

# Prevalence And Correlates Of Depressive Symptoms Among HIV Patients Receiving Care And Treatment In Tertiary Hospital In Northwestern Nigeria

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## Abstract:

**Background:** Depression is the most common neuropsychiatric complication of HIV/AIDS disease. HIV/AIDS and depression are projected to be the world's two leading causes of disability by 2030 and the factors affecting depression are not well studied. The study assessed the prevalence and predictors of depression among HIV/AIDS patients receiving care and treatment in Sokoto, Nigeria.

**Methods:** This was a descriptive cross – sectional study design of 270 adult HIV/AIDS patients attending the ART clinic at UDUTH, Sokoto between 1<sup>st</sup> of February to 28<sup>th</sup> February, 2018. Depression was assessed using the nine-item Patient Health Questionnaire (PHQ-9). A positive depression screen was defined as PHQ-9 score of 1 and above. Social determinants of depression (SDS) and alcohol abuse were assessed and the association with depression were determined.

**Results:** The mean age of respondents was  $36.3 \pm 9.2$  years. One hundred and thirty - five (50.6%) satisfied the criteria for a depressive disorder using the PHQ-9 score. Depressive symptoms were associated with past medical history of depression ( $\chi^2 = 25.96, p < .001$ ), ART regimen ( $\chi^2 = 11.14, p = .049$ ) and lack of social cohesion ( $\chi^2 = 12.51, p = .006$ ).

**Conclusion:** This study revealed a high prevalence of depression among HIV/AIDS patients and it was commoner among those who lack social cohesion. There is the need to integrate mental health interventions into routine HIV care and treatment in Nigeria. Social support and good social relationship should be enhanced at HIV/AIDS treatment facilities to prevent depression.

**Keywords:** Prevalence, Depression, HIV/AIDS, Correlates.

## I. INTRODUCTION

HIV infection has spread over the last 30 years and has a great impact on health, welfare, employment and criminal justice sectors affecting all social and ethnic groups throughout the world (Awofala & Ogundele, 2018). The estimated overall number of People Living with HIV/AIDS (PLWHA) by the end of 2015 was approximately 36.7 million [34.0 million–39.8 million] (Joint United Nations Programme

on HIV and AIDS, 2016) and sub-Saharan Africa was the most affected region, having 25.8 million People Living with HIV/AIDS (PLWHA) and accounting for about 70% of all the PLWHA in the world (Joint United Nations Programme on HIV and AIDS, 2015). Sub-Saharan Africa also accounted for about 70% of new HIV infections and 67% of AIDS-related deaths in 2010. (Joint United Nations programme on HIV/AIDS (UNAIDS), 2011) Nigeria, with HIV prevalence of 3.1%, has the second highest number of PLWHA in the world

and it also has one of the highest number of new HIV infection (Joint United Nations programme on HIV and AIDS (UNAIDS), 2015).

Depression is the most common neuropsychiatric complication of HIV disease (Tate et al., 2003). It is a common mental disorder that presents with sad mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or appetite, and poor concentration. Moreover, depression often comes with symptoms of anxiety. These problems can become chronic or recurrent and lead to substantial impairments in an individual's ability to take care of his or her everyday responsibilities (World Health Organization, 2012).

HIV/AIDS and depression are projected to be the world's two leading causes of disability by 2030 (Mathers & Loncar, 2006). Reports on the actual prevalence of depression in HIV-infected persons have varied widely, from 22% (Campos, Guimaraes, & Remien, 2008) to 71% (Savetsky, Sullivan, Clarke, Stein, & Samet, 2001). With 350 million people affected worldwide (World Health Organisation (WHO), 2012), rates of depression are roughly two times greater in people living with HIV than the general population (approximately 10% versus 5%), as determined by a meta-analysis of published studies (Ciesla & Roberts, 2001). Depression is associated with increased health care utilization (Katon, 2003), decreased quality of life (Sherbourne et al., 2000), and increased suicide rate among patients in primary care. (Wulsin, Vaillant, & Wells, 1999) Almost 1 million lives are lost yearly due to suicide, which translates to 3000 suicide deaths every day. For every person who completes a suicide, 20 or more may attempt to end his or her life (World Health Organization, 2012).

