



Peer-group support intervention improves the psychosocial well-being of AIDS orphans: Cluster randomized trial

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ABSTRACT

Accumulating evidence suggests that AIDS orphanhood status is accompanied by increased levels of psychological distress such as anxiety, depression, intense guilt, shame, and anger. However, few studies have examined the possible reduction of psychological distress in AIDS orphans through the help of interventions that promote well-being. The objective of the study was to evaluate the effects of a school-based peer-group support intervention combined with periodic somatic health assessments and treatment on the psychosocial well-being of AIDS orphans in the Mbarara District of southwestern Uganda. In a cluster randomized controlled design, 326 AIDS orphans aged 10–15 years were assigned to either peer-group support intervention combined with monthly somatic healthcare ($n = 159$) or control group ($n = 167$) for follow-up assessment. Baseline and 10 week follow-up psychological assessments were conducted in both groups using self-administered Beck Youth Inventories. Complete data were available for 298 orphans. After adjusting for baseline scores, follow-up scores for the intervention group in comparison with controls showed significant improvement in depression, anger, and anxiety but not for self-concept. This study demonstrated that peer-group support intervention decreased psychological distress, particularly symptoms of depression, anxiety and anger. Thus, the use of peer-group support interventions should be incorporated into existing school health programs.

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Introduction

Accumulating evidence suggests an increased risk of psychological distress among AIDS orphans (Atwine, Cantor-Graae, & Bajunirwe, 2005; Cluver, Gardner, & Operario, 2007; Makame, Ani, & Grantham-Mcgregor, 2002; Nyamukapa et al., 2008; Zhonghu & Chengye, 2007). For example, a national survey in Zimbabwe found more psychosocial distress in AIDS orphans aged 12–17 years than non-orphans, both in boys and girls (Nyamukapa et al., 2008). Cluver et al. (2007) in a study conducted in South Africa found that children orphaned by AIDS were more likely to report symptoms of depression, peer relationship problems, post-traumatic stress, delinquency and conduct problems than both children orphaned by other causes and non-orphaned children. AIDS-orphaned children were also more likely to report suicidal ideation. In a study by Atwine et al. (2005) conducted in Uganda, AIDS orphans had

greater risk than non-orphans of symptoms of anxiety, depression, and anger. Similarly, a study of 41 pairs of orphans and non-orphans in Tanzania found that orphans had higher scores for internalizing problems compared with non-orphans and that nearly three times as many orphans as non-orphans had contemplated suicide (Makame et al., 2002).

Social support systems have been shown to be effective in addressing mental health and behavioral problems among AIDS orphans, particularly depression, conduct problems and problematic behaviors (Lee, Deteis, Rotheram-Borus, & Duan, 2007). However, to our knowledge no previous studies of peer-group support interventions for improving psychological well-being of AIDS orphans have been conducted. Among adults, peer-group support intervention has shown significantly improved quality of life in HIV infected adult patients (Nunes, Raymond, Nicholas, D'Meza Leuner, & Webster, 1995; Sandstrom, 1996). Nunes et al. (1995) studied HIV positive individuals who participated in support groups and found that social support and quality of life were significantly interrelated. Sandstrom's (1996) study of adults living with AIDS showed that peer-group support interventions reinforced coping skills and improved self-esteem and that, regardless

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of the length of time spent in support groups, the majority of men in the sample benefited from interacting regularly with peers.

Other studies that tested the effectiveness of psychological interventions have targeted adults living with AIDS, and only a handful of such studies have used experimental designs (Kelly et al., 1993; Molassiotis et al., 2002; Mulder et al., 1994). Molassiotis et al. (2002) assessed the effectiveness of cognitive behavioral therapy versus peer-group psychotherapy in a randomized before and after experimental design with 46 symptomatic HIV patients. The results indicated that the mood of the participants in the cognitive behavioral therapy group improved in terms of anger, anxiety, and depression compared to the control group. In the peer-group, a worsening of psychological functioning was observed immediately post-intervention but the picture dramatically improved at the follow-up assessment with improvements of up to 34% compared to the control group. Similarly, an earlier study by Mulder et al. (1994) which evaluated the effectiveness of cognitive behavioral therapy and peer-group psychotherapy among asymptomatic HIV infected homosexual men found that after 17 sessions over a 15-week period, mood disturbance and depression decreased significantly compared to the control group. By and large, the effectiveness of cognitive behavioral therapy seems consistent across studies, although some inconsistencies exist regarding the immediate post-intervention effects of peer-group support intervention on moods of HIV patients. An important question is whether peer-group support intervention is also feasible in AIDS orphans and whether it would be effective in curtailing psychological distress. Although there is no previous evidence that peer-group support intervention may also be appropriate for children, and/or in AIDS orphans in particular, intervention in childhood may be important due to the association between childhood psychological distress and mental illness in adulthood (Buchanan, Flouri, & Brinke, 2002; Krause, Mendelson, & Lynch, 2003; Power, Stansfeld, Matthews, Manor, & Hope, 2002).

