Who Improved in a Trauma Intervention for HIV-Positive Women with Child Sexual Abuse Histories?

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Abstract

The Healing Our Women Program, an 11-week integrated trauma/HIV intervention designed for HIV-positive women with child sexual abuse histories, has been found to reduce psychological distress in treatment groups compared to wait-list controls (Chin et al., 2004; Wyatt et al., 2011). This study examines the characteristics of participants who improved vs. those who did not improve among participants who received the active intervention (N=78) at post, three-, and six-month follow-up. Logistic regression analyses conducted post-intervention and at three- and six-month followups examined demographic characteristics, treatment attendance, AIDS diagnosis, and total trauma burden as possible predictors of improvement. Results indicated that at post-test, total trauma burden was significantly associated with improvement. At three-month follow-up, none of the variables discriminated the groups. At six-month follow-up, total trauma burden was again significantly related to improvement. The results suggest that the intervention is most appropriate for women with high trauma burdens. Future HIV interventions should go beyond the "one size fits all" approach" and consider the "fit" between intervention and participants.

Keywords

trauma intervention; HIV; women: child sexual abuse

Introduction

There is substantial evidence of high rates of psychiatric co-morbidity among HIV-infected men and women (Israelski, Prentiss, Lubega, Balmas et al., 2007). Indeed, previous studies of HIV-infected individuals have found elevated levels of depression, anxiety, and trauma symptoms (Leserman, 2008), particularly among those who are female, minority, and low-income (Puffer, Kochman, Hansen, et al., 2011; Catz, Gore-Felton, & McClure, 2002). In addition their health challenges, women infected with HIV carry a heavy burden of life

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stresses, including financial worries, loss of partners to death or abandonment, ostracism by family, societal stigma, changes in identity, coping with the likelihood of early mortality, and daily hassles such as the management of medications and their side effects (Gurund, Taylor, Kemeny & Myers, 2004). A history of child sexual abuse (CSA) is a reported risk factor for HIV infection (Arriola, Louden, Doldren, et al., 2005; Koenig & Clark, 2004; Wyatt, Myers, Williams, et al., 2002), with a high co-occurrence rate between the two. For example, compared to estimates of 8 to 27% of CSA in community samples, CSA histories have been reported to be as high as 33 to 50% in samples of HIV-infected women (Kalichman, Sikkema, DiFonzo, Luke, & Austin, 2002; Wyatt et al, 2002a; Koenig & Clark, 2004; Whetten, Leserman, Lowe, Stangl et al., 2006). Numerous negative consequences of CSA have been documented, encompassing virtually every aspect of psychological functioning, including risk-taking and sensation-seeking (Bornovalova, Gwadz, Kahler, et al., 2008), cognitive impairment (Zurbriggen & Freyd, 2004), affective dysregulation (Molnar, Buka, & Kessler, 2001), adverse physical health (DeBellis, Chrousos, & Dorn, L., 1994a; DeBellis, Lefter, Trickett, & Putnam, 1994b; Putnam, 2003), substance use and abuse (Wyatt, Vargas Carmona, Loeb, et al., 2005), and risky sexual behavior (Wilson & Widom, 2008; Sena, Carey, & Venable, 2008; Brown & Finkelhor, 1986). The presence of depression and anxiety exacerbates these risks and is a strong predictor of poor medication adherence (DiMatteo, Lepper & Croghan, 2000), faster disease progression, and early HIV-related mortality (Leserman, Pence, Whetten, et al., 2007). Thus, the co-occurrence of HIV and CSA confers significant risk for psychological distress and dysfunction.

While there are only a few such studies, interventions for HIV-positive women with CSA histories have begun to target psychological distress along with sexual risk behaviors (e.g., Puffer, Kochman, Hansen, & Sikkema, 2011; Heckman, Sikkeman, Hansen, et al., 2011). In addition to the independent benefits that are derived by reducing such symptoms, psychological distress likely interferes with the efficacy of sexual risk reduction efforts, such that participants who evidence more symptoms of depression, trauma symptoms, or anxiety may not be able to benefit as much from sexual risk reduction interventions unless their distress is alleviated. Sikkema et al. (2007) found significant reductions in intrusive and avoidant traumatic stress symptoms among a sample of HIV-positive men and women with CSA histories who participated in an HIV intervention compared to support and wait-list groups. In addition, Wyatt and colleagues (2011) reported decreased trauma symptoms among the treatment group in an HIV/trauma intervention compared to control groups.