Among people living with HIV/AIDS, depression increases the likelihood of HIV transmission (Treisman & Angelino, 2007) and it is associated with poor adherence to antiretroviral therapy (ART) (Sternhell & Corr, 2002) leading to virologic failure (Paterson, Swindells, & Mohr, 2000). This may independently increase HIV progression (Leserman, 2003). It is therefore crucial to identify patients with depression for an appropriate management.

Empirical evidence on the prevalence of depression among PLWHA is contradictory. Ciesla and colleagues (Ciesla & Roberts, 2001) estimated that major depression is twice as frequent in HIV-positive patients when compared with HIV-negative patients while Kaplan and colleagues (Sadock, Kaplan, & Sadock, 2007) reported that up to 40% of HIV-positive patients met the diagnostic criteria for depressive disorders. A study by Morrison and colleagues (Morrison, Petitto, Ten Have, Gettes, & Chiappini, 2002) gives the rate of depression to be 4 times higher in HIV sero-positive women when compared with HIV sero-negative women. The National Institute of Mental Health however, believes that as many as 1 in 3 persons with HIV may suffer for depression (National Institute of Mental Health (NIMH), 2004).

In Nigeria, studies carried out in different regions of the country also reported varying prevalence rates for depression among PLWHA. In North Central Nigeria prevalence rates as high as 56.7% has been reported (Shittu, Issa, Olanrewaju, Mahmoud, Odeigah, Salami, et al., 2013) while in Benin, South-South, Nigeria 29.3% was reported with 14.7% of the

cases having mild depression, 12% and 1.3% having moderate and severely depression respectively (Chikezie, Otakpor, Kuteyi, & James, 2013). One study in three hospitals in Enugu, South East Nigeria reported that 33.3% of the participants had depressive disorder (Iwudibia & Brown, 2014). In rural South Africa, the estimated prevalence of depression was 14.8% in the older population (Nyirenda, Chatterji, Rochat, Mutevedzi, & Newella, 2013) while in Tyberberg Hospital in Cape Town, 38.1% of the female HIV positive outpatients were depressed (Olley, 2006).

The reasons for these variation in reported depression prevalence in the various studies across the world may be due to socio-cultural and economic factors. The socio demographic factors such as age, gender, marital status, education and income has been reported as important factors, in explaining the variability in depression prevalence rates (Kessler et al., 1994; Offord et al., 1996; Patten, 2000; Wade, Cairney, & Pevalin, 2002). It has been found that there is a significant interaction between age, sex, marital status and depression (Patten, 2000). Prevalence of depression has also been found to vary considerably based on gender (Lorant et al., 2003). Consistently, women have nearly double or triple prevalence rates than men. Traditionally, there is an association between depression and Socio-Economic Status (SES). Several studies confirmed a strong inverse relationship between SES and mental disorder with people in the lowest socio-economic class more likely to suffer from psychiatric disorder, than those in the highest class (Canada, 1996; Goode, 1997).

Depression is under-recognized, under-reported and under-treated in HIV-infected individuals. There is a dearth of literature on depression among HIV/AIDS patients in the northwestern Nigeria, a region with different socio-cultural and economic factors when compared with the southern part of the country. The aim of this study was to determine the prevalence and correlates of depressive disorders among HIV/AIDS patients receiving care and treatment at a tertiary hospital, Sokoto, Nigeria.

## II. METHODOLOGY

This study was conducted at an HIV/AIDS treatment centre at the Usmanu Danfodiyo University Teaching Hospital (DUTH), Sokoto located in the northwestern Nigeria. This treatment site was activated in 2007 to deliver comprehensive HIV/AIDS care and treatment. The facility has over four thousand patients (4,500) in care and is currently supported by an international non-governmental organization (NGO), Management Science for Health (MSH).

This was a descriptive, cross-sectional study carried out from 1<sup>st</sup> of February to 28<sup>th</sup> February, 2018. This was carried out among HIV/AIDS patients 18 years above who consented to be interviewed. The exclusion criteria were the critically ill patients. The sample size was estimated using the formula for descriptive statistics (Ibrahim MTO, 2009), 21.3% of prevalence of depressive disorders among PLWHA from a previous study (World Health Organization (WHO), 2008). A minimum size of 257 was calculated and adjusting for non-response, a sample size of 270 was recruited for the study.

