Factors Associated with Anxiety Disorder among ART Clients attending Antiretroviral Therapy Clinic at Hawassa University Referral Hospital, Hawassa, SNNPR, Ethiopia

Asres Bedaso[1]*, Dayanand Belagavi[1], Gezahegn Bekele[1] and Nibretie Mekonnen[2]

[1]College of Medicine and Health Sciences, School of Nursing and Midwifery,
[2]Hawassa University, Awassa, Ethiopia Hawassa University Comprehensive Specialized Hospital, Neonatology Unit, Hawassa, Ethiopia

Abstract

Introduction: Anxiety is vague, subjective, non-specific feeling of uneasiness, apprehension, tension, a sense of impending doom, irrational avoidance of objects or situation. Anxiety is one of the co-morbidities that are often overlooked in treating patients with Human Immuno Deficiency Virus. Specific prevalence of anxiety is difficult to identify as aresult of the wide variations across the globe, ranging from 7% to 82.3%.

Objective: Assessment of prevalence of anxiety and associated factors among ART clients attending ART Clinic at Hawassa Universty Referral Hospital, Hawassa, SNNPR, Ethiopia.

Methods and Material: Institutional based cross sectional study design was conducted from March 1 to 30/2016 among 291 patients who attended ART clinic at Hawassa University Referral Hospital. Respondents were selected using Systematic random sampling technique. SPSS 20 was used for data entry and analysis. Crude and adjusted Odds ratio with 95% confidence interval were computed to assess the degree of association between dependent and independent variables, also p-values were used to decide statically significance variables.

Result: Out of 291, total of 265 patients were included in the study making the response rate 91%. Out of which, 17.4 % of the study participants had anxiety. Being female was 8.2 times (AOR=8.2, 95% CI (2.67, 25.3) more likely to have anxiety. Also patients who report perceived stigma were 2.7 times more likely to have anxiety (AOR= 2.7 95% CI (1.19, 6.05). CD4 count was another factor associated with anxiety those with CD4 count <500 cells/ml were 2.6 times more likely to have compared those who didn't remember CD4 count (AOR=2.56, 95% CI 1.22, 5.33).

Conclusion: Prevalence of anxiety was found to be high among people living with HIV at Hawassa University Referral Hospital ART clinic. Age greater than or equal to 38 years, being female, CD4 count <500 cells/ml and perceived stigma were significantly associated to anxiety.

Keywords: Anxiety; ART client; Antiretroviral therapy

Introduction

Anxiety is vague, subjective, non-specific feeling of uneasiness, apprehension, tension (excessive nervousness), fears and a sense of impending doom, irrational avoidance of objects or situation and anxiety attack [1].

HIV attack the body's immune system, specifically the CD4 cells (T cells), which help the immune system fight off infection if left untreated, HIV reduces the number of CD4 cells (T cells) in the body, making the person more likely to get infections or infection related cancers. Over time, HIV can destroy so many of these cells that the body cannot fight off infections and disease [2].

Antiretroviral therapy (ART) is treatment of people infected with human immune deficiency virus (HIV) using anti –HIV drugs. ART has the potential both to reduce mortality and morbidity rates among HIV infected people and to improve their quality of life [3].

Anxiety is highly prevalent in HIV infected individuals and is almost three times more frequent in people living with HIV/AIDS as compared to the general population. The prevalence of anxiety is as high as 38% in clinical studies and it is often associated with depression [4,5].

Anxiety is one of the co-morbidities that are often overlooked in treating patients for Acquired Immune Deficiency Syndrome from Human Immunodeficiency Virus (HIV/AIDS), anxiety is higher among HIV/AIDS than the general population. Anxiety among those that have recently been diagnosed with, HIV has been shown to be more prevalent among patients with stress or excess social stigma related to their diagnosis [6].

General Anxiety Disorder (GAD) affects approximately 6.8 million American adults and is more prevalent among patients with chronic diseases [7]. Notably, the amount of psychological distress among individuals with HIV infection is significantly higher than the general population [8]. Furthermrore, this population is affected by variable levels of distress throughout the course of their infection with negative consequences [9-11]. During periods of distress, individuals with a chronic illness may not only have lower quality of life, but also have difficulty engaging in behaviors that are health promoting [12]. Minimal research has focused on the impact of symptoms of anxiety on HIV management and associated health behaviors [13].

