



Group support psychotherapy for depression treatment in people with HIV/AIDS in northern Uganda: a single-centre randomised controlled trial

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Summary

Background Group support psychotherapy (GSP) is a culturally sensitive intervention that aims to treat depression by enhancing social support, teaching coping skills, and income-generating skills. We compared GSP with group HIV education (GHE) for treatment of depression in people with HIV in Uganda.

Methods In this open-label randomised controlled trial, we included men and women with HIV, aged 19 years or older, who met the Mini International Neuropsychiatric Interview criteria for major depression from an urban HIV care centre in Kitgum district, northern Uganda. Participants were randomly assigned to receive eight weekly sessions of either GSP or GHE. Randomisation was achieved by urn (men and women separately picked a paper containing the intervention allocation from a basket; ratio 1:1), and the intervention sessions were given to gender-specific groups. Participants were followed up immediately after the intervention and 6 months after the end of treatment. The primary outcomes were change in depressive symptom scores (measured with the Self-Reporting Questionnaire) and in function scores (measured with a locally developed method), analysed by intention to treat using cluster-adjusted *t* tests and permutation tests. This trial is registered with The Pan African Clinical Trials Registry, number PACTR201402000742370.

Findings Between Jan 6, and Jan 20, 2014, we assessed 150 individuals, of whom 109 were randomly assigned to receive eight weekly sessions of either GSP (*n*=57) or GHE (*n*=52). Change in mean depression scores immediately after intervention did not differ between groups (mean difference -0.19 , 95% CI -1.77 to 1.39 , *p*= 0.78). Mean function scores did not differ between groups either (0.24 , -0.41 to 0.88 ; *p*= 0.41). At 6 months after end of treatment, participants in the GSP group had lower mean depression scores than did those in the GHE group (-2.50 , -3.98 to 1.02 , *p* value= 0.005), and higher function scores (0.74 , -0.17 to 1.65 , *p*= 0.09) than did participants in the GHE group. No adverse events were reported.

Interpretation The benefits of existing HIV educational interventions in HIV care services could be improved by the addition of GSP content. Potential benefits of the integration of GSP into existing HIV interventions, such as adherence counselling or group HIV educational programmes, should be addressed in future studies.

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Introduction

With increased access to antiretroviral therapy (ART), HIV/AIDS is no longer thought of as a terminal illness, but rather as a chronic disease.¹ Therefore, clinical practice and research should focus on helping patients and caregivers to learn how to cope with the challenges of living with a chronic disease.² One such challenge is mental ill health, which has been consistently associated with HIV infection, with depression being the most common mental health problem in people with HIV/AIDS worldwide.³

In sub-Saharan Africa, findings from a systematic review⁴ of studies that assessed the prevalence of depression in patients with HIV in ART programmes showed that one in three HIV-positive individuals have symptoms of depression, whereas one in five have the clinical syndrome of depression.⁴ Untreated depression increases HIV transmission risk behaviours,⁵ reduces adherence to ART,⁶ decreases CD4 cell count,⁷ and increases mortality.⁸ These concerns are even more

prominent in post-conflict settings where challenges of poverty, food insecurity, and poor access to psychological care are common.⁹

Systematic reviews of studies examining the effect of psychological interventions on depression in patients with HIV show that interventions that incorporate a cognitive-behavioural component are particularly effective against depression and its complications.^{10,11} Unfortunately, most studies have been implemented in high-income countries, with little representation from low-income and middle-income countries.¹⁰ Culturally sensitive psychological interventions are urgently needed in low-income and middle-income countries, particularly in sub-Saharan African countries, to curb depression and to ensure optimum HIV treatment outcomes.

The culturally sensitive group support psychotherapy (GSP) we developed was designed to treat major depression by empowering affected individuals emotionally, socially, and economically. The theoretical

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perspectives that informed the development of this intervention are based on the principles of the cognitive behaviour theory,¹² social learning theory,¹³ and the sustainable livelihoods framework.¹⁴ The cognitive behaviour theory holds that the way we think about our reality is central to how we react to that reality. The social learning theory stems from the idea that behaviour is learned from the environment by observation, in which the person being observed is referred to as the model. The sustainable livelihoods framework shows that the absence of livelihood strategies such as the ability to adapt to adverse situations, network and increase social connections, or work and obtain savings, housing, or land, constrains livelihood opportunities. We postulate that when GSP reduces depression symptoms, livelihood strategies will be enhanced thereby leading to acquisition of livelihood assets. The pursuit of livelihoods would help restore the dignity and independence of those affected by depression leading to sustained reduction in depression and increase in functionality.

Preliminary findings from a pilot study¹⁵ on GSP were promising, but the study only compared GSP with a waiting-list in a non-randomised study sample. Waiting-list controls might be biased because of resentment at not receiving an intervention, changes in disease state over time, and an absence of engagement in care. Therefore, a recommended methodological approach to establish the efficacy of a newly developed therapy is to first compare the therapy against a comparison group that omits the unique ingredients of the new therapy while possessing the common factors (eg, therapeutic alliance) in equal measure.¹⁶

We assessed the specific effects of GSP by comparing it with an active comparison, group HIV education (GHE), directly after treatment and after 6 months. GHE was modelled after existing programmes that credibly aim to generate therapeutic benefits in common with GSP without the specific elements of GSP. We postulated that GSP would lead to greater reductions in depression symptoms and greater increase in function scores than would GHE.

