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Efficacy of Group Psychotherapy to Reduce Depressive Symptoms among HIV-Infected Individuals: A Systematic Review and Meta-Analysis

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ABSTRACT

Depressed mood is highly prevalent among HIV-infected individuals. Some but not all studies have found group psychotherapy to be efficacious in this population. We performed a systematic review and meta-analysis of double-blinded, randomized controlled trials to examine efficacy of group psychotherapy treatment among HIV infected with depressive symptoms. We used PubMed, the Cochrane database, and a search of bibliographies to find controlled clinical trials with random assignment to group psychotherapy or control condition among HIV infected patients with depressive symptoms. The principal measure of effect size was the standard difference between means on validated depression inventories. We identified 8 studies that included 665 subjects: 5 used cognitive behavioral therapy (CBT), 2 used supportive therapy, and 1 used coping effectiveness training. Three of the 8 studies reported significant effects. The pooled effect size from the random effects model was 0.38 (95% confidence interval [CI]: 0.23–0.53) representing a moderate effect. Heterogeneity of effect was not found to be significant ($p = 0.69$; $I^2 = 0\%$). Studies reporting use of group CBT had a pooled effect size from the random effects model of 0.37 (95% CI: 0.18–0.56) and was significant. Studies reporting the use of group supportive psychotherapy had a pooled effect size from the random effects model 0.58 (95% CI: −0.05–1.22) and was nonsignificant. The results of this study suggest that group psychotherapy is efficacious in reducing depressive symptoms among, HIV-infected individuals. Of note, women were nearly absent from all studies. Future studies should be directed at addressing this disparity.

INTRODUCTION

Depressed mood is highly prevalent among individuals receiving medical care for HIV.[1] Individuals with HIV and depressive disorders, compared to those with HIV alone, have increased HIV related morbidity,[2,3] and among women a higher mortality.[4,5] Although highly active antiretroviral therapy (HAART) has led to substantial reductions in morbidity and mortality associated with HIV, studies have shown that individuals with HIV and depressive disorders are more likely to encounter greater delays in being prescribed antiretroviral therapy,[6] and have worse adherence to taking antiretroviral medication.[7] This is in keeping with research that has shown that depression itself is associated with poor adherence to medical treatment.[8]

Recent studies, however, suggest that men-

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tal health interventions may lead to improved depressive and HIV-related outcomes.[9,10] A recent systematic review and meta-analysis found that antidepressants are efficacious targeting depression among those with HIV.[11] However, antidepressant treatment may be associated with high dropout rates[11] and may not be acceptable to all patients.

Psychotherapeutic interventions have also been used to alleviate psychosocial and interpersonal difficulties and distress associated with HIV. Several randomized control trial studies have investigated the efficacy of group therapy techniques to decrease psychological distress, decrease social isolation, and improve coping among HIV-infected people.[12–19] Most of these studies used interventions based on cognitive behavioral theory and nearly all these studies were conducted among men. Because some, but not all, studies have found group therapy interventions to be efficacious in decreasing distress among HIV-infected people, we undertook a meta-analysis of randomized controlled trials to examine whether depressive symptoms respond to group psychotherapy treatment among HIV-infected people.

MATERIALS AND METHODS

Search strategy and study inclusion criteria

Because the term AIDS was introduced in 1981 we searched MEDLINE, PSYCHINFO, and Cochrane databases from 1981–2006 using the key words: psychotherapy and adaptation, psychological with HIV or AIDS and limited to randomized control trials. In an effort to locate both published and unpublished studies the bibliographies of key reviews were examined. Studies were included if they met the following criteria: (1) prospective, double-blinded, controlled trials with random assignment; (2) report of outcomes of depressive symptoms; (3) report of use of a psychotherapeutic interventions. The three authors independently screened the titles and abstracts of each citation.

Data extraction

Data were independently extracted from the studies by the three authors. Discrepancies were resolved by formal review and then by consensus. Our outcome of interest was depressive symptoms. Depression inventories that were specific for depressive symptoms were abstracted. These inventories included the Hamilton Depression Inventory (Ham-D), Center for Epidemiogic Studies-Depression (CES-D), and Beck Depression Inventory (BDI).