Pretesting was carried out at the Specialist Hospital, Sokoto, using 27 respondents (10% of the sample size).

A questionnaire adopted from previous studies was used to collect data from the participants. This was done by using a semi-structured interviewer administered questionnaire that contained information on the socio-demographic variables of respondents, social determinants of health, diagnosis of alcohol misuse (using CAGE), adherence status, and depression using Patients Health Questionnaire (PHQ).

Age, gender, marital status, education level, employment status, social determinants of health, were the socio-demographic variables and potential confounders. Marital status was grouped as either married or unmarried (included the never married, divorced, separated and widowed/widower). Educational status was also grouped as formal (secondary education and above) and informal (primary education and below). Four clinical interview questions, the CAGE questions was used to make a diagnosis of alcohol misuse. The questions focused on Cutting down in alcohol, Annoyance by criticism, Guilty feeling, and Eye-openers (Ewing, 1984).

Socio-economic determinants of health were also explored using two key variables: socio-economic status and social cohesion. Socio-economic status included two indicators: years of schooling and socio-economic status index (SESI). Categories for years of schooling were as follows: above average (7 years and above), average (1-6 years) and below average (0 year). Oyedjeji's method was used in the estimation of SESI of households. This was done by using the occupations and educational attainment of household heads and their spouses to obtain five socio-economic classes (Class I to class V) (Oyedjeji GA, 1985). Social classes I-III were the upper social class while social classes IV-V were the lower social class. Social cohesion was assessed from response to a question: (1) in the previous year, how often did you ask someone for help when you had problems? (Never = 1; Seldom = 2; Sometimes = 3; Often = 4).

The Patients Health Questionnaire (PHQ-9) (Asch et al., 2003) is a brief, 9-item, patients self-report depression assessment tool that was derived from the interview-based PRIME-MD (Pence, Reif, Whetten, Leserman, & Stangl, 2007). It was specifically developed for use, in primary care general medical settings. Many depression screening and severity tools have been used in primary care, with good results. The PHQ-9, however, offers several advantages to other tools. Because the items and the scoring of items on the PHQ-9 are identical to the symptoms and signs of DSM-4 major depression, the tool is easily understood with very high face validity for patients and clinicians in primary care. Many other instruments use a 1-week time frame, but the PHQ-9 uses a 2-week time frame, which conforms to DSM-4 criteria. It is the only tool that was specifically developed for use as a patient self-administered depression diagnostic tool, rather than as a severity or screening tool. It is the only short self-report tool that can reasonably be used both for diagnosis of DSM-4 major depression as well as for tracking of severity of major depression over time (Bing et al., 2001). Psychometric evaluation of the PHQ-9 revealed a sensitivity ranging from 62%-92% and a specificity between 74%-88% (Asch et al., 2003; Bing et al., 2001; Pence et al., 2007). All subjects

screened positively for depression using Patients Health Questionnaire - 2 (PHQ-2), which was the first two questions of PHQ-9, triggered full diagnostic interviews by the behavioural scientists. Scoring and level of depression was accessed viz: (1-4) Minimal depression, (5-9) Mild depression, (10-14) Moderate depression, (15-19) moderately severe depression, and (20-27) severe depression. Some direct depression care, such as care support, coordination, case management, and treatment were embarked on.

Data were processed using IBM SPSS version 22 computer statistical software package and analysed using descriptive and inferential statistics. The level of significance was set at  $< 0.05$  at 95% confidence interval.

Ethical approval was obtained from the Ethical Review Committee of the Usmanu Danfodiyo University Teaching Hospital, Sokoto before commencement of the study and informed consent was obtained from each participant, after adequate information about the study.

### III. RESULTS

Most of the respondents 178 (66.4%) were within the age group 30-49 years with a mean age of  $36.3 \pm 9.2$  years. Majority of them were females 192 (75.0%), Hausa 183 (68.8%) by tribe and practiced Islam 209 (81.0%). Over half of the respondents 145 (54.3%) were married and most of them 159 (60.0%) had at least secondary education while 39 (11.7%) had no education. Over one-third 98 (37.3%) were into either trading or business, 48 (18.3%) were full-time housewife and 39 (14.8%) were unemployed (Table 1).

