

ASSESSMENT OF SEXUAL DESIRE IN PEOPLE LIVING WITH HIV IN ALBANIA: HOW CHANGE SEXUAL DESIRE ACCORDING TO ADHERENCE IN THERAPY, SEXUAL BEHAVIOR, DEPRESSION

Redona Dudushi

Institute of Public Health, Tirana, Albania

Corresponding author: redonadudushi@yahoo.com

Abstract

Introduction: After initiating antiretroviral treatment (ART) patients HIV positive, regain their health, so they seek to return to an active 'normal' life, especially to sexual activity. The aim of the study is to assess the sexual desire in people living with HIV in Albania: how change sexual desire according to adherence in therapy, sexual behavior, depression.

Material and Methods: A descriptive cross sectional study was conducted in outpatient clinic of people living with HIV in Albania. Two hundred sixty four patients were interviewed about their sexual identity, sexual orientation, sexual attraction, sexual practices, and their sexual partners using AMIS questionnaire (Emory University Instrument) to measure their sexual risk behaviors. Patients Health questioner PHQ-9 was used as a screening tool to identify depressive symptoms in HIV-infected patients. Also the sexual desire inventory (SDI), developed by Spector et. al., in 1996, was used to assess the sexual desire in HIV-infected patients. The data collected was analyzed using SPSS software.

Result: Over all 264 patients', median age for all patients was 43.4 ± 11.7 , and the predominance of patients was for male 73.1% compared to female 26.9%. 63.63% of them have a higher score (≥ 45) that reflect a higher level of sexual desire, meanwhile, those with low score (≤ 45) were only 36.37%. Cronbach Alfa 0.906 and a statistically significant correlation between the statements ($p < 0.001$). Its high validity and re ability of instrument. We noted that adherence did not show any correlation with sexual desire. Patients with low sexual desire in a low therapy adherence presented the higher percentage (43.7%), compared to them with high therapy adherence (27.1%) or without therapy (29.2%). There are a significant association between the sexual desire and sexual orientation for p value $p=0.03$. In HIV patients, depression may play a role in sexual desire ($p < 0.0001$ with a coefficient of -4.48173, -5.76898, and -5.44823 respectively). This indicates that there is a negative correlation between them, the higher of the depression degree manifest low sexual desire or vice versa a low depression degree manifests high sexual desire.

Conclusion: In the conclusion, our study is the first to report assess the sexual desire in people living with HIV in Albania, and the change sexual desire according to adherence in therapy, sexual behavior and depression. 63.63% of HIV-infected patients have a higher score (≥ 45) that reflect a higher level of sexual desire; meanwhile, those with low score (≤ 45) were only 36.37% of participants. In the end, our findings presented a negative association between depression and sexual desire status of patients living with HIV. The higher of the depression degree manifest low sexual desire or vice versa a low depression degree manifests high sexual desire.

INTRODUCTION

Antiretroviral treatment (ART) has significantly reduced morbidity and mortality among people living with HIV (1, 2), and has improving the wellbeing of many of those people (1-4). ART has previously been shown to provide the best clinical management for HIV-infected patients (5), as it decreases the prevalence of hypogonadism and advanced HIV disease, which are the principal causes of sexual dysfunction in people infected with HIV (5-7). The perception about the threat HIV disease has decreased after increase of optimism for HIV treatment and beliefs that HIV treatment eliminates the risk for HIV transmission (1, 8-11). It is not surprising that as people regain health, and return to their productive lives, they resume sexual activity (8, 11). Some studies have report that increased use of ART may be associated with increased sexual risk taking (8, 9, 12, 13). In HIV-positive men, the sexual dysfunctions usually are associated with an increase in risky sexual behavior and decreased adherence to antiretroviral drug regimens (6). Sexual Desire Inventory (SDI) is one of the most frequent instruments used to evaluate sexual desire. Spector *et. al* define sexual desire as “interest in the sexual activity, which can measured by amount and strength of thought directed toward sexual stimuli” (14). This instrument consist in 14 items that measure two dimensions; 1) dyadic sexual desire (1 items 1-9), and 2) solitary sexual desire (items 10-13). Item 14 does not belong to either dimension; because it refers to length of time that subject can feel comfortable without having sexual activity of any kind (14). The resulting score (0-101) is indicative of the subject`s level of sexual desire (14). A higher score reflects a higher level of desire (14).