The current peer-group support intervention took place in the school setting and comprised 16 psychosocial exercises which were implemented through the use of trained teachers under the supervision of the researcher and a professional counselor. The intervention differs from the existing approaches to care and support of AIDS orphans that emphasize residential or home-based care (Deninger, Garcia, & Subbarao, 2003). Residential orphan care centers are often manned by surviving parents, guardians, professionals or volunteers from the community. Community support has mostly been in the form of non-statutory foster care, statutory adoption and fostering, informal care for the orphans from within the extended family system and provision of material support while the orphans stay with their surviving parent (Drew, Makufa, & Foster, 1998; Kayombo, Mbwambo, & Massila, 2005; Oleke, Blystad, & Rekdal, 2005; Wood, Chase, & Aggleton, 2006). Traditional approaches to care and support of orphans often lack specific psychosocial interventions such as counseling, other than relocating the residence and/or provision of material and financial support. Furthermore, the current intervention took place in the school setting.

Peer-group support is a form of social support whereby lay assistance is shared between individuals who possess experiential knowledge and similar characteristics (Colella & King, 2004). Unlike adults, spontaneous sharing and emotional support among children less than 18 years of age is often not feasible. Thus, the implementation of peer-group support among children may be particularly challenging. One unique aspect of the current peer-group support intervention was the use of trained teachers to facilitate the group-sharing process. Also, as a supplement to the peer-group support, the intervention included periodic somatic health assessments and treatment, a feature generally lacking in previous peer-group support studies. Also, previous peer-group

support interventions such as those designed for improving recovery from coronary artery bypass surgery or for initiating breast feeding have been implemented using the techniques of one-on-one or group-based coaching (Colella & King, 2004; Hod-dinott, Mareta, & Roisin, 2006) which is not the case in the current study. Although the actual method of peer-group support may vary from study to study according to the subjects and the philosophy of education, the method of peer-group support in the current study was similar to that used to improve psychological distress among adult symptomatic HIV/AIDS patients (Molassiotis et al., 2002).

Despite the diversity in the implementation methods, the ultimate goal of peer-group support intervention is to provide social support for improved coping. Thus, the purpose of the current study was to examine the feasibility of peer-group support intervention in an AIDS orphan population and to test the null hypothesis that there is no difference in psychological distress between intervention and control groups at post-test. As previous studies (Atwine et al., 2005) indicated variation in psychological distress by psychosocial stressors, gender and age of the orphans, the impact of the intervention was also examined within gender and age subgroups. The unique independent contribution of competing factors (confounders) to the variation in post-intervention psychological status was examined while controlling for pre-intervention psychological distress and cluster effect.

Method

Study area

The study was conducted in Mbarara Municipality situated in Mbarara District in southwestern Uganda. Mbarara Municipality is one of the counties of Mbarara District and is subdivided into 3 divisions and 52 villages. The Municipality has a population of 1,089,051 people, of which 13.7% are orphans of all causes (Uganda Bureau of Statistics, 2003). The main language spoken is Runyankore, and the main source of income is subsistence farming. Mbarara municipality was randomly selected out of seven sub-counties in Mbarara District as the study site. All orphans in three divisions of the Municipality were involved in the study.