The standardized difference in means (Cohen d), the effect size, was calculated from means and standard deviations from these scales. When data on means or standard deviations were lacking we contacted the authors of the manuscripts. The one author contacted did not respond to our inquiry for requested information. We also compiled information regarding demographics, study characteristics, and type of psychotherapy intervention reported.

Quality of clinical trials

As variation in quality of clinical trials can result in biased estimates of reported intervention effectiveness, we evaluated the quality of the clinical trials using a 15-item scale developed by Detsky et al.[20] Each author independently rated the quality of the clinical studies. Discrepancies were resolved by formal review and then by consensus.

Statistical analysis

We calculated effect sizes and pooled estimates of effect across studies (Stat 8.0: metan command) using analysis of variance models for standardized mean differences (Cohen d). A random effects model was used. We chose to use a random effects model because it takes into account both within and between-study variation leading to a more conservative weighting estimates. Heterogeneity, or the between study variation in outcomes, was measured using the Q statistic.[21] The Q statistic is considered to have a low power as a test of heterogeneity; therefore, heterogeneity was considered present with a $p < 0.10$. If heterogeneity was found to be present the I^2 statistic was used to describe the percentage of variation due to heterogeneity across studies. In the absence of heterogeneity (i.e., Q statistic, $p > 0.10$), pooled results were reported. Publication

bias was evaluated using a funnel plot as well as Eggers and Beggs tests.[21]

RESULTS

Search findings

We identified 18 randomized clinical trials.[12–19,22–31] Of these, 8 trials[12–19] met inclusion criteria (Fig. 1). These 8 trials included 665 patients randomly assigned to psychotherapy or a parallel control arm (Table 1). Depression was required at baseline for only one study[14] and two studies excluded those with major depression.[15,17] With respect to the type of psychotherapeutic treatment all of the studies used a group format. One study had two intervention arms—a CBT group intervention and a supportive therapy group intervention.[14] Five of the treatment interventions were described as cognitive behavioral therapy (CBT),[12–16] one was described as coping effectiveness training (CET),[17] and two were described as supportive psychotherapy.[14,18] Finally one study reported results that combined two treatment arms (emotional expressive and CBT therapy) together.[19] Length of treatment ranged between 7–15 sessions. The length of the intervention ranged between 90 and 150 minutes. All interventions were directed at improving psychological distress and improving mood. Two interventions were also directed at reducing grief.[16,18] Six trials occurred in the United States, one trial occurred in Amsterdam[19] and one occurred in Hong Kong.[13] With respect to demographics all but one[16] study was conducted on men (Table 1). All studies were rated as reflecting good quality.

Depressive symptom outcome

Three of the 8 studies reported significant effects. Of the 3 studies that found significant effects, one used cognitive behavioral treatment intervention,[16] one used supportive psychotherapy,[14] and one reported the results of a combination of emotional expressive and CBT therapy.[19] The pooled effect size from the random effects model was 0.38 (95% CI: 0.23–0.53;