In parallel, Sexual dysfunction can be a symptom of depression, which can serve to lower the chances of having sex as well as lead one not to use a condom in an attempt to improve sexual functioning (15, 16). Depression may occur following the diagnosis of HIV and commonly persists throughout HIV/AIDS therapy (17, 18). There are a number of mechanisms by which depression can influence sexual behavior (15). Generally, depressive symptoms have been associated with disability, lipodystrophy syndrome, and also they tend to become more prevalent as the disease progresses especially among those individuals with low nadir (17, 19-22). Health-related qualities of life as well as sexual disturbances are also negatively influenced by psychological factors, which seem to represent the most important contributors to feelings of unattractiveness as well as to diminished interest, sexual desire or satisfaction in individuals living with HIV/AIDS (23-25).

Moreover, the feelings of loneliness associated with depressive mood could make one seek company and comfort in sex with less likelihood of caring whether it's safe or not (26). Also depression may lead people to use alcohol as self-medication to alleviate depressive symptoms, and substance use has been associated with unsafe sex (27, 28). Because of these important public health issues, we have done this study to assess the sexual desire in people living with HIV in Albania: how change sexual desire according to adherence in therapy, sexual behavior and depression.

METHODS

Study Setting

The study was conducted among adult (15 years and above) living with HIV/AIDS and receiving care from Outpatient Clinic in Tirana. The outpatient clinic is delivered by interdisciplinary team that cares for HIV infected adults in all country. The clinic serves only to people infected from HIV offering prevention, care, treatment. The team consists of nurses, social worker, psychologist and infectious disease specialists. This HIV program was established nearly 12 years ago and was based at the Infection Diseases Hospital in Tirana. HIV-infected patients are typically referred to the Outpatient Clinic after the patient is diagnosed and confirmed as HIV + from lab. At their first clinic visit, patients undergo a comprehensive assessment by team members, which includes social and medical history, physical examination, review of laboratory results, and education about HIV disease and its transmission. For patients who are candidates for initiation of antiretroviral therapy a physician discuss treatment options in relation to patient-specific factors. In terms of ongoing patient care, the doctors monitor laboratory results and other signs and symptoms to identify any adverse effects of antiretroviral drug therapy that may arise. PLWH come to the ambulatory clinic every month to obtain their treatment.

Study design

This was a cross-sectional descriptive study utilizing quantitative survey methods of data collection. The sexual behavior questionnaire used for data collection was adopted with modifications, pretested, translated and back translated was used. The main domains of the study tool included socio-demographic characteristics, information on how the HIV virus is acquired, sexual identity, sexual orientation, sexual attraction, and sexual behaviors. The socio demographic details included: birthplace, place of residence, age, sex, marital status, education, employment status and income. SDI is used as screening tool to identify sexual desire of people living with HIV. Also the sexual desire inventory (SDI), developed by Spector *et. al.*, in 1996, was used to assess the sexual desire in people living with HIV.