Specifically, the prevalence of anxiety among HIV-infected

individuals and the effect of anxiety on adherence with antiretroviral therapy (ART) and engagement in high risk and health-compromising behaviors remains to be fully elucidated [14]. With increased understanding of this relationship, simple evidence-based interventions can be administered in clinical settings to reduce anxiety [15].

Globally 33 million people were living with HIV/AIDS and 2 million people died from AIDS related causes worldwide, particular in sub-Saharan Africa 22 million people living with HIV and 1.2 million people died from AIDS [16]. In Ethiopia 170,000 people died due to AIDS which imposes a significant psychological burden. People with HIV often suffer from anxiety as they adjust to the impact of the diagnosis of being infected and face the difficulties of living with a chronic life-threatening illness, for instance shortened life expectancy, complicated therapeutic regimens, stigmatization, and loss of social support, family or friends [17].

HIV infection can be associated with high risk of suicide or attempted suicide. People affected by HIV/AIDS are more prone to developing mental disorders such as anxiety, which, in turn, impair their immune function, reduce their quality of life and adherence to treatment and contribute significantly to their premature deaths [18].

Anxiety disorder is one of the most prevalent mental disorders in the general population, with women affected nearly twice as frequently as men. Anxiety can also correlate with lower adherence to antiretroviral therapy (ART), medical recommendations reduced quality of life, social functioning and excess disability [6]. Specific prevalence of Anxiety is difficult to identify as a result of the wide variations across the globe, ranging from 7% to 82.3% [6-19].

Anxiety may pre-exist to HIV infection or it may be related to risk behaviors for HIV infection (i.e., unsafe sex or drug use); in addition, patients may feel anxious at time of or after HIV diagnosis because of the fear of the unknown, HIV-related stigma, death. Key mo-mentsin the personal and social life of HIV- positive subjects (i.e., the decision to disclosure HIV diagnosis to relatives, partner and friends, desire of parenthood, decisions dealing with sexual activity) may determine isolation and mental illness [20].

In addition, non-HIV-related stigma, i.e., homophobia or unsafe social and economic status, should be considered [21,22]. In presence of depressive and/or anxiety symptoms, patients often refuse to access to social support and to seek treatment [20].

Methods and Materials

Study design and setting

Institutional based cross sectional study design were conducted on patients who attend ART clinic at Hawassa University Referral Hospital. This study were conducted in Hawasssa University Referral Hospital (HURH) from April 1 to April 30, 2008 E.C. Hawassa University Referral Hospital is located in Hawassa city, SNNPR, which is 275 km far from Addis Ababa. It provides service in surgery, gynecology and obstetrics, medicine, pediatrics, dentist, physiotherapy, ophthalmology, different Outpatient department, Hospital pharmacy, diagnostic facilities, ART clinic, psychiatry and intensive care unit.

Source and study population

All ART clients who attended ART clinic at Hawassa University Referral Hospital were considered as source population.

All ART clients who attended ART clinic at Hawassa University Referral Hospital during data colletion period who fullfill inclusion criteria were taken as study population.

Inclusion criteria and exclusion criteria

All HIV postive clients who have follow up at Hawassa University Referral Hospital ART clinic with age18 years and above were included in the study.

Those who are unable to respond and severely ill, who have hearing impairment and those with currently known psychiatric disorder were excluded from the study.

Sample size determination and sampling procedure

The sample size was determined by using a single proportion formula considering the following the assumption; standard normal distribution with confidence interval of 95% (Z=1.96), absolute precision or tolerable margin of error (d=0.05), The prevalence rate of anxiety disorder in ART clients was 22.2% [23]. Taking 10% non-response rate, the final calculated sample size was 291.

Systematic random sampling technique was used to select 291 patients coming to Hawassa University Referral Hospital during the study period. There are 6904 and 575 ART clients who have follow up in ART clinic annually and monthly respectively. The sampling fraction were 575/291=2 hence, the sample were collected every 2 clients. The first individual was selected using lottery method.

Data collection instruments and quality control measures

A structured questionnaire was used to collect data on socio-demographic characteristics (age, sex, ethnicity, religion, education, occupation, marital status, and income). Anxiety was assessed using Beck anxiety scale. The Beck anxiety scale was translated and validated for use in Ethiopia. Oslo social support scale and Perceived stigma scale were used social support of ART clients. Current substance use was considered for using commonly available substances (Khat, Cigarret and alcohol) for the past 3 month.

The pre-test was conducted at Adare Hospital one week prior to the actual data collection period on 5% of sample population to check the reliability and consistency of the tool. Each and every questionnaire were checked for completeness and consistency every at the end of data collection of time. Also there were close supervision to reduce mistakes that were happen during data collection.

