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Psychological distress amongst AIDS-orphaned children in urban South Africa

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Background: South Africa is predicted to have 2.3 million children orphaned by Acquired Immune Deficiency Syndrome (AIDS) by 2020 (Actuarial Society of South Africa, 2005). There is little knowledge about impacts of AIDS-related bereavement on children, to aid planning of services. This study aimed to investigate psychological consequences of AIDS orphanhood in urban township areas of Cape Town, South Africa, compared to control groups of children and adolescents orphaned by other causes, and non-orphans. **Method:** One thousand and twenty-five children and adolescents (aged 10–19) were interviewed using socio-demographic questionnaires and standardised scales for assessing depression, anxiety, post-traumatic stress, peer problems, delinquency and conduct problems. **Results:** Controlling for socio-demographic factors such as age, gender, formal/informal dwelling and age at orphanhood, 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. Anxiety showed no differences. AIDS-orphaned children were more likely to report suicidal ideation. Compared to Western norms, AIDS-orphaned children showed higher levels of internalising problems and delinquency, but lower levels of conduct problems. **Conclusions:** Children orphaned by AIDS may be a particularly vulnerable group in terms of emotional and, to a lesser extent, behavioural problems. Intervention programs are necessary to ameliorate the psychological sequelae of losing a parent to AIDS. **Keywords:** HIV/AIDS, orphans, bereavement, mental health, depression, anxiety, post-traumatic stress, delinquency, conduct problems. **Abbreviations:** SDQ: Strengths and Difficulties Questionnaire; CDI: Child Depression Inventory; R-CMAS: Children's Manifest Anxiety Scale–Revised; CBCL YSR: Child Behavior Checklist Youth Self-Report; HIV: Human Immunodeficiency Virus; AIDS: Acquired Immune Deficiency Syndrome.

In 2004, 13–18 million children worldwide were orphaned by AIDS (UNAIDS, 2004). South Africa is currently experiencing one of the world's most severe HIV/AIDS epidemics, with 30% of pregnant women HIV-positive (Department of Health, 2005). An estimated 830,000 children were AIDS-orphaned in 2005, a figure that is predicted to rise to 2.3 million by 2020 (Actuarial Society of South Africa, 2005).

Research in the developed world has explored effects of bereavement on children, and shows differing mental health effects of parental death from causes such as homicide (Black & Harris-Hendricks, 1992), war (Kaffman & Elizur, 1979) and cancer (Siegel, Karus, & Raveis, 1996). However, despite the magnitude of effects of AIDS on orphanhood worldwide, very little empirical evidence explores psychological consequences of AIDS orphanhood specifically (Stein et al., 2005). No published studies to date compare children orphaned by AIDS to children orphaned by non-AIDS causes and non-orphaned children, and so it is difficult to isolate differential effects of AIDS and orphanhood within our understanding of children's responses to bereavement.

Qualitative evidence suggests that AIDS-orphaned children are exposed to multiple stressors which may contribute to mental health problems, including debilitating parental AIDS-illnesses, multiple losses, and stigma (Cluver & Gardner, in 2007; Foster, Makufa, Drew, Mashumba, & Kambeu, 1997). A review (Cluver & Gardner, in press) found 19 studies worldwide, most of which were small, and lacked adequate control groups (Wild, 2001), with wide variation in sample characteristics and outcome measurements. Twelve studies were unpublished as of 2006; five were USA-based, and 14 Africa-based, with 7 studies lacking any comparison group of non-orphans or children orphaned by non-AIDS causes. Twelve studies used standardised questionnaires or clinical interviews, the remainder used non-validated measures.

Studies reviewed suggested that orphans experience depression (Bhargava, 2005; Sengendo & Nambi, 1997), suicidality (Makame, Ani, & McGregor, 2002) and anxiety (Atwine, Cantor-Graae, & Bajunirwe, 2005; Pelton & Forehand, 2005). Uncontrolled studies suggested that orphans may suffer from post-traumatic stress symptoms (Cluver & Gardner, 2006; Makaya et al., 2002) and peer problems (Draimin, Hudis, & Segura, 1992). Conduct problems were found in three US (e.g., Rotheram-Borus, Lee, Lin, & Lester, 2004) and two

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African studies (Atwine et al., 2005; Makaya et al., 2002), but not found in others (i.e., Pivnick & Villegas, 2000; Poulter, 1996). The review pointed clearly to the need for a much larger study of psychological well-being of AIDS-orphaned children, compared both to children orphaned by non-AIDS causes, and to non-orphans, using a range of standardised mental health measures, and controlling for socio-demographic factors which may affect those psychological outcomes.