Study design and Sampling of study subjects

The subject populations are every person living with HIV virus in Albania. The target population where this survey is focused on all persons diagnosed and reported with HIV, nearby national database of the Institute of Public Health. The IPH lab is the institution that performs the final confirmation in national level for an HIV test. Described from HIV national report (2017), the total number of persons diagnosed with HIV in Albania, by 1 December 2017, is 1090 of whom 71.5% are males and 28.4% are females. The sample frame was people living with HIV/AIDS (PLWH), above 15 years old. 839 is the total number of PLWH, > 15 years old in Albania. To ensure equal representation of sub-populations we use the stratified sample dividing the population in two strata with the criteria of getting/non getting antiretroviral therapy. 465 PLWH are on antiretroviral therapy and 374 PLWH are not on antiretroviral therapy. To specify the sample size we use the Sovin formula $n = N/1 + N*(e)^2$. The sample size is 264 PLWH. The first stratum of PLWH on therapy with the criteria of adherence is divided in two groups. In a random way we select the sample. The sample is

made up of three groups: PLWH on ARV with good adherence (88 cases), PLWH on ARV with low adherence (88 cases) and PLWH non on therapy (88 cases).

Ethical issues of the study

Informed consent is taken to all study participants'. It is explained in detail every step of the study, the reason why its conduct and the why it's important. It's discussed about the risk and the potential benefits. It is respected and protected the confidentiality and the anonymity of every participant's from the start till the final stage of the study. In this study is followed the professional codes, laws and regulations of the outpatient clinic. The instruments used in the study are approved by the department of psychology and pedagogy in University of Tirana. The consent to work with patients, involved in the study, is taken from the Infectious Diseases Hospital, Tirana Albania.

Definition of variables

Safe sexual behavior

People Living with HIV were graded as running safer sexual behavior if they systematically used a condom during every sexual act or abstained from sex in the 12 months preceding the study.

Consistent condom use

It was determined as a practice of permanently using a condom every sexual intercourse vaginal/anal in the twelve months before the study.

Abstinence

PLWH was determined as a restraining of sexual life if they reported that they did not experience any sexual act within the 12 months before the study.

Casual sexual partner

It is the person that you have sexual intercourse without having an emotional connection.

Kinds of sex activities

The sexual activity can be performed in a different manner: anal, oral, vaginal activity.

Data analysis

It is a quantitative analysis. The quantitative analysis permits systematic and theoretical proceeding of the collected data from quantitative instruments. Firstly, a database was created in SPSS, where we design study variables' according to instruments. Secondly, reliability tests were conducted for each instrument. It was identified and removed outlier's values of every variable. It was to conduct tests for normal distribution and test of homogeneity between three groups. Thirdly, descriptive and inferential statistics it is used.

ANOVA, independent two-tailed t-tests, Chi Square tests, were used to examine whether sample characteristics and depression measures and the continuous PHQ-9 variables (total score; somatic and cognitive subscale scores) were associated with sexual partnerships.

RESULTS

In this study were involved two hundred sixty four (264) HIV infected patients. Median age for all patients was 43.4 ± 11.7 , and the predominance of patients was for male 73.1% compared to female 26.9%. All demographic variables are divided based to the score of sexual desire. So patients with low then <45 items are characterized as persons with low sexual desire, and patients more than >45 items are characterized as persons with higher sexual desire, because a higher collected score reflects a higher level of desire. The most predominant age group was 45-54 years in percentage 51.4% for low sexual desire and 48.6% for high sexual desire. In tables 1 and 2, we have presented the characteristics of study participants for low and high sexual desire separately.

