,27]

This study highlighted the significant role of structural and social factors in influencing women's mental health. There was an increased likelihood of developing depression among those who had adopted maladaptive coping strategies compared to their counterparts who had adopted adaptive coping styles against stressors. Maladaptive coping styles such as avoidance, self- blame and worry can increase the risk of depression because the focus is escaping the problem and not finding a solution. The findings corroborate with those from other studies.[28,29]

From this study, those who did not engage in any physical exercise were less likely to develop depression. This possibly means that engaging in physical exercise is not protective against depression. The findings are supported by other studies.[30,31]

Clinical factors associated with depression

Women who had opportunistic infections were at an increased risk of depression and this was congruent with qualitative data. Most opportunistic infections such as tuberculosis and candidiasis come with changes in physical appearance causing dissatisfaction among the affected women. The pill burden due to opportunistic infections in addition to HIV infection can cause psychological distress hence predisposing one to depression. The results are alike to other studies which significantly linked opportunistic infections with depression.[14,17,22] The odds of depression were higher among women who had side effects of antiretrovirals than their counterparts. Antiretrovirals may come with severe side effects that can causes changes in the brain and this can trigger the onset of depression. Severe side effects can cause a lot of stress, worry, despair and hopelessness which are linked to the onset of depression. The results concur with those from other studies.[32,33]

Limitations and strengths

Strength and limitations of current study were; the study elucidates more on the burden and associated factors of depression among HIV-positive women. The main strength of the study was the mixed-method approach which allowed for an in-depth assessment of the findings. Findings should be interpreted with caution as this was a facility-based study. Since it was a cross-sectional study no causal inferences could be made. The screening relied on a screening tool rather than a diagnostic review but still showed the significant burden of depression.

CONCLUSION

The prevalence of depression was significantly high at 35.6%. Low income, food insecurity, stressful life event, maladaptive coping style, physical exercise, intimate partner violence, presence of opportunistic infections and side effects of ARTs had a significant association with depression. The findings showed that the magnitude of depression among HIV-positive women is huge implying it is undiagnosed and untreated. Special emphasis particularly screening should be given to the high-risk groups. Therefore, it is important to incorporate mental health care that includes tailored socio-economic and psycho-social support in antiretroviral therapy programs.

Recommendations

The ministry of health should emphasize the implementation of the recommended routine screening for depression among people living with HIV while ensuring the provision of adequate treatment. Mental health screening should be incorporated into HIV primary care to facilitate early diagnosis and referral systems. The

study recommends interventional studies on risk factors of depression to reinforce and widen the existing findings.

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