Data analysis

The collected data were checked for the completeness and consistency by investigators. SPSS 20 were used for data entry and analysis. After cleaning the data, frequencies and percentages were calculated to all variables which were relate to the objectives of the study. Crude and adjusted Odds ratio with 95% confidence interval were computed to assess the presence and degree of association between dependent and independent variables, also p-values were used to decide whether observed difference were statically significant or not. Finally, the result were presented using text, tables and figures.

Operational definitions

Individual who scored ≥ 22 on Beck Anxiety Inventory scale. Current Substance use: using of specific substance chat, cigarette and alcohol in the last three month repeatedly. Good Social support: Individual who scored ≥ 9 on Oslo social support scale. Income: under extreme poverty <1.25 USD per day (20*1.25*30=750 ETB per month) and under poverty <2 USD but >1.25 USD per day (20*2*30=1200 ETB per month) and above poverty line ≥ 2 USD per day (20*2*30=1200

ETB per month) [24]. Perceived stigma: Individual who cored >1on three items perceived sigma scale.

Ethical statement

Ethical clearance were obtained from ethical review board of Hawassa University, College of Medical and health science. Ethical issues of the participants were addressed throughout the study. All participants of the study were provided with an informed consent, clearly stating the objectives of the study and their right to refuse and if any question they do not want to answer they have the right to do so. All participants were randomly selected without any discrimination on any ground. Filled out questionnaires were carefully handled and all access to results were kept strictly to members of the group.

Result

Socio-demographic characteristics

Out of 291 respondents, 265 of them were used for the data analysis, making the response rate 91%. The mean age of the respondents was 38 Years (±9.8). Out of the total 265 respondents, 165 (62.3%) were females, 142 (53.6%) were married, 66 (24.9%) were Amhara and 120 (45.3%) attended primary school. The mean estimated monthly household income was 1200 ETB (Table 1).

Clinical characteristics of the respondents

Out of 265 respondents 123 (46.4%) have diagnosed duration for HIV 0-5 years. Regarding duration of ART treatment 147 (55.5%) were taking ART for 0-5 years. Most respondents 172 (64.9%) knew their CD4 count and 108 (40.8%) had CD4 counts less than or equal to 500 cells/ml (Table 2).

Social support respondents

Regarding social support of the respondents, most of respondents 208 (78.5%) have poor social support and do not have good social support.

Prevalence of anxiety

Based on the cut of point ≥ 22 for case on Beck Anxiety Inventory the prevalence of anxiety among PLWHA at Hawassa University Referral Hospital ART clinic was found to be 17%.

Substance abuse

Out of 265 respondents 47 (17.7%) of respondents used substance in the past 3 month, of which 24 (51%) drink alcohol, 61 (23%) smoke cigarette and 69 (26%) chew khat.

Variables		Frequency	%
Age	18-27	38	14.3
	28-37	109	41.1
	≥ 38	119	44.5
Sex	Male	100	37.7
	Female	165	62.3
Marital status	Single	45	17
	Married	142	53.6
	Divorced	40	15.1
	Widowed	38	14.3
	Sidama	37	14
	Wolaita	51	19.2
Ethnicity	Oromo	56	21.1
	Amhara	66	24.9
	Gurage	30	11.9
	Others*	25	9.4
Religion	Orthodox	136	51.3
	Protestant	103	38.9
	Muslim	24	9.1
	Others •	2	8
Educational level	Unable to read and write	43	16.2
	Able to read and write only	10	3.8
	Primary	44	16.6
	Secondary	120	45.3
	College or university	48	18.1
Occupation	Housewife	71	26.8
	Civil servant	42	15.8
	Farmer	16	6
	Private employee	56	21.1
	Merchant	9	3.4
	Student	51	19.2
	Others **	20	7.5
Income	<750 ETB	131	49.4
	750-1200 ETB	62	23.4
	>1200 ETB	72	27.2

Note: * Tigre, Silte, • Catholic, ** Jobless
Table 1: Socio demographic characteristics of respondents attending ART clinic at HURH, SNNPR, Ethiopia.

