

Posttraumatic Stress among Women with HIV in Zambia

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ABSTRACT

Objective: To examine whether HIV-positive women in Lusaka District, Zambia, displays a higher degree of PTSD-symptoms than a HIV-negative control group.

Method: The study targeted 50 HIV-positive women from four ART-clinics and 42 HIV-negative women from corresponding VCT-units. All sites were located in Lusaka District, Zambia. The HIV-positive women were compared with the control group in regard for PTSD, PTSD-symptoms, dissociative symptoms and history of traumatic experiences. The instruments used were PCL-C, DES-T and LYLES-A. Prior to the main study, the validity of the instruments were assessed with a pilot-sample.

Results: Three participants in the HIV-positive group fulfilled the criteria for clinical PTSD (10.7 %), as compared to none in the control group. The HIV-positive group also displayed a significantly higher degree of PTSD-symptoms and previous traumatic experiences, with strong effect sizes, but not for dissociative symptoms. The significant difference in PTSD-symptoms remained while trauma-history was controlled for.

Conclusions: The results of this study clearly indicates that women with HIV are vulnerable to PTSD and that contracting HIV in itself can

constitute a psychological trauma in itself. Since PTSD among persons with HIV has been associated with transmission risk behaviours, reduced treatment adherence and a faster disease progression, these findings are important to consider in actions against HIV and AIDS.

INTRODUCTION

Mental ill-health is linked to HIV, both as a consequence of HIV-infection and as a predictor for faster disease progression.^{1,2} Traumatic experiences and stressful events are linked to faster progression to AIDS, faster decline of CD4-count, and higher mortality. The correlations increase with cumulative trauma and stressful life experiences.² Furthermore, there seems to be a link between Post-traumatic stress syndrome (*PTSD*) and HIV-transmission and ART-failure,^{3, 4} with several studies showing a correlation between PTSD and Antiretroviral therapy (ART)-failure.⁵ Psychological trauma and PTSD is associated with higher risk of HIV-transmission and poorer health outcomes among women as compared to men.⁴ In the US, an estimated rate of 30 percent of recent PTSD among women who are HIV-positive has been found, more than five times the rate of the general population. Bollinger with colleagues³ examined the prevalence of PTSD among persons with HIV with PTST Checklist – Civilian version (PCL-C) and Clinician-administered PTSD Scale (CAPS), finding a prevalence of 19.3 percent in the last year, and 12.3 percent in the last month/presently.

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The majority of research on the bidirectional relationship between HIV and mental illness is from the developed world.^{6, 7} Brandt⁶ and Breuer with colleagues⁷ conducted separate systematic reviews of the studies on mental health of people with HIV/AIDS in Africa. They conclude that the majority of available research has significant methodological issues. Many studies lack a proper control group, for example. Other common limitations is that a number of studies focus on subgroups of people with HIV, lack of specification of disease severity, lack of use of standardized measures for mental health, and few studies with properly randomized samples. The results of the review by Brandt⁶ indicated that 45 to 75 percent of persons with HIV in Africa suffers from some form of psychiatric disorder, and a prevalence of clinical disorders between 20 to 64 percent. Depression seemed to be the most common condition, followed by substance abuse, PTSD, and anxiety disorders such as panic disorder or generalized anxiety disorder. Substance abuse is related to sexual risk behaviors.⁷ The relationship with PTSD is unclear, with results from South African studies showing prevalence ranging from 4 to 5 percent up to 15 to 30 percent. Brandt⁶ concludes from available research that HIV-positive persons in Africa seems more likely to suffer from mental illness than HIV-negative Africans. Mental illness correlates with later initiation of ART, lower adherence, and higher morbidity and mortality.⁷

Women represent an increasing part of HIV-infected people⁴ and women with HIV face higher morbidity and mortality than men, despite availability of effective antiretroviral therapy.⁸ Women's elevated vulnerability to HIV also shows in prevalence rates of HIV among women. In low- to middle-income countries, women comprise 52 percent of all people living with HIV, and in sub-Saharan Africa the proportion is 57 percent. Gender differences in HIV-prevalence are pronounced in Zambia,⁹ with 16.1 percent of women aged 15-49 versus 12.3 percent of men in Zambia. The differences are larger in

younger age groups, with twice as many young women aging 15-24 being infected than men in the same age group.

The aim of this study was partly to examine if the prevalence of PTSD-symptoms and potentially traumatic experiences are elevated among women with HIV in Zambia. Partly to examine if HIV-infection by itself to a significant degree contributes to PTSD-symptoms. To our knowledge, such a study – where demographic factors and previous potentially traumatic experiences are controlled for – has not been conducted before.