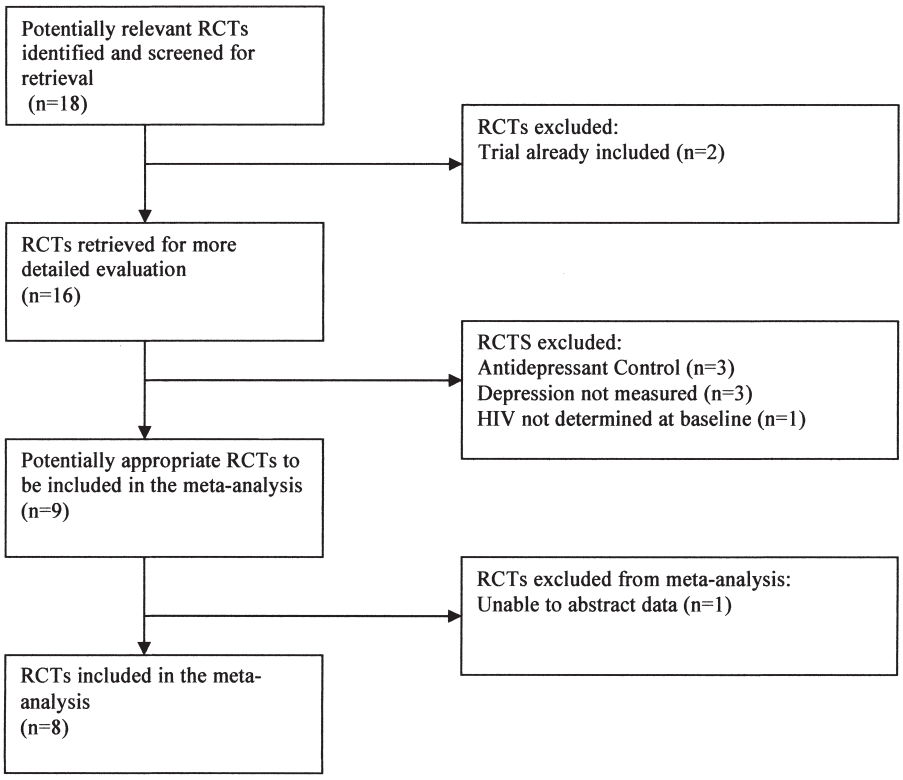

FIG. 1. Flow diagram of randomized control trials included and excluded in meta-analysis.

TABLE 1. CHARACTERISTICS OF THE GROUP THERAPY STUDIES

Study	Number randomized	Age (mean)	Male (%)	Caucasian (%)	Baseline depression required	Number group meetings	Group meetings: min/wk	Depression outcome measure[a]	Type of control group
Goodkin	97	36.5	100	52.6	No	10	90	Hamilton	Usual care
Sikkema	235	40.3	64	28	No	12	90	Hamilton	Usual care
Kelly[b]	68	34	100	62	Yes	8	90	CES-D	Usual care
Chan[c]	13	38.1	100	—	No	7	120	CES-D	Wait list
Chesney	84	39	100	82	No[e]	10	90	CES-D	HIV info/wait list
Mulder[c,d]	27	40.4	100	—	No	15	150	BDI	Wait list
Lutgendorf	40	36.7	100	62.5	No[e]	10	135	BDI	Wait list
Antoni	101	41.6	100	52	No	10	135	BDI	Med adherence

[a]The Ham-D is a 17-item scale clinician-rated depression scale with a response range from 0–54. The CES-D is a 20-item subject-rated depression scale with a response range from 0–60. The BDI is a 21-item subject-rated depression scale with a response range from 5–63.

[b]This study had a CBT arm and a supportive therapy arm.

[c]The Chan study was from Hong Kong and did not report on race. The Mulder sample was from Amsterdam and did not report on race.

[d]The Mulder study had a CBT and an emotional expressive therapy arm. However, the intervention results were presented as a combination of both CBT and emotional expressive therapy.

[e]The Chesney study excluded participants with major depression. The Lutgendorf study excluded participants with Hamilton Depression Rating Scale for Depression in the "moderate or greater severity level."

CBT, cognitive behavioral therapy.

Fig. 2) representing a small-moderate effect size. Heterogeneity of effect was not found to be significant ($p = 0.69$; $I^2 = 0\%$ of variability in effect sizes due to heterogeneity).

We were interested in investigating whether intervention type (i.e., CBT versus non-CBT group therapy interventions) moderated the effect between psychotherapy and depressive symptoms. Studies reporting use of group CBT had a pooled effect size from the random effects model of 0.37 (95% CI: 0.18–0.56]) and was significant representing a moderate effect size. Studies reporting the use of group supportive psychotherapy had a pooled effect size from the random effects model 0.58 (95% CI: −0.05–1.22]) and was nonsignificant. In the one study that used CET, the effect size from the random effects model was 0.16 (95% CI: −0.27–0.59]) and was not significant.

We were also interested in investigating whether the focus of treatment (i.e., grief and depressive symptoms versus depressive symptoms) moderated the effect between psychotherapy and depressive symptoms. Studies focusing on grief and depressive symptoms had a pooled effect size from the random effects model of 0.34 (95% CI: 0.12–0.56]) and was significant, representing a small to moderate effect size. Studies focusing on depressive symptoms had a pooled effect size from the random effects model 0.42 (95% CI: 0.21–0.63) and was significant representing a moderate effect size.