Methods

Study design and participants

In this randomised controlled trial, we recruited participants from an urban HIV-care centre in Kitgum district, northern Uganda. The study team worked with members of the village health team, who constitute the first level of health-care delivery, to spread information about the study by word of mouth in villages within the study region. These members of the village health team knew individuals in the community who were receiving HIV care and could approach them directly with information about the study. To be recruited in the study, participants had to be HIV positive, aged 19 years or older, meet Mini International Neuropsychiatric Interview (MINI) criteria for major depression, live or work

within a distance of 15 km from Kitgum town, and be antidepressant naive. Individuals with a severe medical disorder such as pneumonia or active tuberculosis, psychotic symptoms, and hearing or visual impairment were excluded from the study.

The study was submitted to and approved by both the Makerere University College of Health Sciences Research Ethics Committee and the Uganda National Council of Science and Technology. All study participants provided written informed consent. Light refreshments were served during all group sessions in both treatment groups and every participant received an equivalent of US\$2–5 to defray transport costs.

Randomisation and masking

Eligible participants were randomly assigned (1:1) to receive eight sessions of either GSP or GHE. Randomisation was done by urn randomisation picked by each participant. Men ($n=46$) were separated from women ($n=63$). 23 pieces of paper marked X and 23 pieces of paper marked Y were rolled into tiny paper balls and placed in a small basket. These were presented by the project leader to the men who were asked to each pick one paper ball. Men who picked papers with X were assigned to GSP. Those who picked papers with Y were assigned to GHE. The two groups were separated and each group was presented with a basket of 24 pieces of paper balls of which 12 were labelled group 1 and the other 12 were labeled group 2. Men who picked similar papers would belong to the same group and receive their assigned intervention together. The same process was repeated for the women. Recruitment and randomisation took place between Jan 6, and Jan 20, 2014. Group sessions run from mid-January to mid-March. Post-intervention assessments were done within 2–3 weeks of completing the intervention. 6-month follow-up assessments were done in the last week of September, 2014. Research assistants doing the follow-up assessments were masked to assignment.

Procedures

All individuals recruited into this trial were diagnosed with major depression with the MINI diagnostic interview depression module. The MINI is a diagnostic structured interview that was developed for DSM-IV psychiatric disorders.¹⁷ The psychometric properties of the MINI have not been described in Uganda; however, its depression diagnostic section has been translated and locally adapted in Luganda and previously used in this setting.¹⁸

The depression diagnostic section consists of two screening questions, seven additional questions related to depression symptoms, and one question related to functional impairment. The two screening questions ask about the presence of depressed mood and loss of interest in daily activities over a period of 4 weeks in the recent past. If either one of the questions was positively

endorsed by a study participant, the clinician asked additional questions to explore for current (4 weeks before the interview) major depression. A diagnosis of current major depression was made if a study participant positively endorsed five or more questions related to depression symptoms and the one question related to functional impairment over the 4 week period before the interview.

The post-intervention assessments were done within 2–3 weeks of completing the intervention. Most of the participants were peasant farmers and this follow-up assessment coincided with the rainy season in which the group are busy tending to their gardens, so it took us 2–3 weeks to locate them. We also did follow-up assessments 6 months after the end of treatment.

GSP was delivered in eight sessions held weekly, lasting 2–3 h each. Participants were divided into gender-specific groups of 10–12 participants. Intervention facilitators were mental health workers with a mental health diploma or degree, of the same gender as the participants, and they delivered the intervention material following a scripted intervention manual.¹⁹

The development of this intervention involved the review of the pre-existing group counselling in the PCAF trauma clinics²⁰ and focus group discussions with community members to identify community perceptions of depression, local strategies used to deal with depression, community experiences with group interventions and opinions on what would be the most culturally acceptable components of a group support psychotherapy intervention to alleviate depression symptoms in HIV-affected adults. On the basis of the findings from these two activities, a manual for implementation of the 8 week group support psychotherapy intervention was developed by the investigating team. Details of the development process and structure of the intervention have been described elsewhere.²¹

Briefly, the first session addressed issues relevant to group process, ground rules, and expectations. All group sessions started with an opening ritual and ended with a closing ritual. In the second session, participants were educated about triggers, symptoms, and treatment options for depression. The relation between depression and HIV/AIDS was also discussed. Participants were given the opportunity to share and to externalise any problem that they might have in the third and fourth sessions. In view of the high burden of conflict-related trauma among participants, these were encouraged to share their trauma stories. In the fifth session, participants were taught positive coping skills; particularly skills to manage depressive thoughts and excessive worries. Problem solving skills and skills for coping with stigma and discrimination were taught in the sixth session. Because poverty is a risk factor for depression, the last two sessions were dedicated to training participants in income-generating skills. These two sessions focused on helping group members acquire basic livelihood skills that will enable them to identify income-generating

activities, thus enabling them to take control of their lives. The group facilitators led discussions about the kind of life that group members want to live after their group sessions and what they can do together or in smaller groups in the future. Group facilitators also helped participants to make decisions on viable enterprises. These decisions included forming a group that cleans school compounds for a fee and forming a group that grows and sells produce.