However, while efficacy in reducing psychological distress and improving psychological adjustment in general has been demonstrated, few studies have examined the more challenging question of which subgroup of participants benefited from the intervention vs. those who received little or no benefit. The possibility that subgroups of participants may have qualitatively different responses to an intervention is important to consider for several reasons. First, it would be inefficient and wasteful to deliver an intervention to those who are unlikely to benefit from it. Second, interventions may produce iatrogenic effects. Finally, determining for whom an intervention benefits serves to advance our knowledge, so that we can get beyond the basic question of "does it work?" and move toward tailoring interventions for more carefully defined groups for whom the intervention is most appropriate or most beneficial.

One study that addressed this question (Beadnell et al., 2006) found three major trajectories of change in a risk reduction intervention among a community sample of 287 women: those who were risk eliminators, those who were risk reducers, and those who remained high risk. The group who remained at high-risk reported more risk factors in their background, including more lifetime partners, more recent paying partners, more adult sexual trauma, and recent substance use. Additionally, these women had current circumstances that appeared to maintain their high risk behaviors despite the intervention, including having abusive, non-monogamous partners. Interestingly, risk reducers were as likely to report childhood sexual abuse (CSA) as the high risk group, prompting the authors to suggest that moderators of the consequences of CSA that were unexamined in the study, such as the severity of the abuse, may be important in predicting likelihood of improvement.

The current study addresses these issues. It is based on data from a clinical trial testing the efficacy of an integrated HIV/trauma intervention for HIV-positive women with CSA histories. The Healing Our Women (HOW) Program used an eleven-week psychoeducational group intervention, entitled the Enhanced Sexual Health Intervention (ESHI), that addresses the link between past sexual trauma and current sexual risk behavior and teaches increased coping and emotional problem-solving. Among its major aims were to reduce risk behavior and alleviate psychological distress. Using a combined didactic and experiential approaches, the relationship between past trauma and current behavior was discussed both in general and specifically for each participant. A session-by-session description of the intervention has been reported elsewhere (Chin et al., 2004). In brief, the intervention targeted cognitive, affective, and behavioral domains. Its components include a trauma writing exercise (Pennebaker & Stone, 2004; Pennebaker, 1997), group processing, the identification of and coping with potentially risky or stressful situations, and problem-solving using a heuristic approach. Compared to a wait-list control group, the treatment group exhibited significantly greater pre-post reductions in PTSD symptoms (Wyatt et al., 2010) and maintained low sexual risk or reduced their sexual risk behavior over 6 months (Wyatt et al., 2004). While the intervention demonstrated a significant overall between-group effect, the characteristics that distinguished those who improved from those who did not improve remain to be investigated. Therefore, the purpose of this study is to identify for whom the intervention worked best, and to ultimately elucidate the issue of "fit" between the intervention and participants. To that end, we examined the factors that discriminated between those who exhibited significant reductions in psychological stress and those who did not from pre- to post-intervention, 3-month follow-up, and six-month follow-up. While it is also important to investigate the same question with respect to sexual risk behavior, our sample, consistent with other studies of HIV-positive women, was largely sexually abstinent or already practicing safe sex (i.e. a ceiling effect).