Study sample

Of the 392 orphans screened for eligibility, 66 (16.8%) orphans were excluded. The main reason for exclusion was non-AIDS orphan status. Parental or guardian consent was obtained for 326 AIDS orphans. Therefore, the sample comprised 326 children aged 10–15 years reported to have lost one or both parents due to AIDS, hereafter referred to as AIDS “orphans”. At the baseline assessment, the intervention group consisted of 159 orphans who were subdivided into 10 schools (clusters 11–20). The control group consisted of 167 orphans, also aged 10–15 years, subdivided into 10 schools (clusters 1–10). For both the intervention and control groups, the cluster size ranged from 5 to 16 orphans corresponding to the number of available AIDS orphans in that particular school. At the follow-up assessment, the attrition rate was 8.6% ($n = 28$), due to two orphans from the intervention and 26 from the control group being lost to follow-up at the time of the follow-up assessment. Thus, 298 participants (157 orphans in the intervention group and 141 orphans in the control group) completed the study.

Participants were selected using a multi-stage sampling procedure. The list of names and addresses of all primary schools in Mbarara Municipality was obtained from the Mbarara Municipality Principal Municipal Education Office. During pre-visits to the schools, the names of children registered as orphans, their age, sex, place of residence and name of the guardian or surviving parent were obtained from the school registers with the help of the school

head teacher. The children were followed up at their homes to establish the circumstances that led to the death of their parent(s) in order to confirm if they were AIDS orphans or not. The confirmations were obtained from either the surviving parent or guardian. Local political leaders helped in identifying the homes of the orphans in their respective areas of jurisdiction. The surviving parent or guardian of orphans who fulfilled the eligibility criteria for participation in the study provided written consent (signature or thumbprint) on behalf of the orphan. A consent form translated into the local language was used for obtaining informed consent.

Study design and randomization

The study design was a cluster randomized controlled trial which involved collection of pre-test and post-test data from participants of both intervention and control groups. The unit of randomization was the schools where the orphans were studying. The list of primary schools where the eligible orphans were studying was established, and this list was used as the frame for randomization. Schools were then randomized to either the intervention or control arms of the study. The technique of randomization involved assigning numbers from 1 to 20 to the schools on separate pieces of paper. The papers were folded and put in an enclosed box. The papers were mixed thoroughly and one paper (school) was picked from the box without replacement and assigned to the intervention group. The procedure was repeated until 10 schools were assigned to the intervention arm. The remaining 10 schools in the box were then assigned to the control arm. Cluster randomized controlled trial design was the only practical way of implementing and evaluating the intervention.

Measures

The outcome measures in this study were based on assessments of self-concept, anxiety, anger, and depression derived from the Beck Youth Inventories (BYI) (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), an instrument particularly suitable for use in younger children, aged 7–14 years. The BYI was developed as a self-report instrument, providing a systematic assessment across five dimensions: self-concept, anxiety, depression, anger, and disruptive behavior. The inventories contain items that represent children's thoughts, as well as emotional, behavioral, physiological, and cognitive symptoms. The BYI is not a diagnostic instrument as such, but is widely used as a diagnostic aid in clinical settings, and may help clinicians determine, for example, whether a child's physical complaints might reflect depression rather than somatic illness. The BYI has shown robust reliability and validity in a variety of clinical and non-clinical settings (Beck, Beck, & Jolly, 2001). Each BYI inventory contains 20 statements concerning thoughts, feelings, and behaviors that represent that particular underlying dimension. Self-concept assesses aspects concerning self-confidence and positive self-worth. Anxiety reflects children's specific worries, fears including loss of control, and physiological symptoms associated with anxiety. Depression reflects both the vegetative and behavioral symptoms. Anger reflects unfair treatment, feelings of anger, and hatred. The children were asked to report how frequently the statements were true for them. Each statement was answered either as never (0), sometimes (1), often (2), or always (3). BYI scores were calculated according to the BYI manual (Beck et al., 2001). Thus, a total score for each inventory was obtained by adding the scores obtained for each item (maximum score equals 60). A mean summary score was also calculated for each inventory. Higher scores indicate higher levels of that construct. Thus, higher self-concept scores reflect better self-esteem, while higher anxiety scores reflect more severe anxiety.