Variable		N	%
Diagnosed time	0-5 years	123	46.4
	6-11 years	123	46.4
	Dec-17	13	4.9
	Don't remember	6	2
How long take ART	0-5 years	147	55.5
	6-11 years	108	40.8
	12-17 years	6	2.3
	Don't remember	4	1.5
Knowing self CD4 count	Yes	172	64.9
	No	93	35.1
CD4 count status	<500	108	40.8
	500-800	52	19.6
	>800	12	4.2
	Do not remember	93	35.1
Disclosing HIV status	Yes	182	68.7
	No	83	31.3
To whom did you disclosed	Husband/wife	41	15.5
	Family (parents)	141	53.2
	Brothers and sisters	19	7.2
	Friends	13	4.9
	Relative	30	11.3
	Community(public)	21	7.9
Ever HIV test of husband/wife	Yes	171	64.5
	No	18	6.8
	Don't knew	76	28.7
HIV status of sexual partner	Positive	132	49.8
	Negative	50	18.9
	Didn't knew	83	31.3

Table 2: Clinical characteristics of respondents attending ART Clinic at HURH, SNNPR, Hawassa, Ethiopia, 2008 E.C.

Perceived stigma of respondents

Regarding stigma, 131 (49.4%) respondents had perceived stigma.

Association of socio- demographic and clinical variables with anxiety

On bivariate analysis the factors found to fulfill the minimum requirements (P-value <0.2 in this study) were age, sex, income, marital status, educational level, CD4 cell counts, perceived stigma and social support, these factors were entered into multivariate logistic regression for further analysis in order to control confounding effects. The result of multivariate analysis showed that anxiety was significantly associated with sex, age, CD4 count and perceived stigma. Sex was significantly associated with anxiety, Being female was 8.2 times (AOR=8.2, 95% CI (2.67, 25.3) more likely to have anxiety as compared to male. Also patients who report perceived stigma were 2.7 times more likely to have anxiety as compared to patients who didn't report perceived stigma (AOR=2.7, 95% CI (1.19,6.05). CD4 count was another factor associated with anxiety, those <500 cells/ml were 2.6 times more likely to have compared those who didn't remember CD4 count (AOR=2.56, 95% CI 1.22, 5.33). The association between anxiety and variables has been shown in Table 3.

Discussion

In the current study, the result showed that the prevalence was 17.4% and this study was similar with the study conducted in Singapore 17.9% [19]. However; in the present study the prevalence of anxiety was higher the study done in Tanzanian 15.5% [25], Nigeria 15.6%, [26]. The possible reason might be different instrument and socio-cultural variation.

The finding of this result was lower than the result reported from Debretabor which showed that the prevalence of anxiety was 22.2% [23], other study conducted in Kenya 22.75% [27] and Nigeria 21.7% [25]. Also the current result was lower than the result reported from India 44% [28], China 45.6% [29], Brazil 35.8% [30], Albania 82.3% [6], Italy 47% [31], USA 33%, 35.5% [32], respectively which indicated that the prevalence of anxiety among people living with HIV/ADIS. The possible reason for the different might be different instrument and socio-cultural difference.

Regarding associated factors, in this study, being female were to have anxiety as compared to males which was similar with the study done in Debretabor, Brazil, India, China respectively [23,28-30]. The possible reason might be increased exposure to acute life events, chronic social stresses, lower social status, lower income, and smaller social networks.

When anxiety was in relation to divorce, those who divorced were more likely to have anxiety as compared to who were single. One of the effects of divorce was it destroys the whole dynamic of the family. The possible reason might be due to the stress of divorce, current financial hardship and lack of confidence.

The result of the present study also revealed that the prevalence of anxiety was significantly influenced by perceived stigma about their HIV status which was consistent with study done in Albania [6]. One of the most distressing factors of individuals with HIV infection is stigma. The possibility of stigmatizing situation serving as the event of provoking anxiety. The possible reason might be Illiteracy and lack of knowledge regarding the nature of transmission and possible treatment of HIV infection contributes to the high level of stigma and low self-esteem.