METHOD

Procedure

The study was initiated by a pre-test of the instruments to assess the reliability and validity of the instruments in a Zambian setting. Correlations between symptoms of traumatic stress and quantity of previous potentially traumatic experiences were examined, as well as internal consistency of PCL-C and Dissociative experiences scale – taxon (DES-T). The collected data was also used to estimate a cut-off value for clinical PTSD.

In the main study, we examined if the prevalence of PTSD-symptoms differed among a sample of HIV-positive women enrolled on an ART-program as compared to an HIV-negative control group, and if this eventual difference remained while controlling for individual trauma – history. We chose to focus on women because of the documented gender-specific vulnerability to HIV and PTSD. Demographic variables were controlled for by sample selection. The participants in the main study were recruited from ART-clinics and corresponding Voluntary counselling and testing (VCT) - receptions. With help from employees at the ART-clinics, HIV-positive women were recruited as study-participants. With help from employees at VCT-units HIV-negative participants were recruited in conjunction with HIV-testing. The employees at the VCT-receptions were asked to help recruit

participants in the control group that were matched to the participants in the clinical group. We tried to recruit an equal number of participants in each group from each clinic to avoid potential differences related to geographical factors. A clinician was present while participants answered the forms, either to verbally administer the questions or to be available for questions and support.

Participants

The participants in the pre-test were recruited from Mufulira Baptist Parish ($n=23$) and St. Ignatius Catholic Parish ($n=24$), to collect a relatively representative sample of the Zambian population.

Participants in the main study were recruited from five different hospitals or clinics that were chosen based on the ambition to achieve a good variance regarding socio-economic status among the study-participants. The health facilities included in the study were: the Chingwele Reference Clinic (Clinical $n=21$, Control $n=21$), the Chipata Compound Health Facility (Clinical $n=11$, Control $n=11$), the UNZA Clinic (Clinical $n=6$, Control $n=7$) and the Kalingalinga Hospital (Clinical $n=12$, Control $n=3$).

Instruments

PCL-C

PCL-C is the most commonly used measure in the world for PTSD. It has mostly been used with female samples¹⁰. It consists of 17 items that are linked to the DSM-IV criteria for PTSD, and refers to "stressful experiences of the past".¹¹ The respondents are asked to rate the degree of symptoms described in each item during the past month, on a scale ranging from 1 (not at all) to 5 (extremely).¹⁰ The documented validity and reliability of PCL-C is good. PCL generally correlates highly with other PTSD symptom questionnaires, such as Impact of Events Scale, with a correlation of $r=.90$. It also correlates well with diagnostic interviews such as Clinician-Administered PTSD Scale, with a correlation of $r=$

.79. PCL-C has shown acceptable-to-good test-retest – reliability and good internal consistency, with 14 studies reporting total score values above $\alpha=.75$. Discriminant validity seems to be low, with scores on PCL-C correlating moderately to high with both depression and anxiety¹¹. PCL-C has undergone validation on a HIV-positive population with good results - a Cronach's Alpha of $\alpha=.94$ for the entire scale, as well as a correlation with the severity score on Clinician Administered PTSD Scale (CAPS) of $r=.63$ ($p=.001$). A cut score of 50 yielded the best efficiency, with a specificity of .79 and a sensitivity of .86³.

DES-T

Dissociative Experiences Scale (DES) is a 28 item self-report instrument for dissociative symptom. The respondents rate the degree to which they are occupied by the symptom on an 11-point scale measured in percentage of time (0%, 10%, and so on). DES-T was primarily developed as a measurement for "pathological dissociation"; dissociative components that are more strongly connected to pathology than others. It consists of the 8 items from DES that represents the most extreme dissociative states.¹²

LYLES-A

Linköping Youth Life Experiences Scale (LYLES) is a self-report measure for potentially traumatic life events among adolescents, consisting of 23 main questions with a total of 41 more detailed secondary items. It includes three subscales - *interpersonal events*, *non-interpersonal events*, and *prolonged adverse childhood circumstances*. LYLES has shown kappa correlations ranging from moderate to very good ($r=.44$ to $r=1.0$), and a total test-retest Pearson's correlation at $r=.79$ ($p<.01$). LYLES-A is a version of LYLES adopted for adults, which has undergone a validation in Sweden, including 5000 Swedish adults.¹³

Missing values

Missing values in the study was handled by exclusion. In the main study, the clinical group had missing values in one of the PCL-C – forms. The control group had missing values in one of the PCL-C – forms, four of the LYLES-A – forms and in one of the DES-T – forms.

Statistical analysis

All statistical analyses were executed using IBM SPSS Statistics 20.

In the pre-test, the collected data was used to estimate an appropriate sample size for the main study. When calculating power, a delta score of 5 was used as an estimate of expected difference between means. The power was set to .80 and the alpha level was set to $\alpha=.05$. Cronbach's Alpha was calculated for PCL-C and DES-T, to examine the internal consistency of the instruments. The potential effects of demographic variables on PTSD-symptoms were examined with univariate ANOVAs, using total score on PCL-C as measure for PTSD-symptoms. Correlations between LYLES-A on one hand, and PCL-C and DES-T on the other, were examined through regression analysis. Mean scores on PCL-C and DES-T were used to determine appropriate cut scores to PTSD in the study.