The variables hypothesized to discriminate between the improved and unimproved groups are those that confer greatest risk and vulnerability with respect to both HIV and CSA, and thus were the targets of the intervention. They include: 1) demographic characteristics; 2) whether or not the participant has ever received a diagnosis of AIDS; 3) the burden of trauma that the participant has experienced, including child sexual abuse, adult sexual abuse, and intimate partner violence; and 4) attendance in the intervention. First, a diagnosis of AIDS represents a serious deterioration of one's health and serves as a marker for a host of

health problems. For example, it signifies a t-cell count of 200 or less, a state at which one's immune system is severely compromised, greater risk of opportunistic infections (e.g. cytomegalovirus, cancer, and pneumonia), greater impairment and greater risk of early mortality. The ESHI specifically addresses health problems as a risk factor for psychological distress and teaches coping skills in conjunction with problem-solving strategies to deal with the onset of AIDS-related symptoms, as well as with medical personnel and situations. Second, the burden of chronic stress and trauma has been documented to increase risk for depression, PTSD, and anxiety (Gurund, Taylor, Kemeny & Myers, 2004). Specifically, sexual and interpersonal trauma pose great risk for depression, anxiety, and post-trauma symptoms. The ESHI specifically targets the reduction of trauma symptoms through cognitive processing, peer support, and greater use of effective coping strategies. Third, greater attendance in the intervention is hypothesized to yield greater improvement.

Method

Procedure

Participants were recruited from community-based organizations, health clinics, physicians' offices, hospitals, and HIV support groups through flyers and word-of-mouth. Following the baseline assessment, women were randomly assigned to one of two conditions: ESHI (N = 51) or standard control (SC; N=70) in a two-group repeated measures wait-list control design. Women in the treatment condition attended 11 weekly sessions of 2.5 hours each. The meetings were psychoeducational in content, addressing issues related to CSA and HIV status. After completing the treatment sessions, treatment participants were post-tested and re-interviewed at 3 and 6 months. Following a standard care case management model (Powell, 1996), the SC condition consisted of one face-to-face session in which women received HIV prevention, CSA information, and pamphlets. In addition, they received weekly calls and referrals for support services for 11 weeks, and were post-tested. These services are those typically available for HIV-positive women, consistent with Ryan White guidelines for standard care for people living with HIV. These include individualized case management, referrals, and weekly monitoring of psychological and other needs through weekly phone calls (CDC, 1997).

Sample

Because sexual abuse histories increase the risk for psychological impairment (Briere, 2004) and consistent with other interventions with psychologically at-risk groups (Heil, Sigmon, Mongeon & Higgins, 2005), SC participants were given the option of participating in the ESHI intervention after the post-test. Of the standard wait-list control group, 27 women elected to "roll-over" to the ESHI intervention after being on the wait-list. Thus, in this study, the sample in this study consists of 78 women who were exposed to the active intervention, increasing power to detect treatment effects over time. Group comparisons showed no differences between the initially assigned treatment group and the wait-list group who elected to roll-over to treatment. About half (51.32%) of the sample was African American, 43.42% were Latina, and 5.42% European American. The mean age of the sample was 39.5 years (SD = 8.7). Slightly more than half (57.7%) had a high school education or higher. Almost all were unemployed or on disability (96.1%), and more than

half (62.8%) did not live with a partner. In terms of psychological characteristics, the participants evidenced high levels of depression and PTSD symptoms and a lower level of general anxiety symptoms. The mean score on the Center for Epidemiological Studies Depression Scale (CESD) was 36.1 (SD=15.9; range = 8 to 70), well within the clinical range. On the PTSD symptom scale, participants scored a mean of 9.7 of a possible maximum of 16 symptoms (SD=5.2; range = 0 to 16), indicating a high number of PTSD symptoms. The mean score on the SCL-Anxiety Scale was 13.42 (SD = 8.14; range = 0 to 46), indicating a low level of general anxiety. Attendance in the treatment sessions was high, with 69.2% attending 8 or more of a total of 11 sessions.

Measures

Demographic characteristics—Data on ethnicity, age, education (number of years), employment (employed, unemployed), and relationship status (married or living with a partner vs. single, dating a steady partner, or dating occasionally) were collected on all participants.

Attendance—Attendance data were collected at each of the 11 sessions. Attendance ranged from 2 to 11 sessions, with the mode being 8 sessions. Therefore, in our analyses attendance was recoded into a categorial variable of fewer than 8 and 8 or more sessions.

Total Trauma Burden—A composite variable combining the standardized child sexual abuse, adult sexual abuse, interpersonal violence, and exposure to other trauma variables was created to form total trauma burden.