The GHE intervention was designed and delivered in a similar format as the GSP intervention. We ensured structural equivalence by including the same number of sessions as those of GSP (eight 2 h sessions run on a weekly basis by one facilitator and similar group sizes—a mental health worker with a diploma or degree, of the same gender as the group members, and who delivered the intervention materials following a scripted intervention manual).

The GHE manual was modelled after the HIV Education and Prevention Teaching Manual developed by Students for International Change in Tanzania.²² GHE was developed with the goal to create a comparison group intervention whose rationale and procedures would be credible enough to generate therapeutic factors in common with GSP such as supportive environment, therapeutic alliance, and therapeutic optimism while missing the active elements of GSP such as opportunity to express emotions, and acquisition and practice of positive coping skills and livelihood skills. Every group session started with an opening ritual and ended with a closing ritual. The first session of GHE focused on introductory issues, rationale of HIV education, and orientation. In the second session, participants were taught about the progression of HIV in the body. The third and fourth sessions covered transmission and prevention of HIV infection. Mother-to-child transmission and prevention were taught in sessions five and six. The last two sessions focused on basic facts about ART. Group members were allowed to ask questions at the end of every session.

We assessed depression symptoms using the Self-Reporting Questionnaire (SRQ-20).²³ Cross-cultural adaptation and validation of the SRQ-20 in HIV-positive individuals in southern Uganda showed that an optimum cutoff point of six points or higher had a sensitivity of 84% and a specificity of 93% for current depression. In this study sample, SRQ scores were modelled as a continuous variable and the measure attained a Cronbach's α reliability coefficient of 0.74.

We assessed functioning levels using a five-item locally developed function assessment method.²⁴ Items were derived from qualitative interviews with individuals and their caregivers who were attending the Peter C Alderman Foundation (PCAF) psychotrauma centres in Kitgum and Gulu. These interviews were about their expectations regarding function outcomes. During the implementation and scale-up of the PCAF psychotrauma centres in northern Uganda,²⁵ this five-

item function assessment method was piloted and field tested in 514 individuals recruited from four PCAF psychotrauma centres. In this population, the measure attained a Cronbach α of 0.71. The scale consists of five categories of tasks including household (eg, washing clothes, sweeping the yard), field (eg, digging, grazing animals), social (eg, attending social events) and job-related or school-related tasks (eg, participating in income-generating activities, attending school or skills training courses) and tasks related to personal hygiene (eg, bathing). Study participants were asked to indicate their ability to do a given task on a three-point scale where 0 referred to those who responded “No, I am not able”, 1 to “Yes, but not like before”, and 2 to “Yes, I am able to”.

We also assessed perceived social support with the 12-item multidimensional social-support scale.²⁶ The

scale has been validated in Uganda and its three-subscale structure (family, friends, and significant other) was confirmed.²⁷ The Cronbach’s α for this sample was 0.91. Responses were based on a seven-point Likert scale with higher scores indicating greater support from friends, family, and significant others.

We used the 10-item Rosenberg Self-Esteem Scale, which provides assessment of one’s general feelings about oneself, to measure self-esteem (appendix).²⁸ Responses were based on a four-point scale. This scale has been used in HIV-positive women in South Africa.²⁹ The scores range from 10 to 40 with high scores indicating high self-esteem. In this study sample, the measure attained a Cronbach’s α of 0.88.

We recorded baseline demographic variables of the participants, such as age, gender, education, and marital