Finally we were interested in investigating whether the exclusion of depression moderated the effect between psychotherapy and depressive symptoms. The two studies that excluded participants with major depression were found to have a pooled effect size from the random effects model of 0.26 (95% CI: −0.10–0.61) and was not significant. In contrast, those studies that included participants with major depression had a pooled effect size from the random effects model of 0.41 (95% CI: 0.24–0.48) and was significant, representing a moderate effect size.

Assessment of publication bias

The funnel plot was roughly symmetric. Egger's test and Begg's test were both nonsignificant. Taken together these findings suggest the relative absence of publication bias.

DISCUSSION

Our meta-analysis of randomized double-blinded controlled trials of group psychother-

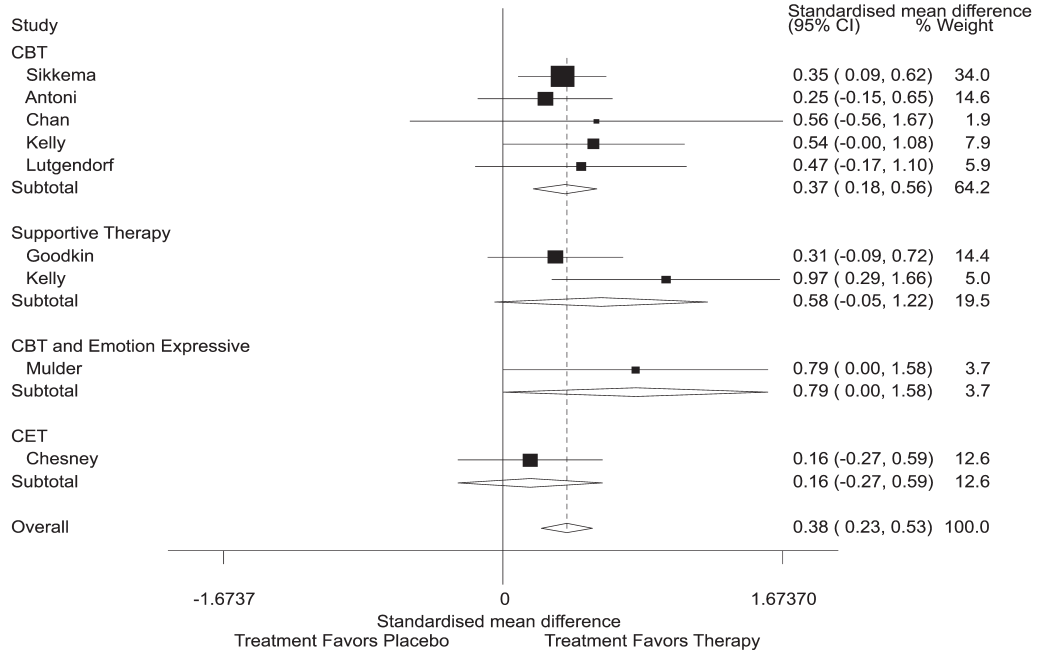

FIG. 2. Forrest plot: Effect of group psychotherapy on depressive symptom outcome stratified by type of group intervention.

apy targeting depressive symptoms among HIV-infected individuals found that group psychotherapy is efficacious. The combined effect size was 0.38 (95% CI: 0.23–0.53) representing a small to moderate effect size. We did not find any heterogeneity among the studies and there did not appear to be publication bias. A meta-analysis of group psychotherapy for unipolar depression found that among 15 studies in which participants in the group psychotherapy intervention were compared to untreated controls the pooled effect size was 1.03.[32] The greater effect size found in the meta-analysis among those treated for unipolar depression may not be surprising. Those with unipolar depression, in contrast to those with depressive symptoms, are, on average more likely to have a greater burden of depressive symptoms and therefore have a greater probability of depressive symptom reduction which would be reflected in a larger effect size.