Child sexual abuse and adult sexual abuse were measured with the Wyatt Sex History Questionnaire (Wyatt et al., 1985). A history of child sexual abuse was determined by asking nine screening questions ("yes/no" items) related to sexual experiences before the age of 18 years with an adult or someone five or more years older, including fondling, frottage, attempted intercourse, intercourse, oral copulation, digital or object penetration. All participants in our sample had a history of child sexual abuse. They were then asked more detailed information regarding the nature of the event. This included the type of physical contact, age of the participant at the time of the abuse, duration, relationship of the perpetrator to the participant, and whether this had happened with someone else before the age of 18. Type of abuse (no penetration=1; penetration=3), perpertrator (extrafamilial=1; one intrafamilial=2; more than one intrafamilial=3), duration of abuse (one time=1; more than one time=3), and age of abuse (12 to 17 years=1; less than 12 years=3) were summed to create the child sexual abuse variable. The adult sexual abuse variable comprised the sum of type of abuse (no abuse=0; no penetration=1; penetration=2), perpetrator (no abuse=0; extrafamilial=1; one intrafamilial=2; none of the participants had more than one intrafamilial perpetrator of ASA) and duration of abuse (no abuse=0; one time=1; more than one time=2).

Interpersonal violence was assessed with the Revised Conflict Tactics Scale (Strauss, Hamby, Boney-McCoy, & Sugarman, 1996), which measures the extent to which relationship partners engage in psychological and physical attacks on as well as their use of reasoning and negotiation with each other. This measure has demonstrated good validity and

reliability, with Cronbach's alphas ranging from .78 to .96 among the five subscales. The total score was used for inclusion in the Total Trauma Burden score.

Exposure to other trauma was assessed with the a series of questions about participants' experiences with non-sexual traumas. For example, participants were asked whether they had experienced events such as combat, abandonment, family or community violence, and natural disasters. Responses were coded yes or no, and all positive responses were summed to yield an overall sum Other Trauma score.

AIDS Diagnosis—Current health status was assessed with a questionnaire asking whether the respondent had illnesses or conditions associated with HIV, their latest CD4 count, and whether the respondent had ever been diagnosed with AIDS. Because the number of participants who did not know their current CD4 count was rather high, we used AIDS diagnosis as the indicator of health status in our analyses.

Psychological Distress—A composite measure of psychological distress that combined measures of depression, anxiety and PTSD symptoms was used as the outcome of interest. Specifically, symptoms of depression were assessed with the 20-item Center for Epidemiological Studies – Depression Scale (CES-D) (Radloff, 1977), symptoms of anxiety were assessed with the anxiety subscale from the Symptom Checklist-90-Revised (SCL-90-R) (Derogatis, 1976), and PTSD symptoms were assessed with the PTSD diagnostic module of the University of Michigan version of the Composite International Diagnostic Interview (UM-CIDI) (Kessler, McGonagle, Zhao, Nelson, & et al., 1994). It should be noted that the items used to measure PTSD symptoms do not overlap with the Trauma Burden items, which measure exposure to events rather than their sequelae. Because different response scales are employed in the source measures, scores were standardized and a reliable sum psychological distress score was calculated (Cronbach α = .79) and used in the analyses.

Data Analysis

A series of multivariate logistic regression analyses, one for each time period, was conducted to examine the relative contributions of the hypothesized predictors of reduction in psychological distress. Reduction in distress was defined as a pre-post change score of −2 or greater. This threshold was selected on both empirical and rational bases; in examining the distribution of change scores on distress, a change of −2 represents one standard deviation and therefore a significant improvement on the standardized z-score metric we used. All analyses were performed with SAS, Version 8 (SAS Institute, Inc. Cary, NC).

Results

Descriptive statistics for demographic, predictor, and outcome variables by improved and unimproved groups are presented in Table 1.

A series of multiple logistic regressions with odds ratios identified the best predictors of the likelihood of improvement for each time period (See Tables 2, 3, and 4). For the pre- to post-intervention change, the overall model was significant (chi-square=10.25, P=.04). The model had a percentage concordance 0f 75.7 and percentage discordance of 23.7. The model

indicated that women with higher trauma burden were more likely to show improvement at post-test (OR=1.44), 95% confidence intervenal (CI) = 1.06, 1.95. The other hypothesized variables were non-significant in predicting improvement at post-test.