Method

Participants

Participants were recruited in 2005–06, from 9 schools, 18 non-governmental organisations, and community sampling. Sampling was purposive, aiming to include very vulnerable children by over-sampling populations unlikely to be included in a school study: street-children (via shelters and feeding schemes), child-headed households and children not attending school. Participants lived in deprived urban settlements in Cape Town. The study area spanned 42 km^2 of neighbourhoods formerly designated for black Africans under apartheid. These areas are characterised by high population density, unemployment, property crime, rape and violent crime (South African Police Services, 2004).

The UN definition of orphanhood was used; i.e., loss of one or both parents (UNAIDS, 2004), and the World Health Organisation definition of adolescence as 10–19 years (WHO, 2003). The total sample comprised 1025 children and adolescents aged 10–19: 425 orphaned by AIDS, 241 orphaned by non-AIDS causes, and 278 who were not orphaned. Eighty-one were orphaned by unknown causes. In order to exclude acute bereavement reactions, children orphaned in the previous 6 months were not interviewed. Non-orphaned and other-orphaned controls were matched by school or close locality. Non-orphaned controls were selected by alphabetical allocation from school registers and shelters.

Determining cause of death

Eighty-one orphaned children were excluded from the present analyses, due to inability to determine cause of parental death or lack of corroborating evidence. This group included cases where cause of death was not discussed (21%), deaths of tuberculosis with no other AIDS-defining symptoms (10%), or deaths by 'bewitchment' which may or may not have been AIDS-related (9%).

Parental death by AIDS was defined by several criteria. A small proportion of families were aware of, and open about, HIV status. For the majority, parental death by AIDS was determined using a 'verbal autopsy' method, validated in a South African population (Hosegood, Vanneste, & Timaeus, 2004) as well as in Uganda, Ghana, Tanzania and Ethiopia. Parental death due to AIDS was determined by the presence of 3 or more AIDS-defining illnesses, such as oral candidiasis, Kaposi's sarcoma, pulmonary tuberculosis or HIV-wasting syndrome (WHO, 2005). Further indicators of AIDS death included death of both parents and/or infant deaths of siblings from AIDS-defining illnesses. Where possible, child report was corroborated by teachers, social workers and surviving parents. Where diagnoses were in doubt, symptoms were reviewed by two independent medical practitioners.

Children in the 'orphaned by non-AIDS causes' group included causes such as vehicle accidents (24%), suicide (3%) and homicide (28%). AIDS-unrelated illnesses such as diabetes and hypertension were coded as non-AIDS deaths only where there were no other potentially AIDS-related symptoms.

Procedure

Ethical approval was granted by Oxford University, University of Cape Town, and the Department of Education (Western Cape). Participation was voluntary and informed consent was obtained from children and caregivers. Thirty-four children did not participate due to recent bereavement (27), disclosure of HIV+ status (5) or lack of consent (2). With interviewers, children completed anonymous self-report questionnaires, including games and drawing activities, lasting 40–60 minutes. Participants received refreshments and certificates of thanks, and participating organisations received staff training. All interviewers were local, Xhosa-speaking social workers, psychologists or community health workers, and were trained in working with AIDS-affected young people. Confidentiality was maintained, except where children were at risk of significant harm, or requested assistance.

Measures

Demographics questionnaire: Using items derived from the National Census (Statistics South Africa, 2001), a questionnaire was devised to obtain information on age, gender, home circumstances and socio-economic status. *Mental health problems* were measured using a range of standardised scales, all previously used with vulnerable children in Cape Town.

Depression was measured using the Child Depression Inventory (CDI short form) (Kovacs, 1992). It has been widely used in South Africa (i.e., Wild, Flisher, Laas, & Robertson, 2006), shows good psychometric properties, and has comparable results with the full CDI (Kovacs, 1992). Anxiety was measured using the Children's Manifest Anxiety Scale–Revised (R-CMAS; Reynolds & Richmond, 1978). This 28-item scale has good psychometric properties (Gerard & Reynolds, 1999) and has been used in South Africa (Wild et al., 2006). Peer problems were measured using the 5-item peer problems subscale of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). The SDQ has strong psychometric properties, has been translated into 51 languages, including Xhosa, and validated in many developing countries (Goodman, Renfrew, & Mullick, 2000b).