In our meta-analysis, most studies used a cognitive behavior group therapy intervention to target depressive symptoms. The combined effect size for cognitive behavior was 0.37 (95% CI: 0.18–0.56) representing a moderate effect size. Thus, cognitive behavioral therapy appears to be efficacious in targeting depressive symptoms among HIV-infected individuals.

Less can be said about the other forms of therapy used. For example, although supportive therapy seems to have a positive effect on reducing distress and depression among HIV-infected individuals, the limited number of studies and the large variability in the results of these studies makes it difficult to draw a clear conclusion. Whether the focus of the intervention was on grief and depressive symptoms or depressive symptoms alone, did not appear to moderate the effect of the intervention with respect to depressive symptoms.

Finally, the pooled results of the studies that included participants with major depression appeared to have a significant effect while those that excluded participants with major depression did not. As those with major depression, on average, are likely to have a greater probability of depressive symptom reduction than those without major depression, the difference we found may in fact reflect a floor effect.

Although the theoretical underpinnings of the group therapy interventions included in the meta-analysis were diverse they did share sev-

eral features in common. First, all used a group therapy format. Second, all sessions were at least 90 minutes and occurred on average for 10 sessions. Third, each study used techniques specifically tailored to improve coping strategies and improve social support. Most, but not all, also provided some form of relaxation training. These elements may represent common components of successful group psychotherapy for HIV-infected individuals with distress.

With respect to demographics it is interesting to note that all but one of the studies was conducted among men. These findings may in part be result of the demographic nature of the epidemic over time. In the late 1980s and early 1990s HIV was considered primarily a disease of men.[33] However, the emerging population at risk for HV are now non-white and Hispanic women. Providing effective interventions that target depressive symptoms among women is especially important as two prospective studies demonstrate that compared to nondepressed women with HIV, women with depressive symptoms are significantly at increased risk of mortality.[4,5] Furthermore, being a woman is considered an independent risk factor for depression.[34,35] Because some studies suggest that mental health interventions may in fact be protective [9] it is important to ensure that women are accessing appropriate mental health treatment. As the results of the meta-analysis may not generalize to women, future studies may be needed to address this disparity.

Minorities appeared to be well represented in most of the studies evaluated. Among the 5 studies that occurred in the United States, minorities represented, on average, about half of the participant sample.

There are several limitations to this study. First, many of the studies occurred prior to the HAART era and as such we were unable to address whether or not adherence to HAART was an important moderator of response. Studies have shown that individuals with HIV and depressive disorders, compared to those with HIV alone, have worse adherence to taking antiretroviral medication.[6,36,37] However, studies have also found that mental health treatment increases the probability that individuals with depression receive and utilize HAART.[9,38,39] Thus, it is possible that interventions that reduce depressive symptoms may in fact improve access to and adherence with HAART. Future meta-analyses may be able to better address this outcome.

Second, only a couple of studies provided information of CD4 counts or HIV disease severity and therefore we were unable to determine the impact this may have had on treatment response. As there did not appear to be any significant heterogeneity in the studies investigated, it is unclear whether severity of illness would be important moderators to consider in a meta-regression. Third, we acknowledge that individuals enrolled in clinical trials may be more adherent to interventions and may be different then patients seen in actual clinical practice. This may then limit the generalizability of the findings of this meta-analysis.

Finally, we used a unit-free, standardized score, the effect size, in order to combine the results from several depression instruments. By combining the results of the depression instruments in this way we avoided the possibility of selection bias (i.e., not including results in the meta-analysis because they contained different depression outcome measures) and increased the overall power of our analysis. This method, though, assumes that the different instruments used in the meta-analysis, in fact, measure the same construct (i.e., depression) and are similarly responsive to symptom change. If these assumptions are not met, there is a potential for increased heterogeneity in the study results. As our study used instruments that are frequently used to measure depression and as we did not find any heterogeneity in our study results we believe that combing results from different depression instruments did not violate the above assumptions.

CONCLUSION

This study suggests that group therapy, and particularly group cognitive behavioral therapy may be efficacious in treating depressive symptoms among those infected with HIV. However, the underrepresentation of women limits the generalizability of these findings. Because women may be at risk for depression and

are an emerging population at risk for HIV future studies should be directed to remedy this disparity.

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