Table 1. Demographic characteristics of the study' participants

Variable	<45	≥45	P
	N (%)	N (%)	
Gender			
Female	42 (59.2)	29 (40.8)	<0.01
Male	54 (28.0)	139 (72.0)	
Age, Median (SD)	43.4 ±11.7		
Age group (years)			
16-24	(1 (7.1)	13 (92.9)	<0.01
25-34	12 (25.5)	35 (74.5)	
35-44	22 (28.9)	54 (71.1)	
45-54	38 (51.4)	36 (48.6)	
55-64	20 (45.5)	24 (54.5)	
≥65	3 (33.3)	6 (66.7)	
Residence			
Rural	32 (50.8)	31 (49.2)	<0.01
Urban	64 (31.8)	137 (68.2)	
Education level			
without education level	3 (60.0)	2 (40.0)	0.1
8 years	41 (38.3)	66 (41.7)	
Second education	32 (33.3)	64 (66.7)	
University	12 (25.0)	36 (75.0)	
Religious Faith			
atheist	7 (38.9)	11 (61.1)	0.6
bektashi	1 (50.0)	(50.0)	
catholic	13 (34.9)	20 (60.6)	
muslim	59 (39.3)	91 (60.7)	
orthodox	7 (25.0)	21 (75.0)	
other	9 (27.3)	24 (72.7)	
Marital status			
cohabitation	5 (38.5)	8 (61.5)	<0.01
single	11 (17.7)	51 (82.3)	
divorced	16 (48.5)	17 (51.5)	
widow	16 (59.3)	11 (40.7)	
regular partner	1 (50.0)	1 (50.0)	
married	47 (37.0)	80 (63.0)	

Table 2. Demographic characteristics of the study' participants (following)

Variable	<45	≥45	P value
	N (%)	N (%)	
Occupation			
no	52 (44.4)	65 (55.6)	<0.01
retiree	8 (66.7)	4 (33.3)	
yes	36 (26.7)	99 (73.3)	
Sexual orientation			
bisexual	12 (33.3)	24 (66.7)	0.03
heterosexual	80 (40.0)	120 (60.0)	
homosexual	4 (14.3)	24 (85.7)	
How do you feel sexually?			
female	43 (51.2)	41 (48.8)	<0.01
male	53 (29.4)	127 (70.6)	
Do you have Children			
No	19 (20.7)	73 (79.3)	<0.01
Yes	77 (44.8)	95 (55.2)	
Current residence			
prison	1 (100.0)	0	<0.01
motel	1 (100.0)	0	
lives with their parents	57 (74.0)	20 (26.0)	
rent house to live	35 (76.1)	11 (23.9)	
lives in the house of their cousins	2 (25.0)	6 (75.0)	
lives in their own house	72 (55.4)	58 (44.6)	
other (street)	0	1 (100.0)	
Monthly income			
Without income	35 (59.3)	24 (40.7)	0.2
≤50.000lek	1 (20.0)	4 (80.0)	
]50.000-100.000]	19 (55.9)	15 (44.1)	
]100.000-150.000]	13 (52.0)	12 (48.0)	
]150.000-200.000]	20 (66.7)	10 (33.3)	
]200.000-250.000]	18 (58.1)	13 (41.9)	
]250.000-300.000]	14 (73.7)	5 (26.3)	
]300.000-350.000]	6 (60.0)	4 (40.0)	
]350.000-400.000]	10 (83.3)	2 (16.7)	
]400.000-450.000]	5 (83.3)	1 (16.7)	
]450.000-500.000]	5 (83.3)	1 (16.7)	
]500.000-550.000]	3 (75.0)	1 (25.0)	
>550.000lek	19 (82.6)	4 (17.4)	

Cronbach Alfa 0.906 and a statistically significant correlation between the statements (p <0.001). Its high validity and re ability of instrument.

Table 3. Validity and re ability of instrument

Alfa Cronbach	Konsistenca e brendshme
0.932	Shume e mire

In table four, is presented a comparison between adherence of therapy and the sexual desire.

Table 4. Comparison between three groups based to the adherence and sexual desire

Category	Therapy in low adherence	Therapy in good adherence	Without therapy	Total
<45	42 (43.7)	26 (27.1)	28 (29.2)	96 (36.4%)
≥45	46 (27.4)	62 (36.9)	60 (35.7)	168 (63.6%)
Total	88 (33.3%)	88 (33.3%)	88 (33.3%)	264

In table five is presented the relationship between sexual desire and the sexual orientation of participant enrolled in this study. There are a significant association between the sexual desire and sexual orientation for p value p=0.03.