Figure 1 shows that 135 (50.6%) satisfied the criteria for a depressive disorder using the PH-9 score among which, 84 (31.5%) had minimal depression, while 1 (0.4%) was severely depressed. Most of the respondents 120 (64.9%) were in the upper social class and had adhere 207 (94.5%) to their ART medications (Table 2).

The CAGE questionnaire to diagnose alcohol misuse revealed that only 3 (1.1%) of respondents had at one time or the other engage in alcohol intake with 2 (0.75%) respondents having a total score of 2 or more.

Majority of respondents 35 (87.5%) that had past medical history of depression were depressed ( $\chi^2 = 25.96$ ,  $p < .001$ ). Majority of the respondents 40 (70.2%) that took Atripla (TDF/3TC/EFV) were not depressed ( $\chi^2 = 11.14$ ,  $p = .049$ ). Most of the respondents that sometimes 35 (68.6%) and often 4 (80.0%) asked someone for help when they have problems were depressed while on the contrary, most respondents that seldom 47 (61.0%) did so were not depressed ( $\chi^2 = 12.51$ ,  $p = .006$ ) and this were statistically significant (Table 3).

None of the variables was associated with depressive symptoms in binary logistic regression. (Table 4).

### IV. DISCUSSION

Depression is a major problem among HIV/AIDS-infected patients. It has been proven to be a risk factor for poor adherence to ART, treatment failure, HIV progression and death (Leserman, 2003; Paterson et al., 2000; Treisman &

Angelino, 2007). Despite the recommendations made by several authors over a decade ago on the integration of mental health in global initiatives for HIV/AIDS, and that research on mental health and HIV be of high priority, especially in developing countries like Nigeria, there is still a dearth of literatures on mental health and HIV in Nigeria (Freeman, Patel, Collins, & Bertolote, 2005).

The prevalence of depressive symptoms among HIV/AIDS patients receiving care and treatment at an Antiretroviral therapy (ART) Clinic of the Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto, Sokoto State was 50.6%. Mood disorders, depression in particular, are the most frequent psychiatric complication associated with HIV/AIDS, a disease that is still perceived as highly stigmatizing not only among member of the community but surprisingly healthcare providers.

The prevalence of depressive symptoms in this study is higher than 39.9% by Shehu and colleagues at the Aminu Kano Teaching Hospital, north-western, Nigeria who found the prevalence of 39.9% using the Hospital Anxiety and Depression Scale (HAD)(Shehu & Muktar, 2008); 21.3% reported by Ndu and colleagues in south-eastern Nigeria(Ndu, Arinze, Aguwa, & Obio, 2011); 29.3% by Chikezie and colleagues in Benin City, south-southern Nigeria using the Schedule for the Clinical Assessment of Neuropsychiatry (SCAN) and the Beck Depression Inventory (BDI)(Chikezie et al., 2013); 42% by Igie and colleagues in Lagos University Teaching Hospital (LUTH), Lagos using the Hamilton Depression Scale Rating (Igie & Udoh, 2011). This is however, lower than 57% reported by Shittu and colleagues in Kwara, State, Nigeria (Shittu, Issa, Olanrewaju, Mahmoud, Odeigah, & et al, 2013). The prevalence of depressive symptoms in this study is also higher than studies done in other part of Africa like Uganda (8.1%)(Kinyanda, Hoskins, Nakku, Nawaz, & Patel, 2011) and Cameroon (7.0%)(Gaynes et al., 2012). It was also higher than 36% reported by Pence and colleagues in the United State of America (Pence et al., 2007).

These variations in prevalence of depression may be due to the diagnostic criteria used by these studies, in making diagnosis of depression, for example, while some used Hospital Anxiety Scale (HADS), some others studies might have used Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV). Secondly, variations may also be due to the various stages of HIV in these patients compared to other studies.

The study revealed that majority of respondents that had past medical history of depression were depressed. Depression is the commonest mood disorder among HIV/AIDS patients. A previous study by Gaynes and colleagues in Cameroon reported that having one prior episode of major depressive disorder (MDD) increased the risk of having a recent MDD episode by over five- fold, while having two or more prior episodes increased the risk of recent MDD by over eleven-fold (Gaynes et al., 2012).