See Online for appendix

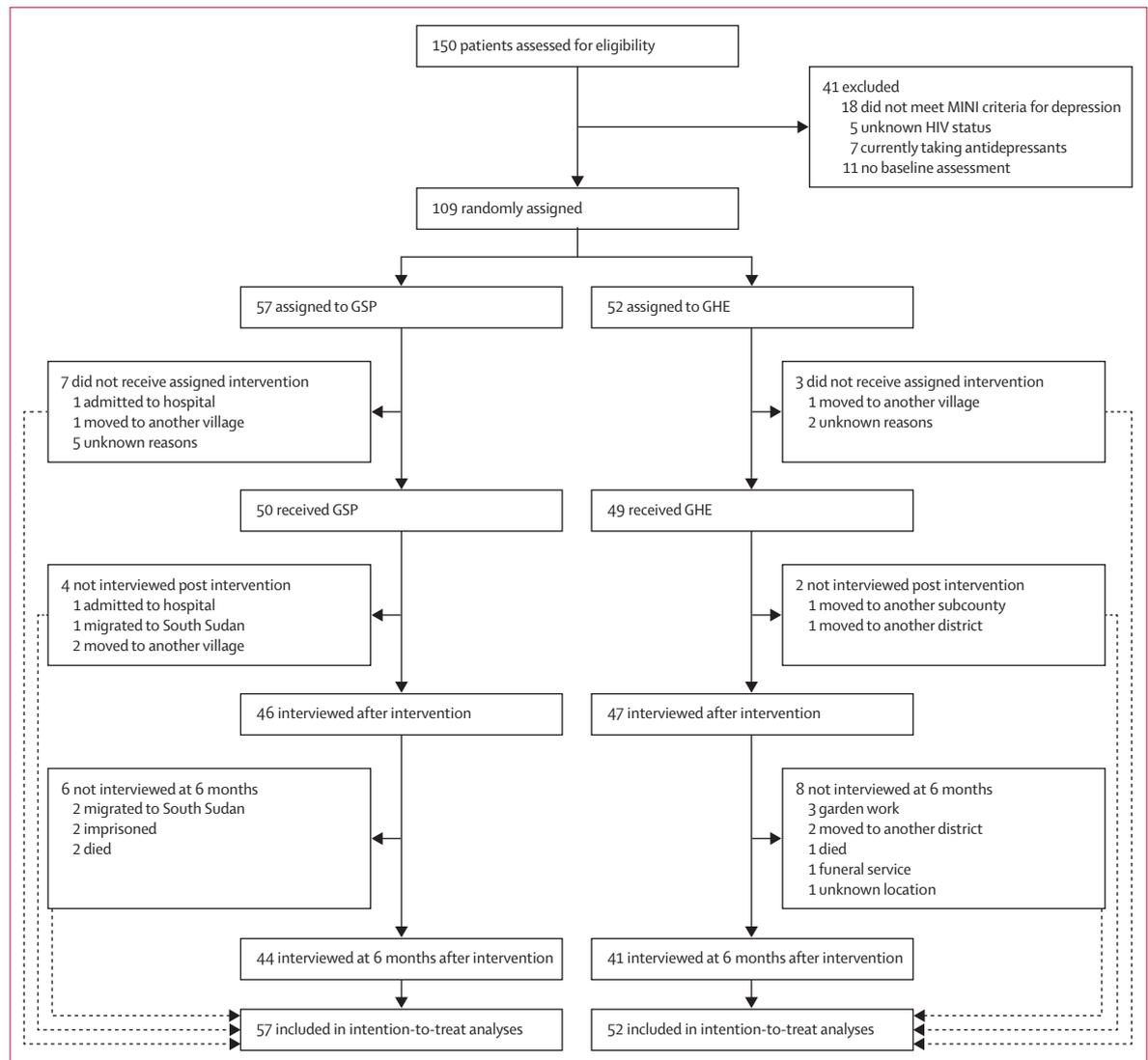


Figure 1: Trial profile

MINI=Mini International Neuropsychiatric Interview. GSP=group support psychotherapy. GHE=group HIV education.

status and we looked at important risk factors for study outcomes. We assessed post-traumatic stress symptoms using the locally adapted Harvard Trauma Questionnaire (HTQ), which has been successfully translated into several languages, with acceptable measures of reliability and validity.³⁰ In this study population, the Cronbach α was 0.93.

We assessed alcohol use with the alcohol use disorders identification test (AUDIT).³¹ This ten-item scale has been validated in HIV-positive populations in sub-Saharan Africa.³² Each of the ten questions is rated on a four-point scale. The total score ranges from 0 to 40. A total of 8 or higher is recommended as an indicator of hazardous drinking behaviour and a score of 20 or higher is indicative of alcohol dependency. In this study population, the measure attained a Cronbach α of 0.97.

We used a locally developed 16-item trauma event checklist to assess war traumatic events (appendix). Participants were asked whether they had experienced a given traumatic event or not. A variable indicating the number of traumatic events experienced by an individual was created and categorised as “less than three trauma events versus three-to-six trauma events versus more than six trauma events”.

Additionally, we also assessed factors that we deemed to be common to both interventions such as therapeutic alliance. We used an adapted version of the scale to assess therapeutic relationships—patient version (STAR-P), which was developed to assess the therapeutic relationship between patient and clinician while delivering community mental health services (appendix).³³ Although the scale has not been validated in Uganda or other sub-Saharan African countries, the items were brief and seemed culturally appropriate to the local staff. The scale was translated into local language of the study participants and back translated into English. The Cronbach α for the STAR-P in this study population was 0.79.

We assessed therapeutic optimism with a single question. Study participants were asked to rate the statement “Overall, this intervention has reduced my depression symptoms” on a four-point scale in which those who responded with “strongly disagree” had a score of 0, with “disagree” a score of 1, with “agree” a score of 2, and with “strongly agree” a score of 3.

Outcomes

The primary outcomes were changes in depression and in function scores from baseline to immediately after intervention and from baseline to 6 months after intervention. Secondary outcomes were changes in perceived social support (multidimensional social-support scale) and in self-esteem (Rosenberg self-esteem scale).

Statistical analyses

We did bivariate analyses with χ^2 tests and independent two-sample *t* tests to compare baseline demographic and

psychosocial variables between study groups. Similarly, we also did bivariate analyses to compare these variables between those who had completed all sessions (completers) and those who had not (non-completers).