Table 5. Relationship between sexual desire and sexual orientation

Sexual orientation	Sexual desire		P value
	< 45 N (%)	≥ 45 N (%)	
Bisexual	12 (33.3)	24 (66.7)	0.03
Heterosexual	80 (40.0)	120 (60.0)	
Homosexual	4 (14.3)	24 (85.7)	
Total	96 (36.4%)	168 (63.6%)	

Based to the patients health questionnaire (PHQ 9) used to all participants of our study, most of them presented a depression minor, respectively 20.8% for patients with low sexual desire and 38.7% for patients with high sexual desire (table 6).

Table 6. Distribution of sexual desire according to rating scale of depression

PHQ9	Sexual desire		Total Number
	<45 N (%)	≥45 N (%)	
Depressive symptoms	15 (15.6)	79 (47.0)	94
Depression minor	20 (20.8)	65 (38.7)	85
Moderate depression	44 (45.8)	17 (10.1)	61
Depression Moderate to Severe	13 (13.5)	6 (3.6)	19
Depression severe	4 (4.2)	1 (0.6)	5
Total	96 (100.0)	168 (100.0)	264

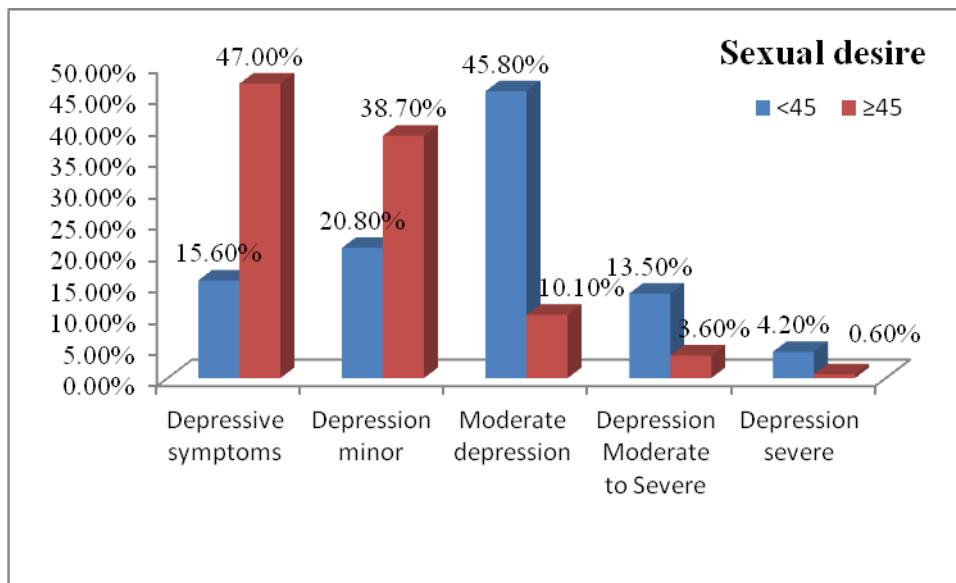


Figure 1. Percentage of depression type based to the sexual desire

DISCUSSION

The aim of our study was to assess the sexual desire in people living with HIV in Albania: how change sexual desire according to adherence in therapy, sexual behavior and depression.

The findings of this study showed that the 63.63% of HIV-infected patients have a higher score (≥ 45) that reflect a higher level of sexual desire, meanwhile, those with low score (≤ 45) were only 36.37% of participants.

Regarding the demographic characteristics of the study’ participants, our findings suggest a strong association between the sexual desire and the variables like; gender, age groups, residency, marital status occupation, the number of children, sexual orientation, current residency etc for p value <0.05 . The relationship between education level, religious faith, and monthly income and sexual desire of the patients, was no significant in our patient groups p value >0.05 .

ART might additionally have negative psychological effects on sexual health (29), the relationship between depression and sexual satisfaction is a complex process (30). If we compared in our study the rating scale for sexual desire with the adherence of therapy in HIV infected patients, we can be said that: patients with low sexual desire in a low therapy adherence presented the higher percentage (43.7%), compared to them with high therapy adherence (27.1%) or without therapy (29.2%). In other hand, patients with higher score for sexual desire and in good therapy adherence presented the higher percentage (36.9%), compared to them with low adherence of therapy (27.4%) and without therapy (35.7%). We noted that adherence did not show any correlation with sexual desire.