The main study – sample was compared to the pre-test – sample regarding demographic variables, through χ^2 and *t*- tests. The clinical group and the control group were compared with the same method. Prevalence of PTSD was assessed through calculating frequency of respondents scoring above the cut score on PCL-C. Differences in score on PCL-C, DES-T and LYLES-A between the clinical group and the control group were examined with independent *t*-tests. To assess the independent effect of HIV-diagnosis on PTSD-symptoms, an ANCOVA with total score on PCL-C as dependent variable, HIV-status as independent variable and total score on LYLES-A as covariate was calculated.

Ethics

The study was approved by the Humanities and Social Sciences Research Ethics Committee at the University of Zambia, by the Ministry of Health in Zambia, by the Lusaka District Community Health Office.

Inclusion criteria were female Zambian citizens over 18, diagnosed with HIV. Exclusion criteria were developed AIDS and absence of adequate access to health care at the time of participation in the study. All participants were anonymous and gave informed consent to participate in the study.

RESULTS

In the pre-test, no demographic factors showed significant impact on total score on PCL-C. With a power of .80, alpha-level of .05, an estimated sigma of 12.16 and an estimated population mean on PCL-C of 34.15, the required sample size to be able to detect a meaningful difference in severity scores on PCL-C ($\Delta 5 \leq x$) should be at least $n=47$. The internal consistency using Cronbach's alpha and the pre-test sample was $\alpha=.903$ for PCL-C, and $\alpha=.833$ for DES-T. The mean on the PCL-C total severity scale was $m= 34.15$ ($SD=12.16$). As criteria for PTSD, both the cluster method as well as a cut-off score of 50 needed to be fulfilled simultaneously. Linear regression analysis predicted PCL-C score based on LYLES-A score to a significant degree ($F(1, 44) = 20.42, p = .000$) with a R^2 of .32, and DES-T score based on LYLES-A to a non-significant degree ($F(1, 43) = 2.23, p = .143$) with a R^2 of .05.

Table 1: Mean scores on PTSD Checklist – Civilian version (PCL-C), Dissociative Experiences Scale – Taxon (DES-T) and Difficult Life Experiences (LYLES-A) divided by HIV-status.

Sample	Instrument					
	PCL-C		DES-T		LYLES-A	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
HIV-positive Clinical group (n =50)	37.9	(10.7)	14.7	(9.5)	37.1	(13.2)
HIV-negative Control group (n=42)	29.3	(7.8)	9.4	(10.7)	26.2	(9.5)

In the clinical group, 3 participants of 28 (10.7 %) fulfilled the criteria for PTSD, as compared to 0 of 24 (0 %) in the control group. In the clinical group, 4 participants of 27 (14.8 %) fulfilled the criteria for a dissociative disorder, as compared to 2 of 23 (8.7 %) in the control group. There was a significant difference, with a large effect size, between the clinical group and the control group in regard to score on PCL-C ($t(49) = 3.21, p = .002, CI_{95\%} [3.18 - 13.85], d = .91$) and total score on LYLES-A ($t(46) = 3.16, p = .003, CI_{95\%} [3.98 - 17.94], d = .95$). Total score on DES-T showed a non-significant difference between the groups ($t(48) = 1.36, p = .18, CI_{95\%} [-2.55 - 13.19], d = .38$). There was a significant, medium sized effect of HIV-status on total score on PCL-C while controlling for total score on LYLES-A through ANCOVA-analysis ($F(1, 47) = 4.07, p = .050, \text{partial } \eta^2 = .085$)

DISCUSSION

In the pretest, both PCL-C and DES-T showed good internal consistency. PTSD-symptoms correlated with number of potentially traumatic experiences, which we concluded would give credence to both LYLES-A and PCL-C. DES-T did not show a significant correlation to LYLES-A in a regression analysis. The mean scores in the pretest resulted in high cut-scores on PCL-C and DES-T. In fact, the criteria for PTSD in PCL-C in this study is the strictest we have come upon. A proper validation of the measures could provide important information regarding the high mean scores.