Majority of the respondents that took Atripla (TDF/3TC/EFV) compared with other ART were not depressed. This may be because Atripla is taken once a day and it's been proven to be well tolerated by patients including pregnant women (World Health Organization, 2015). It is the

recommended ART regimen by World Health Organization (WHO). This also implies that HIV/AIDS care and treatment with fewer or no pill burden are less likely to lead to depression among HIV/AIDS patients. This is consistent with a finding by Kaestner and colleagues in 2012 that reported a 35-year-old HIV-positive man suffering from bipolar disorder who developed major depression shortly after commencing combination antiretroviral therapy (cART) on three occasions. The first two times the patient ceased therapy autonomously, and the depression disappeared completely. The close connection between cART and major depression in the present case supports depression-inducing potential of cART (Kaestner et al., 2012).

Most of the respondents that sometimes and often asked someone for help when they had problems were depressed while, most respondents that seldom asked someone for help were not depressed. This may result from failure to receive decisive help from people. Asking someone for help perhaps due to financial difficulties, or with regard to their management is common among the poor or unemployed who lacks the ability to provide for themselves. They may also be unstable or failing ART care and treatment necessitating the need for assistance from someone. These can trigger or worsen depressive state amongst them.

Social support and good social relationship makes an important contribution to health and prevent the depression. It also helps to give people the emotional and other resources they need. Hence, belonging to a social network of communication and mutual obligatory makes people feel cared for, loved, esteemed and valued and this has a powerful protective effect on health. Therefore, good social relationship can reduce depression. On the other hand, low social support causes more stress and can accelerate or worsen the progression from HIV to AIDS (Leserman et al., 2007). This necessitates the need for social programmes to facilitate stronger social networks for them. For widows or widowers, the loss of their life companions (usually also their confidant) could be devastating.

The high prevalence of depressive symptoms reported in this study emphasizes the need to integrate the management of depression in the National guideline for HIV care and treatment in Nigeria. Empirical evidence in developing countries have shown that proper interventions, including a cognitive-behavioural group plan and community-driven group interpersonal psychotherapy, can reduce depressive symptoms and its recurrence, and lead to better quality of life of patients with HIV or patients in regions with a high prevalence of HIV (Bolton et al., 2003; Chan et al., 2005).

## V. CONCLUSION

This study reported a high prevalence of depressive symptoms among HIV/AIDS-infected patients in Sokoto, Nigeria, and its association with past medical history of depression, ART regimen, and social cohesion. This signifies the need of efficient and effective mental health interventions to be integrated into routine the National HIV treatment guideline in Nigeria. Social support and good social relationship should be enhanced at HIV/AIDS treatment

facilities to prevent depression.

Variables	Frequency (%)
<b>Age in years</b>	
10 – 29	60 (22.4)
30 – 49	178 (66.4)
50 – 69	30 (11.2)
<b>Mean ± SD</b>	<b>36.3 ± 9.2</b>
<b>Gender</b>	
Male	64 (25.0)
Female	192 (75.0)
<b>Ethnicity</b>	
Hausa	183 (68.8)
Fulani	21 (7.9)
Igbo	7 (2.6)
Yoruba	34 (12.8)
Others*	21 (7.9)
<b>Religion</b>	
Christianity	49 (19.0)
Islam	209 (81.0)
<b>Marital status</b>	
Single	34 (12.7)
Married	145 (54.3)
Separated	6 (2.2)
Divorced	30 (11.2)
Widow	52 (19.5)
<b>Educational status</b>	
None	39 (14.7)
Quranic only	44 (16.6)
Primary	23 (8.7)
Secondary	77 (29.1)
Tertiary	82 (30.9)
<b>Occupational status</b>	
Unemployed	39 (14.8)
Student	19 (7.2)
Housewife	48 (18.3)
Farmer	6 (2.3)
Civil servant	53 (20.2)
Business	98 (37.3)

\* Others included – Edo, Zuru, Tiv, Plateau etc.