The self-report protocol was pre-tested for one day with children of similar ages who were not part of the study in order to ensure that the questions were readily comprehensible. Previous internal consistency (alpha) coefficients calculated for the separate Beck Youth Inventories were satisfactory (0.70–0.85) except for disruptive behavior (alpha = 0.32) (Atwine et al., 2005). Due to low internal consistency in that study, the inventory for disruptive behavior was excluded from the present study. Current reliability coefficients for the remaining Beck inventories were obtained for the pre-test sample of AIDS orphans from both intervention and control groups. These coefficients indicated satisfactory reliability (alpha = 0.71–0.84).

At baseline assessment, information was also gathered concerning: (1) demographic background (age, gender, occupation of the guardian/parent, religion, ethnic tribe, time of parental death, which parent is dead, other relatives in the family who died from AIDS, or who are currently ill with AIDS, and the present caretaker); (2) caretaking needs (living circumstances, food, clothing, school attendance, who pays for their school fees, is their present environment stable, who are they living with, are there other orphans in the family, are they performing home chores, physical condition of home, number of persons in home, any sexual abuse, whether they were contented with their living condition and whether they can talk to parents/guardians about their feelings); (3) physical health needs (current physical health problems, whether they are taken to a clinic for treatment when necessary, what type of clinic, and response to treatments). Questions for generating data about caretaking needs were adapted from Atwine et al. (2005) and data about caretaking needs were collected using a self-administered questionnaire. The follow-up assessment included the same questions concerning demographic background and caretaking needs in order to ensure that during the course of the study no changes occurred in the living conditions or other circumstances having a possible effect on the orphans' psychological well-being.

The somatic and mental health assessments used for the follow-up assessment were identical to those used for baseline assessment.

Two native speakers who worked separately and independently translated the BYI plus the additional background questions from English to Runyankore (dialect) and two other Runyankore speakers then back translated this into English. The two English translations were checked against each other by a native English speaker for inter-translator reliability and also checked against the original English language inventory in order to ensure correctness. Differences between the two English translations were reconciled, and one final translation was used for the protocol.

Peer-group support intervention

The peer-group support intervention was adapted from protocols of psychosocial methodologies used in training for transformation (Hope & Timmel, 1995). The theoretical basis for the peer-group support intervention is the principles and methodological tool of "consciousness" (Freire, 1972), often referred to as participatory psychosocial approaches. The procedure facilitates the transformation of oppressive experiences into a liberating one; it allows participants to reflect, challenge and face difficult experiences and to develop coping strategies. The theory recommends the use of psychosocial participatory methodologies in literacy education which allows for reflection, sharing of experiential knowledge, feelings, dialogue, participation, development of critical awareness and empowerment. It comprised 16 psychosocial exercises, which were implemented by selected primary school teachers over a period of 10 weeks. Each exercise was designed in the form of a game or play that lasted approximately 1 h, and was presented in a problem-posing manner to stimulate thinking

among the participants. The exercises were semi-structured and allowed participants to link their feelings with their current social conditions, and challenged them to take responsibility for shaping their own lives and living situations (Hope & Timmel, 1995).

The peer-group support exercises were originally intended for adults (Hope & Timmel, 1995), and were modified for children. In the first sessions, orphans were encouraged to introduce themselves and to share fears, worries and concerns about orphanhood. In the subsequent meetings, the orphans were involved in exercises such as name games, blindfolded walk, sharing of past–present–future hopes, all of which were aimed at building trust within the group. Other topics discussed included approaches to problem solving, HIV/AIDS, fears about orphanhood and how to handle fear, and basic human needs and sources of satisfaction. The last group of exercises was aimed at raising self-esteem and included sending messages to another orphan, sharing the aspects they like about themselves, physically bearing the weight of each other, and the “big hug” exercise where participants held, supported, and hugged each other.

During the implementation period, two peer-group support exercises were held per week in the school classrooms and at usual games’ times to avoid interference with class lessons. A trained teacher from each of the participating schools organized and conducted the peer-group support meetings and was supervised for this role by the researcher and an experienced counselor. The process had seven key elements, which the teachers followed when discussing each topic: 1) presentation of the topic in encoded form, such as pictures, role-play, poems, stories, or games that clearly pose the problem, 2) asking the orphans to identify the underlying problem they have seen or heard in the encoded form (e.g., pictures, role-play, poems, stories). Responses to this question were elicited until the correct problem was identified, 3) asking them whether they have experienced the same problem at home, in school and/or in the community, and if so, to give examples of their experiences, 4) asking them to give reasons as to why the problem exists, 5) asking the orphans about the effect of the problem on them as individuals, groups and families, 6) asking how they feel about the problem, 7) asking what they could do as individuals or as a group of orphans to solve the problem. This was an action-planning question, which provided the opportunity for participants to share problem-solving strategies. During these discussions, the role of the teacher was to guide the discussion and make sure that as many orphans participated as possible.