Three individuals fulfilled the criteria for PTSD in the clinical group, as compared to none in the control group. Since the criteria was strict, the true prevalence of PTSD might have been even higher. Still, the observed prevalence is similar to earlier findings.^{3, 6, 7} Furthermore, the clinical group displayed a higher degree of PTSD-symptoms than the control group. These findings indicate that women with HIV is a vulnerable population, which is supported by earlier research highlighting an elevated prevalence of mental illness among HIV-

positive individuals^{6,7}. To our knowledge, this study is the first to examine the effect of PTSD-symptoms on HIV while using a control group and attempting to control for both demographic factors and history of potentially traumatic experiences. The results implies that HIV-positive persons could be a population with a distinct vulnerability for PTSD, and that HIV in itself could constitute a significant trauma. Thus it adds to the general body of research on the potential traumatic effects of contracting HIV, in which PTSD has been linked to risk behaviours among persons with HIV, reduced treatment adherence, and a faster disease progression.^{2, 4, 5} It would therefore be important to pay attention to the findings in this study. In order to make their work more efficient, organizations against HIV in sub-Saharan Africa should further develop and integrate a focus on mental health and PTSD in their programs. An example of a practical implication would be to integrate mental health – aspects in VCT-counselling.

LIMITATIONS

The limited validation of the instruments prevented us from answering a number of relevant questions regarding scoring patterns. Another potentially limiting factor is that only English was included in this study. PCL-C, DES-T and LYLES-A were culturally adapted to ciBemba and iciNyanja, but those versions were not included in the final study since they produced inconsistent and puzzling data. Nevertheless, English is the most widely spoken of the official languages in Zambia. We concluded that with a clinician present for verbal administration, the English versions would suffice.

CONCLUSION

The HIV-positive sample displayed a significantly higher degree of PTSD-diagnosis and PTSD-symptoms than the control group, and the difference remained significant while controlling for history of potentially traumatic experiences. The results indicate that women with HIV are vulnerable to

PTSD and that HIV in itself can constitute a psychological trauma. Since PTSD among individuals with HIV has been linked to adverse outcomes, these findings are important to consider in actions against HIV and AIDS in sub-Saharan Africa. To integrate service and treatment for PTSD and mental illness into the existing VCT-program is an example of a potentially effective strategy to help persons with HIV and comorbid mental illness.

ACKNOWLEDGEMENTS

The authors have declared that they have no competing or potential conflicts of interest. The study was partly funded by SIDA through their "Minor Field Study" – scholarship, partly by UNZA. We want to thank the employees at the included clinics for their help, and we are thankful to all the respondents for their participation.

REFERENCES

1. Freeman, M. C., Patel, V., Collins, P. Y., and Bertolote, J. M. Integrating mental health in global initiatives for HIV/AIDS. *British Journal of Psychiatry* 2005;187, 1-3.
2. Leserman, J. Role of depression, stress and trauma in HIV disease progression. *Psychosomatic Medicine* 2008;70, 539-545.
3. Bollinger, A. R., Cuevas, C. A., Vielhauer, M. J., Morgan, E. E., & Keane, T. M. The operating Characteristics of the PTSD Checklist in detecting PTSD in HIV+ substance abusers. *Journal of Psychological Trauma* 2008;7, 213-234.
4. Machtiger, E. L., Wilson, T. C., Haberer, J. E., & Weiss, D. S. Psychological trauma and PTSD in HIV-positive women: a meta-analysis. *AIDS & Behaviour* 2012;16:2091-2100.
5. Nel, A., & Kagee, A. Common mental health problems and antiretroviral therapy adherence. *AIDS Care* 2011;23: 1360-1365.
6. Brandt, R. The mental health of people living with HIV/AIDS in Africa: a systematic review. *African journal of AIDS Research* 2009; 8: 123-133.
7. Breuer, E., Myer, L., Struthers, H., & Joska, J. A. HIV/AIDS and mental health research in sub-Saharan Africa: a systematic review. *African Journal of AIDS Research* 2011;10: 101-122.
8. Simmons, R. D., Ciancio, B.C., Kall, M. M., Rice, B.D., & Delpech, V.C. Ten-year mortality trends among persons diagnosed with HIV infection in England and Wales in the era of antiretroviral therapy: AIDS remains a silent killer. *HIV Medicine* 2013;14: 596-604.
9. UNAIDS. *Get on the Fast-Track. The life-cycle approach to HIV*. Joint United Nations Programme on HIV/AIDS; 2016.
10. Brewin, C. R. Systematic Review of Screening Instruments for Adults at Risk of PTSD. *Journal of Traumatic Stress* 2005;18: 53-62.
11. Wilkins, K. C., Lang, A. J., & Norman, S. B. Synthesis of the psychometric properties of the PTSD Checklist (PCL-C) military, civilian, and specific versions. *Depression and Anxiety* 2011; 28: 596-606.
12. Watson, D. Investigating the construct validity of the dissociative taxon: stability analyses of normal and pathological dissociation. *Journal of Abnormal Psychology* 2003; 12: 298-305.
13. Nilsson, D., Dahlström, Ö., Pribe, G., & Svedin, C. G. Polytraumatization in an adult national sample and its association with psychological distress and self-esteem. *Brain and Behaviour* 2015; 5: 62-74.