Post-traumatic stress was measured using Amaya-Jackson's 'Child PTSD Checklist'. This 28-item scale is derived from DSM-IV criteria, uses a 4-point (Likert) severity scale, and has been used extensively in Cape Town (e.g., Seedat, Nyamai, Njenga, Vythilingum, &

Stein, 2004). Psychometric data reported is unpublished (Amaya-Jackson, Newman, & Lipschitz, 2000). Test–retest reliability ($r = .91$) and internal consistency (α's .82–.95) are high. Discriminant and concurrent validity were good when compared to diagnostic, clinician-administered interviews K-SADS (Chambers, Puig-Antich, & Hirsch, 1985; Kaufman, Birmaher, & Brent, 1997) and the Clinician-Administered PTSD Scale for Children and Adolescents (Nader et al., 1996) (Newman et al., 1998). The text-based checklist was accompanied by cartoons derived from the Levonn/Andile PTSD scale (Richters, Martinez, & Valla, 1990), which was found accessible for Xhosa-speaking adolescents in Cape Town (Ensink, Robertson, Zissis, & Leger, 1997).

Conduct problems were measured using the 5-item 'conduct problems' subscale of the SDQ (Goodman, 1997) and the 11-item delinquent subscale of the CBCL Youth Self-Report (Achenbach, 1991). The YSR has good psychometric properties (Achenbach & Rescorla, 2001; Song, Singh, & Singer, 1994), and has been used with AIDS-orphaned children (Forehand et al., 2002), and in South Africa (van der Merwe & Dawes, 2000; Wild et al., 2006).

Analysis strategy

Data were analysed using SPSS (Version 13.0). Differences between orphanhood groups on psychological scales and socio-demographic characteristics were assessed using independent sample *t*-tests, Chi-squared tests and one-way ANOVAs. Associations between socio-demographic factors and continuous psychological outcomes were also examined; socio-demographic factors that were associated with each outcome at $p < .20$ level were identified as potential co-factors for multivariate models (Hosmer & Lemeshow, 1989). Multiple linear regression analyses were used to assess associations between orphan status (orphaned due to AIDS and orphaned due to other causes, compared to non-orphans) with each continuously-scored psychological outcome (depression, anxiety, post-traumatic stress, peer problems, delinquency, and conduct problems). Two models are shown for each outcome. The unadjusted models show univariate associations between orphan category and psychological outcome. The adjusted multivariate models control for socio-demographic co-factors. Finally, comparisons were made between orphanhood groups on proportions of children within the clinical range, using standardised clinical cut-offs. All tests were two-tailed and significance was set at the $p < .01$ level because of number of comparisons made.

Results

Demographic and background characteristics (Tables 1 and 2)

The mean age of participants was 13.4 years. AIDS-orphaned children (mean 13.7 yrs) were older than non-orphaned children (mean 13.0 yrs; $p < .002$). This finding may have been a result of the sampling procedure: controls were matched from the same school grade, and AIDS-orphaned children were more likely to be delayed in school than non-orphans ($\chi^2 = 18.2$; $p < .001$). There were no group differences on gender, internal migration between provinces, or number of moves between different households. Orphaned children (both AIDS and non-AIDS) lived in smaller households ($p < .001$), and were more likely to live in informal (shack) dwellings than non-orphans ($p < .001$). Ethnic origin was 97% Xhosa, with no differences between orphanhood groups. AIDS-orphaned children were more likely to be maternally or doubly bereaved than other orphans ($p < .001$), and were older at first parental bereavement (10.1 years) than other orphans (7.8 years, $p < .001$).