Teachers were trained by the first author to deliver the peer-group support intervention. The researcher and counselor provided weekly supervision of the teachers and also handled matters arising from the study. The involvement of the professional counselor was recommended by the Faculty of Medicine Research Review and Ethics Committee and Institutional Review Board. The counselor was assigned the responsibility of handling any stigma, discrimination and or emotional breakdown that might arise during the project. However, no case of stigma, discrimination or emotional breakdown arose. Therefore, the services of the professional counselor were not needed during the course of the intervention.

As part of the intervention process, children were given the opportunity to receive healthcare monthly, at which time present health problems and symptoms of illnesses were discussed followed by a general physical examination (checking for physical signs of diseases such as pain, pallor of skin and mucus membranes, jaundice, cyanosis, finger clubbing (a sign of chronic hypoxemia), enlarged lymph nodes, dehydration, oral thrush, sore throat, and edema). In addition, vital signs such as temperature, pulse, respiration, and blood pressure, and body mass index were assessed. Orphans with symptoms/signs of minor ailments such as fever or minor injury were given symptomatic treatment such as analgesia

and antimicrobial medications. During the physical health assessments, two orphans were found to have signs of severe mental retardation. These two orphans were subsequently excluded from the sample. Furthermore, four orphans from the intervention group with severe physical conditions (mainly bacterial pneumonia, allergic skin reaction, generalized lymphangitis, and umbilical hernia) were referred to a pediatrician for treatment. These orphans were included in the sample.

Orphans in the control group attended the same schools but not the after-school support intervention.

Data collection procedures

The majority of the BYI assessments were self-administered by the orphans because they were able to read and write in English language without difficulties. However, 13 orphans with lower levels of education were interviewed by two research assistants working independently. A separate self-administered questionnaire was used to collect information about demographics and the caretaking needs from the orphans. Although no inter-rater reliability tests were performed for the data collected by interview, the use of a standardized assessment instrument would minimize any tendency towards an interviewer “effect”. The scores of these children did not differ in any way from the scores of children who self-administered the BYI. All data were collected in the school setting to avoid the influence of the surviving parent or guardian on the orphans’ responses in the months of August to December 2006. Prior to the onset of the study, research assistants were trained in administration of the research instrument.

Ethical considerations

The research proposal was approved by the Faculty of Medicine Research Review and Ethics Committee of Mbarara University of Science and Technology in 2006. Because the orphans were under the age of 18 years, written informed consent was sought from the surviving parent or guardian. The surviving parent or guardians were fully informed about the aims, procedures, benefits and limitations of the study. Most parents/guardians requested the non-disclosure of AIDS orphanhood status to the participants at the onset of the study due to fears of blame, stigma and discrimination. However, it is likely that many of the orphans were aware that their orphanhood was due to HIV/AIDS, as they had witnessed the prolonged suffering and death of their parent(s). Unfortunately, exact information on the number of orphans who knew their AIDS orphanhood or HIV status at the onset of the study was not available. The orphans assigned to the control group were given the same intervention at the end of the study as an ethical redress.

Data analysis and statistics

The four outcome variables (self-concept, anxiety, depression and anger) were first examined for normality of distribution. Anger and anxiety scores had normal distributions for both groups combined (skew for anger 0.48, for anxiety 0.20). Depression and self-concept scores had slightly skewed distributions (skew for depression 1.22, for self-concept –1.29), but this departure from normality was deemed acceptable. Descriptive statistics were used to compute the mean, standard deviation and range for demographic data and the BYI scores for self-concept, anxiety, depression and anger. Intra cluster correlations (ICC) within schools were calculated based on the four outcome measures and ranged from –0.11 to +0.48. Paired *t*-tests were used to compare the pre- and post-scores for each group separately. Analysis of covariance (ANCOVA) was performed, using post-intervention scores as the dependent variable and intervention/control group as the

between-subject variable, with the pre-intervention scores as covariates. The level of statistical significance was set at $p < 0.05$ for two-tailed test at 95% confidence interval. Statistical analyses were conducted using SPSS 15.0 version for Windows.