Although randomisation to GSP and GHE was done at the individual level, study participants received their respective interventions in groups (clusters). Since individuals within a cluster are likely to be correlated, we used cluster-level analyses to make allowance for intraclass correlation. In view of the small number of clusters in our data, we avoided multilevel mixed-effects linear regression models because they are only reliable when there are at least 15 clusters per group.³⁴ Thus, to account for the clustered nature of the data, we applied

	Group support psychotherapy (n=57)	Group HIV education (n=52)
Age (years)	40.54 (9.84)	48.8 (8.69)
Gender		
Female	24 (42%)	22 (42%)
Male	33 (58%)	30 (58%)
Educational background		
Primary education or lower	48 (84%)	39 (75%)
Secondary education or higher	9 (16%)	13 (25%)
Occupational status		
Not employed	17 (30%)	16 (31%)
Employed	11 (19%)	16 (31%)
Peasant farmer	29 (51%)	20 (38%)
Relationship status		
Never married	8 (14%)	3 (6%)
Married or living with partner	20 (35%)	26 (50%)
Separated or divorced	6 (11%)	6 (12%)
Widowed	23 (40%)	17 (33%)
Post-traumatic stress symptoms*		
Yes	45 (79%)	37 (71%)
No	12 (21%)	15 (29%)
Hazardous alcohol consumption¶		
Yes	16 (28%)	9 (17%)
No	41 (72%)	43 (83%)
Number of traumatic events	6.63 (3.46)	6.73 (3.38)
Number of children	4.35 (3.83)	4.48 (2.65)
Depression score†	15.39 (3.40)	15.57 (3.28)
Self-esteem scores‡	18.24 (7.25)	19.28 (5.68)
Social-support scores§	49.12 (18.90)	48.86 (19.73)

Data are number of participants (%) or mean (SD). *Measured with the Harvard Trauma Questionnaire, in which a total score ≥ 36 is indicative of post-traumatic stress disorder. †Measured with the Self-Reporting Questionnaire, in which a score ≥ 6 is indicative of depression. ‡Measured with the Rosenberg Self-Esteem Scale, in which scores range from 10 to 40 with higher scores indicating high self-esteem. §Measured with the 12-item Multi-dimensional social-support scale, in which scores range between 12 and 84, the higher the score the higher the perceived social support. ¶An Alcohol Use Disorders Identification Test score ≥ 8 is suggestive of hazardous alcohol consumption and ≥ 20 is indicative of alcohol dependency.

Table 1: Baseline study population demographic and psychosocial characteristics

t tests to cluster-level summaries, which is a robust method of analysis for cluster data.³⁴ Specifically, we used the STATA collapse command to obtain cluster-level summaries of the postulated common factors (mean therapeutic alliance and optimism scores) and our outcomes of interest (mean depression, function, self-esteem, and social-support scores) from data on individual participants. This procedure reduced the data from 109 individual participants to ten groups. We then used the *clttest* command to compare cluster means across treatment groups.

To do an intention-to-treat analysis, we imputed missing values with several imputations. We constructed five imputed datasets with the multivariate normal model assuming that data were missing at random. All patients had rich baseline data that we used to create the multiple imputation datasets.

Since we had few clusters ($n=10$), we were concerned about the validity of results obtained by use of the unpaired *t* tests because of its critical reliance on the assumption of normality. For calculation of significance, we used permutation tests, which provide valid *p* values irrespective of the underlying distributional form. We selected a random sample of 5000 permutations and computed the observed intervention effect measure for each of these permutations. If the null hypothesis is true, and there is no intervention effect, then the observed effect measure can be regarded as having been randomly selected from this permutation distribution. Thus, a *p* value is obtained as the proportion of all permutations giving an effect measure at least as extreme as the one observed. No observations are excluded from the resampling because of missing values or other reasons.³⁴

Lastly, Cohen's *d* effect sizes³⁵ were computed for the effect estimates to determine the size of the intervention effect with formulae proposed by Thalheimer and Cook (2002)³⁶ and were evaluated by the conventions: small=0.2; moderate=0.5, and large=0.80. We used STATA statistical software (v12; STATA Corp, College Station, TX) for all analyses. This trial is registered with The Pan African Clinical Trials Registry, number PACTR201402000742370.

Role of the funding source

The funder of the study had no role in study design, data collection, data analysis, data interpretation, or writing of the report. The corresponding author had full access to all the data in the study and had final responsibility for the decision to submit for publication.

Results

Recruitment and randomisation took place between Jan 6, and Jan 20, 2014. Of 150 individuals assessed for eligibility, 120 met eligibility criteria, agreed to participate, and were invited for a meeting wherein they would receive baseline assessments. Of these, 11 did not attend the meeting, therefore, only 109 completed baseline assessments and participated in the randomisation process (figure 1). 57 participants were randomly assigned to the GSP group and 52 participants to the GHE group. Group sessions ran from Jan 20, to March 10, 2014.

Demographic and psychosocial characteristics were similar between treatment groups (table 1). Seven (12%) participants in the GSP group did not attend any therapy sessions compared with three (6%) participants in GHE. Individuals who did not attend any therapy sessions were not excluded from follow-up assessments. However, three (30%) received the immediate post-intervention assessment and two (20%) received the 6 month post-intervention assessment.