A significant association was be find between relationship of sexual desire and sexual orientation, ($p = 0.03$). Sexual desire ≥ 45 items predominate in homosexuals patients 24 (85.7%) compared to heterosexuals 120 (60%) and bisexuals 24 (66.7%).

Cronbach Alfa 0.906 and a statistically significant correlation between the statements ($p < 0.001$). Its high validity and re ability of instrument

Depression in an HIV-infected individual has been reported to largely hinder the patient's life (31). More studies, worldwide, have presented that the prevalence of depression in HIV-positive patients is two to three times higher compared with the general population (32-34). Our study provides evidence that the association between depression and sexual desire is more present in HIV/AIDS patients. Patient with sexual desire (< 45) indicate more problems with depression minor 20.8%, moderate depression 45.8%; moderate to severe depression 13.5% and severe 4.2%. Regarding patients with high sexual desire (> 45), the problems with depression minor was 38.7%, moderate depression 10.1%; moderate to severe depression 3.6% and severe 0.6%

The moderate depression, moderate to severe depression and severe depression are predictive factors for sexual intercourse, as our findings suggest. So they may play a role in the association observed between depression and sexual desire ($p < 0.0001$ with a coefficient of -4.48173, -5.76898, and -5.44823 respectively). This indicates that there is a negative correlation between them, the higher of the depression degree manifest low sexual desire or vice versa a low depression degree manifests high sexual desire.

CONCLUSION

In the conclusion, our study is the first to report assess the sexual desire in people living with HIV in Albania, and the change sexual desire according to adherence in therapy, sexual behavior and depression. 63.63% of HIV-infected patients have a higher score (≥ 45) that reflect a higher level of sexual desire; meanwhile, those with low score (≤ 45) were only 36.37% of participants. Variables like; gender, age groups, residency, marital status occupation, the number of children, sexual orientation, current residency etc for p value < 0.05 . A significant association was be find between relationship of sexual desire and sexual orientation, ($p = 0.03$).

In the end, our findings presented a negative association between depression and sexual desire status of patients living with HIV. The higher of the depression degree manifest low sexual desire or vice versa a low depression degree manifests high sexual desire.