Results

Demographics and living conditions of the participants

The demographic and living conditions of the orphans in intervention compared to control group are shown in Table 1. Of the 298 orphans included in the analysis, 50% were male, 94.5% were Bantu ethnic group, 33.2% were Moslems, and the rest were Christians. Almost equal numbers were residents of the three divisions of Mbarara Municipality. All orphans were attending school at the time of the study; 42.6% were “double” orphans. On randomization, 52.7% of the orphans were assigned to the intervention group and the rest to the control group. No significant differences were found in the background characteristics of the orphans in the intervention and the control groups (see Table 1). Furthermore, there were no statistically significant differences between the two orphan groups concerning their living and caretaking needs.

Psychological distress at baseline and follow-up

The baseline scores for psychological distress of the orphans in the intervention compared to control group are shown in Table 2. At baseline, orphans in the intervention group had significantly lower scores for self-concept ($p = 0.001$), higher scores for depression ($p = 0.001$), but not significantly different scores for anxiety ($p = 0.54$) and anger ($p = 0.054$) than those in the control group. At follow-up, the orphans in the intervention group had significantly lower scores for anxiety, depression, and anger than at baseline, whereas orphans in the control group showed increases in depression and anger and lowered self-esteem compared to baseline.

F values presented in Table 2 show the effect of the peer-group support intervention in comparison with controls on follow-up scores after adjusting for baseline scores. A significant intervention effect was obtained for three of the BYI measures: anxiety

($p = 0.003$), depression ($p < 0.001$), and anger ($p < 0.001$). Age and gender were not included as covariates as their balanced distribution at baseline between the intervention and the control groups indicated lack of confounding. We however tested for interaction between age, gender, and the intervention effect. No significant interaction was shown for any of the BYI measures.

Discussion

The findings indicated that follow-up symptoms of anxiety, depression, and anger were lower than among the control orphans. These findings suggest that peer-group support intervention has a significant impact on anxiety, depression, and anger among AIDS orphans. This is consistent with that observed among adults living with HIV/AIDS (Nunes et al., 1995). Social support groups are effective in addressing mental health and conduct problems, particularly depression among AIDS orphans (Lee et al., 2007).

On the other hand, the current study found no significant effect of peer-group support intervention on self-concept of the orphans. This current finding contradicts earlier evidence from Sandstrom (1996) who found that peer-group support interventions reinforced coping skills, and improved self-esteem among adults living with AIDS. The participants of the current study were relatively younger than those in the study by Sandstrom (1996) and their self-esteem may have been higher to start with, as is common among young children. Unfortunately the self-esteem of control orphans declined from baseline to follow-up. It is possible that the control participants' knowledge of not being chosen for the intervention might have led to a temporary worsening of self-esteem. Ideally, the control group should have been exposed to some form of placebo such as listening to a story in order to prevent the negative effect of being “excluded” from the intervention. The plan was to give them the same peer-group support intervention, should it be found beneficial, which was done after conclusion of the study. Another competing explanation is that the peer-group support intervention arm delayed the decrease in self-concept typically expected during this age group (Galambos & Tilton-Weaver, 2000), while it continued to decrease for the control group.

A possible limitation in the current study was the lack of similarity in the two orphan groups in baseline psychological distress after randomization to intervention and control groups. To address this, we adjusted for baseline scores in the ANCOVA analysis. No other confounders required adjustment as the groups were similar in demographic characteristics. We were unable to correct for clustering within schools although this was evident in both groups. Another limitation is that AIDS orphan status for the participants in the current study was verified on the basis of verbal report of parental cause of death by the surviving parent or guardian. However, documents or medical reports about the cause of death were generally lacking in Uganda, regardless of location (urban or rural). Some of the topics discussed in the sessions may not have been entirely appropriate for the orphans because they were obtained from protocols used for training for transformation by Hope & Timmel (1995).