Table 2 shows associations between socio-demographic factors and continuous psychological outcomes. Increased age was positively correlated with scores on all scales ($p < .001$). Females reported more depression and anxiety than males ($p < .01$); whereas males reported more delinquency and conduct problems than females ($p < .01$). Smaller

Table 1 Differences between groups on demographic variables

	Children orphaned by AIDS ($n = 425$)	Children orphaned by other causes ($n = 241$)	Non-orphaned children ($n = 278$)	*P* value[1]
Age (mean, SD)	13.7 (2.5)	13.4 (2.4)	13.0 (2.0)	<.001
Female (%)	50.6	43.2	46.4	ns
Xhosa ethnicity – overall sample (%)	98.1	96.7	96.4	ns
Household size (mean, SD)[2]	4.8 (1.9)	4.6 (1.7)	5.2 (2.0)	<.001
Informal dwelling (%)[3]	43.0	43.0	29.1	<.001
Internal migration (%)	41.4	44.0	40.6	ns
Moved between 2+ homes (%)	66.4	69.3	71.6	ns
Loss of mother (%)	58.6	28.2	–	<.001
Loss of father (%)	66.1	83.0	–	<.006
Loss of both parents (%)	24.9	12.4	–	<.001
Age, first bereavement (mean, SD)	10.1 (3.8)	7.8 (4.6)	–	<.001

[1] *p*-value associated with one-way ANOVA or Chi-square test.
[2] Number of cases reduced due to exclusion of street-children who moved between shelters and streets. For AIDS-orphaned children, $n = 403$; other orphans, $n = 223$; non-orphans, $n = 265$.
[3] Number of cases reduced due to exclusion of street-children. For AIDS-orphaned children, $n = 402$; other orphans, $n = 221$; non-orphans, $n = 261$.

Table 2 Associations between demographic factors and mental health outcomes[1]

	Depression (CDI)	*p*	Anxiety (RCMAS)	*p*	Peer problems (SDQ Peer)	*p*	Post-traumatic stress	*p*	Delinquency (CBCL)	*p*	Conduct Problems (SDQ)	*p*
Age	.157	<.001	.127	<.001	.144	<.001	.174	<.001	.201	<.001	.118	<.001
Gender												
Male (M, SD)	2.72 (2.64)	<.01	11.11 (5.31)	<.01	2.25 (2.10)	ns	15.58 (13.76)	ns	2.79 (2.90)	<.001	1.27 (1.56)	<.01
Female (M, SD)	3.15 (2.85		11.98 (5.21)		2.43 (2.15)		17.18 (14.71)		2.22 (2.43)		1.27 (1.56)	
Household Size	−.019	ns	−.003	ns	−.067	.04	−.059	ns	−.017	ns	−.011	ns
Informal dwelling												
Yes (M, SD)	2.99 (2.82)	ns	11.70 (5.35)	ns	2.23 (2.18)	ns	15.64 (14.35)	ns	2.19 (2.42)	ns	1.29 (1.50)	ns
No (M, SD)	2.79 (2.63)		11.11 (5.19)		2.37 (2.09)		16.21 (13.94)		2.41 (2.38)		1.36 (1.49)	
Internal Migration												
Yes (M, SD)	2.97 (2.88)	ns	11.54 (5.55)	ns	2.29 (2.14)	ns	16.24 (14.13)	ns	2.28 (2.38)	<.019	2.29 (2.37)	ns
No (M, SD)	2.88 (2.66)		11.53 (5.09)		2.36 (2.11)		16.44 (14.32)		2.69 (2.91)		2.69 (2.90)	
Moved between 2 or more homes												
Yes (M, SD)	2.97 (2.77)	ns	11.54 (5.36)	ns	2.27 (2.11)	ns	15.84 (13.93)	ns	2.42 (2.58)	ns	1.36 (1.49)	ns
No (M, SD)	2.86 (2.65)		11.47 (5.07)		2.47 (2.15)		17.28 (14.60)		2.72 (2.93)		1.47 (1.65)	
Mother only death[2]												
Yes (M, SD)	3.33 (2.99)	ns	11.73 (5.68)	ns	2.70 (2.09)	ns	18.58 (14.90)	ns	2.74 (2.85)	ns	1.58 (1.60)	ns
No (M, SD)	3.09 (2.70)		11.64 (4.79)		2.62 (2.14)		18.75 (14.68)		2.70 (2.70)		1.46 (1.53)	
Father only death[2]												
Yes (M, SD)	3.23 (2.86)	ns	11.88 (5.06)	ns	2.70 (2.15)	ns	18.96 (14.78)	ns	2.70 (2.72)	ns	1.49 (1.57)	ns
No (M, SD)	3.28 (2.98)		12.52 (5.81)		2.43 (2.03)		19.34 (15.32)		2.54 (2.56)		1.47 (1.39)	
Death of both parents[2]												
Yes (M, SD)	3.42 (3.19)	ns	12.28 (5.52)	ns	2.73 (2.14)	ns	18.73 (14.80)	ns	2.59 (2.78)	ns	1.50 (1.69)	ns
No (M, SD)	3.16 (2.75)		11.54 (5.19)		2.66 (2.11)		18.67 (14.76)		2.76 (2.76)		1.52 (1.52)	
Age, first bereavement	.051	ns	.009	ns	.068	ns	.050	ns	.050	ns	.049	ns