Variable	Category	Anxiety		COR 95%CI	AOR 95% CI	P value
		Yes	No			
Age	18-27	2	35	1	1	1
	28-37	10	99	1.18 (0.31, 4.53)	1.25 (0.27, 5.62)	0.77
	≥38	34	85	4.53 (1.30, 15.74)	8.32 (1.86, 37.1)	0.006 [1]
Sex	Male	5	95	1	1	1
	Female	41	124	6.3 (2.391, 16.51)	8.2 (2.67, 25.33)	0.002 [2]
Marital status	Single	1	44	1	1	1
	Married	29	113	11.3 (1.49, 85.44)	4.4 (0.504, 38.76)	0.18
	Divorced	11	29	16.7 (2.04, 14.31)	4.9 (0.50, 48.03)	0.17
	Widowed	5	33	6.7 (0.74, 59.80)	1.1 (0.09, 13.59)	0.93
Educational level	Can't read and write	8	35	0.99 (0.34, 2.85)	0.61 (0.14, 2.62)	0.5
	Read and write only	2	8	1.8 (0.19, 5.99)	0.32 (0.036, 2.81)	0.3
	Primary	5	39	0.56 (0.17, 1.8)	0.32 (0.06, 1.56)	0.16
	Secondary	22	98	0.97 (0.41, 2.29)	0.59 (0.18,1.99)	0.39
	College/university	9	39	1	1	1
Income	<750 ETB	33	97	3.8 (1.51,9.57)	1.5 (0.47, 4.51)	0.504
	750-1200 ETB	7	55	1.4 (0.45, 4.47)	0.82 (0.24, 2.8)	0.746
	>1200 ETB	6	67	1	1	1
CD4 count	500	31	79	2.6 (1.22, 5.32)	3.39 (1.36, 8.44)	0.0081
	500-800	3	53	0.39 (1.05, 1.45)	0.42 (0.09, 1.87)	0.26
	>800	0	12	0.001	0	0.99
	Don't remember	12	78	1	1	1
Perceived stigma	No	17	117	1	1	1
	Yes	29	102	1.96 (1.02, 3.7)	2.7 (1.19, 6.05)	0.0161
Social support	Good	8	49	1	1	1
	Poor	38	170	1.37 (0.59, 3.12)	0.58 (0.21, 1.62)	0.302

Note: [1] p value<0.05; [2] p value<0.001

Table 3: Bivariate and multivariate analysis of clinical variables associated with the prevalence of anxiety among PLWHA at HURH, ART clinic 2008 E.C.

Patients' CD4 count is an important factor in the decision to start ART. A low or falling CD4 count indicates that HIV is advancing and damaging the immune system. A rapidly decreasing CD4 may cause develop anxiety which was similar to study conducted in Debretabor Hospital [23].

Conclusion and Recommendation

From the finding of this study Prevalence of Anxiety was found to be high on people among PLWHA at Hawassa University Referral Hospital ART clinic. Factors like being female, age ≥ 38 years, perceived stigma, being divorced and CD4 count less than 500 cells/ml were significantly associated with anxiety.

It will be good if Hawassa university referral hospital conduct regular screening of anxiety for females among HIV positive patients, for ≥ 38 years age group, <500 cells/ml CD4 count and stigmatized ART clients and better to arrange close follow up.

Acknowledgement

Competing Interest

The authors have declared that they have no competing interest.

Authors Contribution

The authors' responsibilities were as follows: AB & DB designed and supervised the study, carried out analysis and interpretation of data. GB & NM assisted in the design, analysis and interpretation of the data and AB wrote the manuscript. All authors read and approved the final manuscript.

References

1. http://www.worldcat.org/title/diagnostic-and-statistical-manual-of-mental-disorders-dsm-iv-tr/oclc/43483668

2. http://apps.who.int/gb/archive/pdf_files/EB124/B124_6-en.pdf

3. http://apps.who.int/iris/handle/10665/2107/statistics

4. Campos N, Bonolo FD, Guimaraes C (2006) Anxiety and depression assessment prior to initiating antiretroviral treatment in Brazil. Aids Care 18: 529-536.

5. Pappin M, Wouterse E, Booysen FL (2012) Anxiety and depression amongst patients enrolled in a Public sector antiretroviral treatment programme in South Africa: a cross-sectional study. BMC Public Health 12: 244.

6. Morrison S, Banushi VH, Sarnquist C, Gashi VH, Osterberg L, et al. (2011) Levels of self-reported depression and anxiety among HIV-positive patients in Albania: a cross-sectional study. Croat Med J 52: 622-628.

7. Wells K, Golding J, Burnam M (1988) Psychiatric disorder in a sample of the general population with and without chronic medical conditions. Am J Psychiatry 145: 976-981.

8. Justice AC, Mcginnis KA, Atkinson JH, Heaton RK, Young C, et al. (2004) Psychiatric and neurocognitive disorders among HIV-Positive and negative veterans in care: veterans aging cohort five-site study. AIDS 18: S49-S59.

9. Treisman G, Angelino A, Hutton H (2001) Psychiatric issues in the management of patients with HIV infection. Journal of the American Medical Association 286: 2857-2864.