It is difficult to say with certainty that improvements in psychological distress that were observed in this study were solely due to the peer-group support intervention because additional “support” may have been provided through the somatic treatment. It was beyond the scope of the present study to include a third orphan group that would have received only the peer-group intervention without somatic treatment. Alternatively, the control group could have received solely somatic treatment. Another possible limitation is the use of several different teachers, whose approach may not have been standardized across groups. However, pre-training of teachers ensured that the same protocol was implemented. Furthermore, as teachers they all had prior experience dealing with children. Although it seems advantageous from

Table 1
Characteristics of orphans in intervention and control groups.

Characteristics	Intervention (n = 157)	Control (n = 141)	p-Value
Age (mean years)	11.9	11.7	0.32
Gender (female)	84 (53.5%)	66 (46.8%)	0.19
Current guardian			
Single mother	50 (31.8%)	52 (36.9%)	
Single father	14 (8.9%)	9 (6.4%)	
Older sibling	12 (7.6%)	9 (6.4%)	
Relatives	67 (42.7%)	68 (46.2%)	
New family	4 (2.5%)	2 (1.4%)	
Others	10 (6.3%)	1 (0.7%)	0.17
No. of people in current home (mean)	6.7	6.8	0.90
No. of children in current home (mean)	4.3	3.9	0.29
No. of orphans in current home (mean)	3.2	2.8	0.28
In contact with other orphans elsewhere	136 (87.2%)	123 (87.2%)	0.16
Has relatives sick/died of AIDS	91 (60.3%)	73 (51.8%)	0.15
Caretaker also ill	62 (41.3%)	52 (37.4%)	0.50
Meals per day (mean)	2.5	2.4	0.33
Rooms in the house (mean)	3.4	3.4	0.92
Happy about where he/she is living	113 (74.5%)	105 (74.3%)	0.50
Parent who died			
Father	58 (38.7%)	66 (47.1%)	
Mother	25 (16.7%)	14 (10.0%)	
Both parents	67 (44.7%)	60 (42.9%)	0.16
Duration of orphanhood (mean years)	7.5	6.0	0.12

Table 2

Comparison of psychological distress scores at baseline and follow-up assessment for orphans in intervention and control groups.

	Intervention group (n = 157)		Control group (n = 141)		ANCOVA on follow-up	
	Baseline Mean (SD)	Follow-up Mean (SD)	Baseline Mean (SD)	Follow-up Mean (SD)	F	p
Self-concept	35.9 (13.9)	36.5 (12.2)	40.3 (9.3)	35.3 (8.2)**	1.37	0.24
Anxiety	20.9 (10.8)	18.0 (10.0)*	21.5 (9.8)	21.1 (8.4)	9.09	0.003
Depression	17.6 (9.5)	13.2 (9.4)***	14.0 (8.1)	17.1 (7.9)**	16.12	<0.001
Anger	19.0 (8.7)	15.1 (8.8)***	17.1 (8.2)	19.0 (8.1)*	17.23	<0.0001

p-Values for paired t-tests: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

a practical point of view that a peer-group support intervention for AIDS orphans be integrated into the existing school setting, a possible limitation in this regard is that those orphans who are potentially very distressed may not be attending schools. Thus, perhaps part of the success of this intervention may be due to the fact that these AIDS orphans were not the most disadvantaged. A counter-argument however is that their pre-intervention BYI levels corresponded to those in Atwine et al.'s (2005) study. Thus, the sample may be deemed representative.

The issue of disclosure of AIDS orphanhood status merits some comment. At the start of the study, all of the orphans knew they were orphans but not specifically as AIDS orphans. They were not disclosed their AIDS orphanhood status because their parents or guardians feared that the children would be angry with them for denying them with such a vital information for such a long time. However, during the course of the intervention most of the orphans became aware that they were being offered the intervention because their parent(s) had died due to AIDS, although it was difficult to assess the possible impact of the acquisition of this awareness on the current results. This realization could either have increased the feeling of stigmatization and/or contributed to a (positive) Hawthorne effect. However, the results show that any negative effects of learning that one is an AIDS orphan were seemingly counteracted by the positive effects of the intervention.

Conclusion

Psychological interventions such as peer-group support may optimize adjustment and decrease the psychological distress, particularly depression and anger associated with AIDS orphanhood in the adolescent age group. The effectiveness of the peer-group intervention shown here provides evidence for the success of psychosocial support and care for orphans.

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