46 (81%) of 57 participants assigned to GSP attended at least 75% of sessions; 49 (94%) of 52 participants assigned to GHE attended at least 75% of sessions. Attrition was similar in the two groups, with 13 (23%) participants in the

	Completers (n=85)	Non-completers (n=24)	p value
Age (years)	40.84 (8.6)	40.21 (11.5)	0.30
Gender			
Female	52 (61%)	11 (46%)	0.18
Male	33 (39%)	13 (54%)	
Educational background			
Primary education or lower	69 (81%)	18 (75%)	0.51
Secondary education or higher	16 (19%)	6 (25%)	
Occupational status			
Not employed	21 (25%)	12 (50%)	0.061*
Employed	22 (26%)	5 (21%)	
Peasant farmer	42 (49%)	7 (29%)	
Relationship status			
Never married	7 (8%)	4 (17%)	0.15
Married or living together	37 (44%)	9 (38%)	
Separated or divorced	7 (8%)	5 (21%)	
Widowed	34 (40%)	6 (25%)	
Significant post-traumatic stress symptoms†			
Yes	64 (75%)	18 (75%)	0.98
No	21 (25%)	6 (25%)	
Hazardous alcohol consumption‡			
Yes	10 (12%)	15 (62%)	<0.0001
No	75 (88%)	9 (38%)	
Number of traumatic events	6.68 (3.3)	6.67 (3.7)	0.98
Number of children	3.95 (2.9)	2.88 (2.4)	0.10
Depression score§	15.58 (3.3)	15.11 (3.4)	0.55
Self-esteem scores¶	18.44 (6.3)	19.83 (7.2)	0.85
Social-support scores	49.19 (19.2)	48.33 (19.8)	0.85

Data are number of participants (%) or mean (SD). *Fisher's exact *p* value. †Measured with the Harvard Trauma Questionnaire, in which a total score ≥ 36 is indicative significant post-traumatic stress symptoms. ‡An Alcohol Use Disorders Identification Test score ≥ 8 is suggestive of hazardous alcohol consumption and ≥ 20 is indicative of alcohol dependency. §Measured with the Self-Reporting Questionnaire (SRQ-20), in which a score ≥ 6 is indicative of depression. ¶Measured with the Rosenberg Self-Esteem Scale, in which scores range from 10 to 40 with higher scores indicating high self-esteem. ||Measured with the 12-item Multidimensional social-support scale, in which scores range between 12 and 84, the higher the score the higher the perceived social support.

Table 2: Comparison of baseline demographic and psychosocial characteristics between study completers and non-completers

GSP group and 11 (21%) participants in the GHE group unable to complete the 6 month follow-up assessment. Apart from hazardous alcohol consumption (higher in non-completers than in completers), participants lost to follow-up did not differ significantly on other baseline and psychosocial variables from those who completed study assessments (table 2).

At the assessment immediately after intervention, therapeutic alliance was similar in the two groups (mean difference 0.44, 95% CI -2.74 to 3.63, $p=0.77$) whereas therapeutic optimism was greater in participants in the GSP group than in those in the GHE group (0.22, 0.43 to 0.39, $p=0.03$).

During the treatment period, participants in both interventions had a similar reduction in depression symptoms, which resulted in no difference in the mean depression scores at the assessment immediately after intervention (table 3, figure 2A). However, at 6 months after intervention, participants in the GSP group had greater reduction in depression symptoms, which resulted in lower mean depression scores in participants in the GSP group than in those in the GHE group. The effect size of the estimated effects at 6 months after intervention was large (Cohen's d 1.71).

Both GSP and GHE had similar increase in function scores immediately after intervention (table 3, figure 2B). At 6 months, we noted a trend towards greater functioning in participants in the GSP group than in those in the GHE group, but the mean difference was only marginally significant. Nevertheless, the scale of estimated effects was large 6 months after intervention (Cohen's d 0.81).

During the treatment period, participants in both interventions had similar increase in perceived social support (table 3, figure 2C). However, at 6 months, participants in the GSP group had greater increase in perceived social support than did those in the GHE group. The effect size of the estimated effects at 6 months after intervention was large (Cohen's d 1.11).

During the treatment period, participants in both interventions had similar increase in self-esteem immediately after intervention (table 3, figure 2D). However, at 6 months, participants in the GSP group had greater increase in self-esteem than did those in the GHE group. The effect size of the estimated effects at 6 months after intervention was large (Cohen's d 1.14).

Two participants assigned to receive GSP and one participant assigned to receive GHE died from HIV-related physical illness. There were no deaths due to suicide and no other adverse events were reported.

Discussion

In keeping with our hypothesis, GSP was more effective than GHE in reducing depression symptoms and increasing functioning levels in patients with HIV in the long-term. By contrast with previous randomised trials examining the effect of cognitive-behaviour-based interventions in patients with HIV, the study sample included individuals with major depressive disorder.¹⁰

The observed lack of difference with respect to depression scores between GSP and GHE at the assessment immediately after intervention suggests that GHE was as effective as GSP in reducing depression symptoms during therapy sessions. This finding is not uncommon. A meta-analysis¹⁰ of interventions based on cognitive behavioural therapy for depression and anxiety in patients with HIV showed that treatment effects were achieved immediately after intervention for only nine of the 20 studies reviewed.¹⁰ Several factors might explain our restricted ability to identify differences between GSP and GHE immediately after intervention. First, by virtue of learning some facts about HIV such as the possibility of having a normal life expectancy if adherent to ART or having an HIV-negative baby through programmes for prevention of mother-to-child transmission, the educational sessions themselves might have raised awareness and raised hope for the future, which might have had a