REFERENCE

1. Joyce Wamoyi; Martin Mbonye; Janet Seeley; Josephine Birungi; Shabbar Jaffar. (2011). Changes in sexual desires and behaviours of people living with HIV after initiation of ART: Implications for HIV prevention and health promotion. *BMC Public Health* 11:633. <https://doi.org/10.1186/1471-2458-11-633>.
2. Crum NF, Riffenburgh RH, Wegner S, Agan BK, Tasker SA, Spooner KM, Armstrong AW, Fraser S, Wallace MR: Comparisons of causes of death and mortality rates among HIV-infected persons: analysis of the pre-, early, and late HAART (highly active antiretroviral therapy) eras. *J Acquir Immune Defic Syndr*. 2006, 41 (2): 194-200. 10.1097/01.qai.0000179459.31562.16.View ArticlePubMedGoogle Scholar
3. Nakayiwa S, Abang B, Packel L, Lifshay J, Purcell DW, King R, Ezati E, Mermin J, Coutinho A, Bunnell R: Desire for children and pregnancy risk behavior among HIV-infected men and women in Uganda. *AIDS Behav*. 2006, 10 (4 Suppl): S95-104.View ArticlePubMedGoogle Scholar
4. Kakaire O, Osinde MO, Kaye DK: Factors that predict fertility desires for people living with HIV infection at a support and treatment centre in Kabale, Uganda. *Reproductive Health*. 2010, 7 (1): 27-10.1186/1742-4755-7-27.View ArticlePubMedPubMed CentralGoogle Scholar
5. J. Collazos, "Sexual dysfunction in the highly active antiretroviral therapy era," *AIDS Reviews*, vol. 9, no. 4, pp. 237–245, 2007. View at Google Scholar · View at Scopus
6. Marco de Tubino Scanavino. Sexual Dysfunctions of HIV-Positive Men: Associated Factors, Pathophysiology Issues, and Clinical Management. *Advances in Urology* Volume 2011, Article ID 854792, 10 pages <http://dx.doi.org/10.1155/2011/854792>
7. A. Danoff, "Endocrinologic complications of HIV infection," *Medical Clinics of North America*, vol. 80, no. 6, pp. 1453–1469, 1996. View at Google Scholar · View at Scopus
8. Newell ML: Vertical transmission of HIV-1 infection. *Transactions of the Royal Society of Tropical Medicine and Hygiene*. 2000, 94 (1): 1-2. 10.1016/S0035-9203(00)90413-9.View ArticlePubMedGoogle Scholar
9. Kennedy C, O'Reilly K, Medley A, Sweat M: The impact of HIV treatment on risk behaviour in developing countries: a systematic review. *AIDS Care*. 2007, 19 (6): 707-720. 10.1080/09540120701203261.View ArticlePubMedGoogle Scholar
10. Rice E, Batterham P, Rotheram-Borus MJ: Unprotected sex among youth living with HIV before and after the advent of highly active antiretroviral therapy. *Perspectives on Sexual and Reproductive Health*. 2006, 38 (3): 162-167. 10.1363/3816206.View ArticlePubMedGoogle Scholar

11. Bateganya M, Colfax G, Shafer LA, Kityo C, Mugenyi P, Serwadda D, Mayanja H, Bangsberg D: Antiretroviral therapy and sexual behavior: a comparative study between antiretroviral- naive and -experienced patients at an urban HIV/AIDS care and research center in Kampala, Uganda. *AIDS Patient Care STDS*. 2005, 19 (11): 760-768. 10.1089/apc.2005.19.760.View ArticlePubMedGoogle Scholar
12. Sarna A, Chersich M, Okal J, Luchters SM, Mandaliya KN, Rutenberg N, Temmerman M: Changes in sexual risk taking with antiretroviral treatment: influence of context and gender norms in Mombasa, Kenya. *Culture, Health and Sexuality*. 2009, 11 (8): 783-797. 10.1080/13691050903033423.View ArticlePubMedGoogle Scholar
13. Ezekiel MJ, Talle A, Juma JM, Mnyika KS, Klepp KI: Attitudes and perceived impact of antiretroviral therapy on sexual risk behaviour among young people in Kahe, Moshi Rural District, Tanzania. *Tanzan J Health Res*. 2008, 10 (4): 203-212.PubMedGoogle Scholar.
14. Spector, I. P., Carey, M. P., & Steinberg, L. (1996). The Sexual Desire Inventory: Development, factor structure and evidence of reliability. *Journal of Sex & Marital Therapy*, 22, 175-190.
15. Seggane Musisi, Glenn J. Wagner, Bonnie Ghosh-Dastidar, Noeline Nakasujja, Akena Dickens, Andelialilia Okello. (2013). Depression and Sexual Risk behavior among Clients about to Start HIV Antiretroviral Therapy in Uganda. *Int J STD AIDS*. 2014 Feb; 25(2): 130–137.
16. Bancroft J, Janssen E, Carnes L, Goodrich D, Strong D, Long JS. Sexual activity and risk taking in young heterosexual men: The relevance of sexual arousability, mood, and sensation seeking. *J Sex Res*. 2004;41(2):181–192.
17. Cook JA, Grey D, Burke J, Cohen MH, Gurtman AC, Richardson JL, et al. Depressive symptoms and AIDS-related mortality among a multisite cohort of HIV-positive women. *Am J Public Health* 2004;94(7):1133-40.
18. Vagner Raso; Magdalena Ioana Tolea; Jorge Simão do Rosário Casseb; Alberto José da Silva Duarte; Júlia Maria D'Andréa Greve. (2016). Depression is inversely associated with sexual satisfaction and physical function in men living with HIV/AIDS. *MedicalExpress*. vol.3 no.6.
19. Leserman J, Pence BW, Whetten K, Mugavero MJ, Thielman NM, Swartz MS, et al. Relation of lifetime trauma and depressive symptoms to mortality in HIV. *Am J Psychiatry* 2007; 164:1707-13.
20. Roubenoff R. Acquired immunodeficiency syndrome wasting, functional performance, and quality of life. *Am J Manag Care* 2000;6(9):1003-16.
21. Crane HM, Grunfeld C, Harrington RD, Uldall KK, Ciechanowski PS, Kitahata MM. Lipatrophy among HIV-infected patients is associated with higher levels of depression than lipohypertrophy. *HIV Med* 2008;9(9):780-6.