At three months post-intervention, the overall model did not reach significance, and none of the individual predictors were significantly associated with improvement. At six months, the overall model was non-significant; however, trauma burden significantly discriminated the improved and unimproved groups (OR= 1.46, 95% CI = 1.048, 2.038).

Discussion

This study is one of few, to date, that examine the factors that distinguished improvement from non-improvement in a sample of HIV-positive women with child sexual abuse histories who participated in an integrated HIV/trauma-informed intervention. The purpose of the study was to move beyond the question of "did the intervention work" to address the question of "for whom does it work?" Among the hypothesized predictors of improvement, greater trauma burden, consisting of child sexual abuse, adult sexual abuse, and interpersonal violence, discriminated those women who improved from those that didn't at post-test. At first glance the results may appear somewhat counterintuitive and contrary to expectations. Previous studies have shown that greater exposure to trauma and more severe abuse are associated with greater impairment of cognitive processes, affective regulation, and coping (Briere et al., 1992; Zurbriggen & Freyd, 2004; Berliner & Elliott, 2001), and therefore may lead to greater difficulty receiving and benefiting from psychoeducational interventions. However, this intervention was specifically designed to address the traumatic effects of child sexual abuse and other types of trauma, and so these results appear to validate the general "fit" between the focus of the intervention and the intended population of women with the greatest relative burden of trauma and perhaps the greatest need for the intervention. It is very plausible that the insights between past and present engendered by the intervention, as well as the problems-solving strategies taught, resonate more with the severely traumatized than those who may not even consider their experiences to be traumatic. Consistent with this, overall burden predicted improvement, suggesting that the intervention has a different impact on someone who has been raped repeatedly by a family member as a young child, for example, than for someone who was fondled once as a teenager, and also qualitatively different for participants who experienced multiple other traumatic events (e.g. community violence, and intimate partner violence) compared to those who experienced relatively fewer traumatic events. One note of caution about this particular finding lies in the fact that participants with higher trauma burden also evidenced higher distress at pre-test, thus raising the possibility that their greater improvement may be due in part to a statistical artifact. However, this finding is consistent with those from a previous study (Morrissey, Ellis, Gatz, et al., 2005) which also reported greater psychological improvement in women with greater trauma, thus bolstering the likelihood that the finding is meaningful. Indeed, it would be difficult to find participants with high trauma burden who also did not have higher distress.

What underlying mechanisms may have produced this pattern of results? One likely possibility is that the major components of the intervention, including desensitization,

normalization, cognitive reframing, decreasing isolation, and peer modeling, achieved their intended effects. In particular, in the trauma writing exercise, found to be effective in alleviating trauma symptoms in previous studies (Pennebaker, 1997), many participants revealed their abuse experiences in detail for the first time. In addition, participants who have been exposed to greater trauma may be more motivated to improve. It will be important to replicate these findings in subsequent studies, as well as to conduct "dismantling studies" to help us identify the specific "active ingredients" of the intervention that prove especially beneficial.

Health status, as indicated by whether or not participants had ever been diagnosed with AIDS, did not discriminate between improved and unimproved groups, suggesting perhaps that the psychological distress experienced by participants stemmed mainly from CSA experience and other types of trauma. This is consistent with the fact that HIV counseling and services have been available to women for many years, and virtually all women have access to such services as soon as they are diagnosed. Unfortunately, the same cannot be said about trauma services for women with HIV. A recent study in Los Angeles County indicated a widespread need for trauma services for this population (Henderson, under review). the findings of this study may reflect this service gap. However, it is also possible that AIDS diagnosis does not represent current health status very accurately. With the current availability of medications that can significantly decrease viral load, one's health may be restored even after receiving an AIDS diagnosis. A stronger indicator of current health status would be viral load; however, the costs of assessing it directly were prohibitive and relying on self-report would be of questionable value.