Table 1: Socio – demographic characteristics of respondents

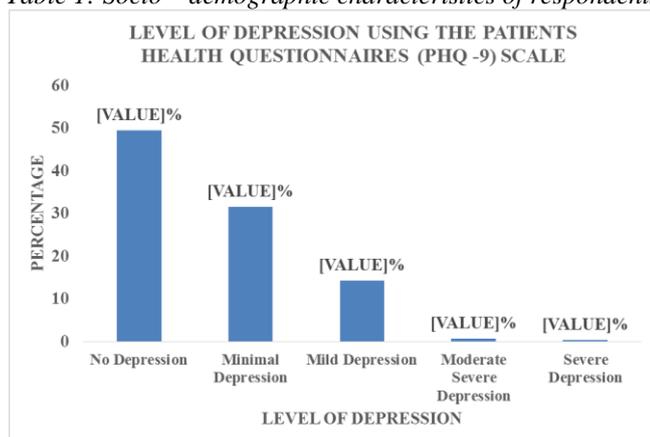


Figure 1: Level of Depression among the respondents using

Patients Health Questionnaires (PHQ – 9) scale

Variables	Frequency (%)
<b>Socio – economic status</b>	
<b>Index (SESI)</b>	
Q1 (least poor)	7 (2.6)
Q2 (less poor)	45 (24.3)
Q3 (poor)	68 (36.8)
Q4 (very poor)	44 (23.8)
Q5 (most poor)	21 (11.4)
<b>Social Class</b>	
Upper social class	120 (64.9)
Lower social class	65 (35.1)
<b>Adherence to ART</b>	
<95%	12 (5.5)
≥95%	207 (94.5)

Table 2: Respondents' socio – economic status index (SESI) and adherence to ART

Variables	Not-depressed	Depressed	Test statistics, p value
	Freq. (%)	Freq. (%)	
<b>Age in years</b>			
10 – 29	27 (20.5)	33 (24.6)	$\chi^2 = 3.53$ p = .171
30 – 49	94 (71.2)	82 (61.2)	
50 – 69	11 (8.3)	19 (14.2)	
<b>Gender</b>			
Female	90 (47.1)	101 (52.9)	$\chi^2 = .525$ p = .469
Male	33 (52.4)	30 (47.6)	
<b>Educational status</b>			
Informal	51 (49.0)	53 (51.0)	$\chi^2 = .041$ p = .840
Formal	80 (50.3)	79 (49.7)	
<b>Socio – economic status Index (SESI)</b>			
Q1 (least poor)	4 (4.3)	3 (3.3)	$\chi^2 = .792$ p = .940
Q2	21 (22.8)	23 (25.3)	
Q3	34 (37.0)	34 (37.4)	
Q4	24 (26.1)	20 (22.0)	
Q5 (most poor)	9 (9.8)	11 (12.1)	
<b>Past medical history of depression</b>			
No	127 (56.2)	99 (43.8)	$\chi^2 = 25.96$ p = .000*
Yes	5 (12.5)	35 (87.5)	
<b>Family history of depression</b>			
No	119 (49.2)	123 (50.8)	$\chi^2 = .072$ p = .788
Yes	13 (52.0)	12 (48.0)	
<b>ART Regimen</b>			
TDF/3TC/EFV	40 (54.8)	17 (42.5)	$\chi^2 = 11.14$ p = .049*
TDF/3TC/NVP	0 (0.0)	1 (2.5)	
AZT/3TC/EFV	3 (4.1)	0 (0.0)	

AZT/3TC/NVP	29 (39.7)	20 (50.0)	
TDF/3TC/ATZ/r	1 (1.4)	0 (0.0)	
AZT/3TC/LPV/r	0 (0.0)	2 (5.0)	
<b>Years of schooling</b>			
Above average ( $\geq 7$ years)	71 (61.2)	70 (53.0)	$\chi^2 = 3.59$
Average (1 – 6 years)	6 (5.2)	15 (11.4)	$p = .166$
Below average (0 year)	39 (33.6)	47 (35.6)	
<b>Social cohesion</b>			
Never	64 (50.0)	65 (48.5)	$\chi^2 = 12.51$
Seldom	47 (36.7)	30 (22.4)	$p = .006^*$
Sometimes	16 (12.5)	35 (26.1)	
Others	1 (0.8)	4 (3.0)	

\* $p < .05$

Table 3: Correlates of Depressive symptoms among respondents

Variable	B	p value	OR	95% C.I. for OR	
				lower	Upper
Past medical history of depression (Yes/No)	2.02	.078	7.52	.79	70.93
ART Regimen	.151	.24	1.16	.90	1.49
Social cohesion (Often/Others)	.29	.31	1.34	.76	2.40

\* $p < .05$

Table 4: Predictors of Depressive symptoms among respondents

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