22. Leserman J. Role of depression, stress, and trauma in HIV disease progression. *Psychosom Med.* 2008;70(5):539-45.
23. Préau M, Marcellin F, Carrieri MP, Lert F, Obadia Y, Spire B, et al. Health-related quality of life in French people living with HIV in 2003: results from the national ANRS-EN12-VESPA Study. *AIDS* 2007; 1: S19-27.
24. Florence E, Schrooten W, Dreezen C, Gordillo V, Nilsson Schönnesson L, Asboe D, et al. Prevalence and factors associated with sexual dysfunction among HIV-positive women in Europe. *AIDS Care* 2004; 16 (5):550-7.
25. Bova C, Durante A. Sexual functioning among HIV-infected women. *AIDS Patient Care and STDs* 2003; 17:75-83.
26. Ramrakha S, Caspi A, Dickson N, Moffitt TE, Paul C. Psychiatric disorders and risky sexual behaviour in young adulthood: cross sectional study in birth cohort. *BMJ.* 2000; 321 (7256):263–266.
27. Nakimuli-Mpungu E, Bass JK, Alexandre P, et al. Depression, alcohol use and adherence to antiretroviral therapy in sub-Saharan Africa: a systematic review. *AIDS Behav.* 2012; 16 (8):2101–2118.
28. Kalichman S, Simbayi L, Kaufman M, Cain D, Jooste S. Alcohol Use and Sexual Risks for HIV/AIDS in Sub-Saharan Africa: Systematic Review of Empirical Findings. *Prev Sci.* 2007; 8 (2):141–151.
29. Hoffmann C, Rockstroh JK, Kamps BS. *HIV Medicine.* 15th edition, Flying Publisher, 2007.
30. Bradley MV, Remien RH, Dolezal C. Depression symptoms and sexual HIV risk behavior among serodiscordant couples. *Psychosom Med* 2008; 70 (2): 186-91.
31. Ricardo Pereira de Moraes & Jorge Casseb. (2017). Depression and adherence to antiretroviral treatment in HIV-positive men in São Paulo, the largest city in South America: Social and psychological implications. *Clinics (Sao Paulo).* 2017 Dec; 72(12): 743–749.
32. Wagner GJ, Goggin K, Remien RH, Rosen MI, Simoni J, Bangsberg DR, et al. A closer look at depression and its relationship to HIV antiretroviral adherence. *Ann Behav Med.* 2011;42((3)):352–60.]
33. Wolff LC, Alvarado MR, Wolff RM. Depression in HIV infection: prevalence, risk factors and management. *Rev Chilena Infectol.* 2010;27((1)):65–74.
34. Nhamba LA, Hernandez Melendrez E, Bayarre Veá HD. Depression affecting HIV people in two municipalities of Angola. *Depression en Pers con VIH en dos Munic Angola. Revista Cubana de Salud Pública.* 2014;40((4)):276–88