Contrary to expectation, attendance did not discriminate between improvement and non-improvement. This was likely due to a ceiling effect, as a large majority (69.2%) of participants attended at least 8 sessions out of a total of 11. Further investigation is needed to test for a dose-response relationship. Level of education also did not distinguish improved from unimproved groups, perhaps owing to the limited range of education in the sample.

At three- and six-month follow-ups, the overall models were not significant, although total trauma burden was significantly associated with improvement at six-months. These results are likely due to participant attrition after post-test, resulting in low sample sizes at three- (N=67) and six- months (N=65). Whether the post-test results hold over time will await further studies with larger sample sizes.

The main limitation of this study is its small sample size and therefore reduced power to detect effects in a multivariate model. Upon examining unadjusted odds ratios for each predictor (reported in Table 2), the results remained the same, with trauma exposure the only significant predictor of improvement. While a disproportionate number of women with high trauma burden improved (30%) compared to those with low trauma burden (12%), this represents only 13 women who showed improvement out of 78. Thus suggests that reduction in psychological symptoms is difficult to achieve in the context of a psychological intervention and hence targeting participants with the greatest potential to benefit is worthwhile and efficient. Replication of the findings is needed in future studies with larger sample sizes.

These findings serve to further our understanding of the fit between HIV/trauma interventions and their participants, thus representing one step toward moving beyond the "one size fits all" approach among HIV interventions. The finding that higher trauma burden predicts improvement is significant as sexual and other types of trauma appear to be common among low-income women women of color impacted by HIV. In targeting the individuals most likely to benefit, HIV/trauma interventions can increase their overall efficiency and effectiveness.

Acknowledgments

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Table 1

Demographic, Predictor, and Outcome Variables by Group

	Improved (n=13)	Unimproved (n=65)
Age -- mean (SD)	39.7 yrs (9.5)	39.4 yrs (8.5)
Ethnicity (N)		
Latino	7	30
African American	6	33
Education (N)		
< high school	3	30
>=high school	10	35
Employment[*] (N)		
Employed	2	1
Unemployed	11	64
Relationship Status (N)		
Live with partner	3	26
Not live with partner	10	39
AIDS Diagnosis (N)		
Yes	3	10
No	8	57
Attendance (N)		
High (>8)	2	23
Low (<=8)	11	43
Trauma Burden[*] (mean, SD)	1.17 (2.18)	−0.23 (1.97)
Psychological Distress		
pre-test (mean, SD)[*]	1.95 (2.06)	−0.39 (2.35)
post-test (mean, SD)[*]	−1.30 (1.49)	−.26 (2.46)

[*]
p<.05

Table 2

Logistic Regression Model Predicting Improvement Vs. Non-Improvement at Post-Test (N=78)

	Unadjustable OR	95% CI	OR	95% CI
Education	2.857	0.719, 11.348	3.098	.708, 13.553
AIDS Diagnosis	2.138	0.483, 9.459	1.117	.216, 5.783
Attendance	2.814	0.573, 13.822	3.739	.621, 22.512
Trauma Burden	1.367	1.027, 1.820	1.435	1.057, 1.946

Table 3

Logistic Regression Model Predicting Improvement Vs. Non-Improvement at 3-Month Follow-Up (N=67)

	Unadjustable OR	95% CI	OR	95% CI
Education	1.172	0.298, 4.607	1.164	.281, 4.822
AIDS Diagnosis	1.334	0.242, 7.337	.856	.132, 5.569
Attendance	1.846	0.356, 9.585	2.349	.386, 14.294
Trauma Burden	1.186	0.864, 1.628	1.236	.880, 1.737

Table 4

Logistic Regression Model Predicting Improvement Vs. Non-Improvement at 6-Month Follow-Up (N=65)

	Unadjustable OR	95% CI	OR	95% CI
Education	1.524	0.415, 5.600	1.176	.281, 4.920
AIDS Diagnosis	1.000	0.186, 5.490	.691	.107, 4.449
Attendance	2.230	0.441, 11.286	3.193	.518, 19.665
Trauma Burden	1.427	1.032, 1.972	1.461	1.048, 2.038