	Group support psychotherapy (n=5 groups)	Group HIV education (n=5 groups)	Effect estimate* (95% CI)	p value†	p value‡ (95% CI)
Immediately after intervention					
Cluster depression scores	5.48 (0.48)	5.67 (0.48)	-0.19 (-1.77 to 1.39)	0.78	0.82 (0.81-0.84)
Cluster function scores	8.89 (0.19)	8.55 (0.19)	0.24 (-0.41 to 0.88)	0.41	0.39 (0.39-0.42)
Cluster social-support scores	63.20 (1.86)	62.10 (1.86)	1.08 (-5.02 to 7.16)	0.67	0.73 (0.71-0.74)
Cluster self-esteem scores	25.20 (0.54)	24.01 (0.54)	1.18 (-0.60 to 2.96)	0.16	0.16 (0.15-0.18)
6 months after intervention					
Cluster depression scores	3.20 (0.45)	5.70 (0.45)	-2.50 (-3.98 to 1.01)	0.005	0.005 (0.007-0.01)
Cluster function scores	9.42 (0.28)	8.68 (0.20)	0.74 (-0.17 to 1.65)	0.092	0.091 (0.08-0.10)
Cluster social-support scores	70.24 (1.64)	64.50 (1.64)	5.77 (0.41 to 11.13)	0.029	0.034 (0.04-0.06)
Cluster self-esteem scores	27.13 (1.13)	23.05 (1.13)	4.07 (0.38 to 7.76)	0.034	0.052 (0.02-0.04)

Data are mean (SE). *Mean difference between group support psychotherapy and group HIV education. †Cluster-adjusted t tests. ‡Permutation tests.

Table 3: Analyses based on cluster summaries of mean depression, function, social support, and self-esteem scores

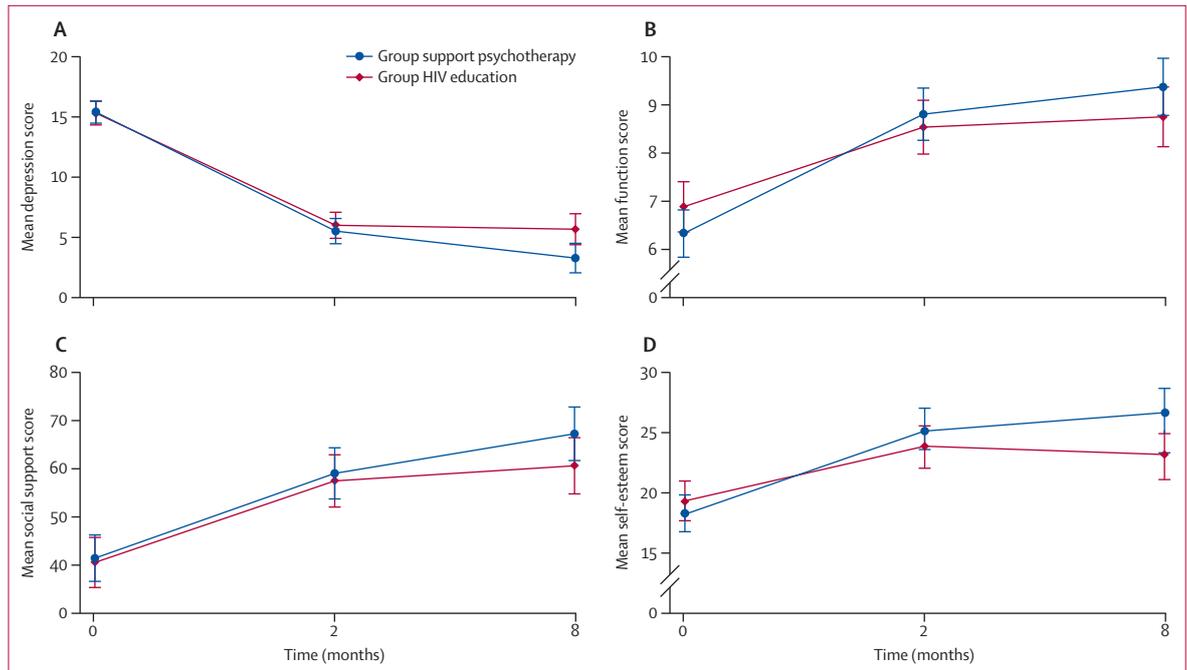


Figure 2: Modelled depression, function, social support, and self-esteem scores with multilevel mixed-effects linear regression analysis
 (A) Depression scores, measure with the Self-Reporting Questionnaire. (B) Function scores, measured with a functioning level five-item scale. (C) Perceived social-support scores, measured with a multidimensional social-support scale. (D) Self-esteem scores, measured with the Rosenberg self-esteem scale.

Panel: Research in context

Systematic review

Two detailed reviews^{10,11} of the existing medical literature on interventions for depression in people living with HIV gathered about 20 randomised trials of cognitive behavioural interventions targeting depression. Most were done in the USA and Europe, with little representation from low-income and middle-income countries. Of the 20 randomised trials, nine showed a significant effect on depression symptoms immediately after intervention. Only 11 studies assessed for longer-term effectiveness, of which six reported persistent treatment effects at follow-up. By contrast with this study, all previous trials have targeted depression symptoms rather than the full blown clinical syndrome of major depression.