10. Atkinson J, Grant I (1994) Natural history of neuropsychiatric manifestations of HIV disease. Psychiatr Clin North Am 17: 17-33.

11. Kalichman S, Heckman T, Kochman A, Sikkema K, Bergholte J (2000) Depression and thoughts of suicide among middle-aged and older persons living with HIV/AIDS. Psych Serv 51: 903-907.

12. Polsky D, Doshi J, Marcus S (2005) Long-term risk for depression symptoms after a medical diagnosis. Archives of Internal Medicine 165: 1260-1266.

13. Ickovics J, Hamburger M, Vlahov D (2001) Mortality, CD4 cell count decline, and depressive symptoms among HIV-seropositive women: Longitudinal analysis from the HIV epidemiology research study. Journal of the American Medical Association 285: 1466-1474.

14. Turner BJ, Laine C, Cosler L, Hauck WW (2003) Relationship of gender, depression, and health care delivery with antiretroviral adherence in HIV-infected drug users. J Gen Intern Med 18: 248-2578.

15. Pence B, Miller W, Whetten K, Eron J, Gaynes B (2006) Prevalence of DSM-IV-defined mood, anxiety, and Substance use disorders in an HIV clinic in the southeastern United States. J Acquir Immune Defic Syndr 42: 298-306.

16. http://data.unaids.org/pub/GlobalReport/2008/JC1511_GR08_ExecutiveSummary_en.pdf

17. http://data.unaids.org/pub/Report/2009/JC1700_Epi_Update_2009_en.pdf

18. http://www.centreforglobalmentalhealth.org/sites/www.centreforglobalmentalhealth.org/files/uploads/documents/ETHIOP~2.pdf

19. Kemppainen J, Holzemer W, Nokes K, Eller LS, Corless IB, et al. (2003) Self-care management of anxiety and fear in HIV disease. J Assoc Nurses AIDS Care 14: 21-29.

20. Bravo P (2010) Tough decisions faced by people living with HIV: a literature review of psychosocial problems. AIDS Rev 12: 76-88.

21. Mayer KH, Bekker LG, Stall R, Grulich AE, Colfax G, et al. (2012) Comprehensive clinical care for men who have sex with men: an integrated approach. Lancet 380: 378-387.

22. Gonzalez A, Zvolensky MJ, Parent J, Grover KW, Hickey M (2012) HIV symptom distress and anxiety sen- sitivity in relation to panic, social anxiety, and depression symptoms among HIV-positive adults. AIDS Patient Care STDS 26: 156-164.

23. Amsalu B, Gashaw A, Minale T, Tigabu B, Telake A (2014) Prevalence of anxiety and associated factors among people living with HIV/AIDS at Debretabor general hospital anti retro viral clinic Debretabor, Amhara, Ethiopia, 2014. American Journal of Psychiatry and Neuroscience 2: 109-114.

24. https://datahelpdesk.worldbank.org/knowledgebase/articles/906519

25. Marwick KF, Kaaya SF (2010) Prevalence of depression and anxiety disorders in HIV positive outpatients in rural Tanzania. AIDS Care 22: 415-419.

26. Ogundipe A (2012) Factors associated with anxiety disorders among HIV positive attends of an HIV clinic in Lagos, Nigeria. Int J STD AIDS 23: 389-393.

27. Ngssanga PW (2013) Prevalence of anxiety and depression among HIV/AIDS patients attending the Comprehensive Care Centre (CCC), Kenyatta National Hospital (KNH) 20.

28. Reuters T (2013) Depression and anxiety among HIV-positive sex workers in Kolkata, India: testing and modifying the hospital anxiety depression scale.

29. Liu L, Pang R, Sun W, Wu M, Qu P, et al. (2013) Functional social support, psychological capital, and depressive and anxiety symptoms among people living with HIV/AIDS employed full-time. BMC Psychiatry 1: 324.

30. Nogueira CL, Bongolo PF, Guimaraes MDC (2006) Anxiety and depression assessment prior to intiating ART treatment in Brazil. AIDS Care 18: 529-536.

31. Celesia BM, Coco CA, Bisicchia F, Pellicanò G, Nun-Nari G, et al. (2010) Anxiety disorders and adherence to HAART. XVIII International AIDS Conference.

32. Shacham E, Morgan JC, Onen NF, Taniguchi T, Overton ET (2012) Screening anxiety in the HIV clinic. Aids Behav 16: 2407-2413.