Interpretation

Results from our trial suggest that group support psychotherapy (GSP) is effective in reducing depression symptoms and improving functioning. These findings confirm previous evidence that cognitive behavioural interventions confer benefits on people with HIV diagnosed with depression. The potential benefits of the integration of GSP into existing HIV interventions such as adherence counselling or group HIV educational programmes should be addressed in future studies. Furthermore, future studies should examine effectiveness of GSP in other susceptible populations by comparing it with active therapy and delineating the mechanisms through which GSP achieves its treatment effects.

positive effect on the individual. Second, study participants could have shared information they learned from their respective groups thus GHE participants might have learnt some cognitive behavioural skills. Third, group facilitators for the GHE sessions were mental health workers previously trained in the delivery of GSP and had facilitated GSP groups in the pilot study of this intervention. Some skills taught in GSP could have imparted to GHE participants.

The recorded differences between GSP and GHE at 6 months suggest that GSP was more effective than GHE in reducing depression symptoms and improving functioning in the long term. Possible explanations for this are that GSP participants continued to meet in their groups to plan for and implement income-generation projects as instructed in the last two sessions of the intervention. We postulate that these ongoing group meetings might have served as booster sessions, which motivated them to continue to practise their acquired skills for a longer period of time.

GHE participants did not achieve any more reduction in depression symptoms at 6 months. Since no group meetings were organised after treatment in this group, and participants had not been taught any coping skills, problem solving skills, or skills to manage depression symptoms and excessive worries, some participants might have relapsed back into depression. Previous research³⁷ has suggested that coping with emotional stress in patients with HIV might require ongoing behavioural reinforcement to prevent relapse.

We noted a greater increase in self-esteem and social support for GSP than for GHE at 6 months from the end of intervention. Although previous trials of cognitive behavioural interventions in patients with HIV have not included measures of self-esteem,^{10,11} trials in other populations show that cognitive behavioural interventions increase self-esteem.³⁸ GSP was as effective as GHE in increasing perceived social support immediately after intervention. However, 6 months after the end of intervention, participants who received GSP achieved greater social support than did those who received GHE. This finding is not surprising. Previous research has shown that group identification predicts increased social support, which is a potent buffer against depression.³⁹

This study has several limitations. Because we did not assess treatment fidelity, interventions could have not been delivered as planned, leading to contamination that would result in non-detection of significant differences when they truly existed. Ideally, treatment sessions should have been audio-taped and reviewed weekly, and group facilitators should have been given feedback via weekly meetings for the duration of the study. In view of the small number of mental health workers trained in delivering GSP, supervision of treatment sessions was not possible.

Further, GSP was delivered by mental health professionals with diploma and degree level, restricting its long-term accessibility and sustainability because of the scarce availability of these professionals. Future research needs to assess whether the intervention can be administered by less trained providers. Finally, attendance was lower in the GSP group than in the GHE group, which might have affected the results.

Despite these limitations, the study has several strengths. First, it was a randomised trial with a real-world sample that was representative of treatment-seeking war survivors in northern Uganda. Second, the study did not exclude individuals addicted to alcohol; such individuals are often screened out of randomised trials. Third, the study achieved high attendance and retention numbers, which confirms the acceptability of group interventions in this population. Fourth, this trial is the first in sub-Saharan Africa to compare a group psychotherapeutic intervention with an active comparison group intervention in an attempt to control for the effects of common therapeutic factors. Lastly, the magnitude of the intervention effects on all study outcomes was large, suggesting that culturally sensitive GSP is highly effective in not only reducing depression symptoms and improving functioning but also improving social support and self-esteem in depressed people with HIV in post-conflict northern Uganda. Since GSP is a novel intervention, and the few trials of adapted western psychotherapy interventions in Uganda^{40,41} did not report effect sizes, direct comparisons of its effects across studies is not possible.

The findings of this study stress the need for a comprehensive HIV care model that integrates mental

health care into the overall medical regimen.⁴² For example, psychoeducation and increased awareness of the effect of depression on immune status and adherence are likely to be useful knowledge for all patients with HIV. The benefits of existing HIV educational and adherence counselling interventions in HIV care services could be improved with the addition of GSP content in view of the high prevalence of depression in people living with HIV/AIDS in Uganda.⁴ Furthermore, future studies should examine the effectiveness of GSP in other susceptible populations by comparing it with active established therapy and delineating the mechanisms through which GSP achieves its treatment effects. Also, the feasibility of training lay community health workers to deliver GSP, thereby increasing accessibility to the intervention for those residing in rural areas, should be investigated.

Contributors

EN-M, KW, JO, and SA conceptualised and designed the study protocol. EN-M and RO managed the literature searches. EN-M, SK, EJM, and RM undertook the statistical analysis independently, and wrote the first draft of the report. SM, RM, EJM, and JBN revised the report critically for important intellectual content. EN-M, KW, JO, SA, SM, RO, JBN, RM, SK, and EJM contributed to and have approved the final report.

Declaration of interests

We declare no competing interests.

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