[1] *p*-values associated with independent sample *t*-test or bivariate associations.
[2] Includes only orphaned children.

household size was associated with peer problems, and internal migration associated with delinquency. Maternal, as opposed to paternal, bereavement, and loss of both parents were not associated with heightened distress on any outcome.

Psychological outcomes when controlling for socio-demographic factors (Table 3)

Depression. When controlling for age and female gender, orphanhood by AIDS was significantly related to higher depression scores. Orphanhood by other causes was not associated with depression in either the unadjusted or adjusted models.

The recommended cut-off score for the full CDI is 19 (Kovacs, 1992), identifying the upper 10% of the distribution in a non-clinical sample. Pro-rating for the CDI short form, 17% of AIDS-orphaned children fulfilled clinical criteria for depression, compared to 10% of other-orphaned children and 9% of non-orphans.

An additional item asked respondents to identify suicidal ideation. When controlling for age and female gender, AIDS-orphaned children were more likely than other groups to endorse a conservative threshold of 'I want to kill myself' ($p < .05$).

Anxiety. Orphanhood by AIDS initially was marginally associated with anxiety in the unadjusted model, but the association was completely eliminated in the adjusted model (controlling for age, female gender and type of dwelling). Orphanhood by causes other than AIDS was not associated with anxiety in either unadjusted or adjusted models.

Using a recommended cut-off score of 19 (Stallard, Velleman, Langsford, & Baldwin, 2001) to identify children experiencing clinically significant levels of anxiety, 10% of AIDS-orphaned children, 8% of other-orphaned children and 8% of non-orphans fulfilled clinical criteria.

Peer problems. Orphanhood by AIDS was significantly associated with peer relationship problems in the unadjusted model, and this association remained significant after controlling for age, household size, and more than 2 moves between homes. Orphanhood by causes other than AIDS was not associated with peer problems in either unadjusted or adjusted models.

Borderline scores for peer problems as 4–5, and abnormal scores above 6, identified scores above the 98th percentile in a British validation study (Meltzer, Gatward, Goodman, & Ford, 2000b). Using the higher cut-off, 14% of AIDS-orphaned children, 9% of other-orphaned children and 8% of non-orphans fulfilled 'abnormal' criteria.

Post-traumatic stress symptoms. Orphanhood by AIDS was significantly associated with PTSD

Table 3 Multivariate associations between orphanhood by AIDS, orphanhood by other causes, and psychological outcomes, controlling for socio-demographic cofactors

	Depression[1]		Anxiety[2]		Peer Problems[3]		PTSD[4]		Delinquency[5]		Conduct Problems[6]	
	Unadjusted Model	Adjusted Model	Unadjusted Model	Adjusted Model	Unadjusted Model	Adjusted Model	Unadjusted Model	Adjusted Model	Unadjusted Model	Adjusted Model	Unadjusted Model	Adjusted Model
Orphanhood by AIDS	.200**	.179**	.097*	.069	.290**	.261**	.299**	.267**	.144**	.124**	.142**	.130**
Orphanhood by other causes	.035	.029	−.008	−.022	.055	.040	.087*	.073	−.002	−.011	.015	.009
R-Square	.032	.052	.008	.026	.068	.090	.067	.090	.019	.048	.016	.036
R-Square change		.023		.022		.026		.027		.035		.023
F-change		7.64**		6.28**		8.22**		6.56**		6.43**		7.40**

*Denotes significance at the 0.05 level; **Denotes significance at the .001 level.
[1]Adjusted model controls for age, gender; [2]Adjusted model controls for age, gender, informal dwelling, [3]Adjusted model controls for age, household size, >2 moves between homes; [4]Adjusted model controls for age, gender, household size, >2 moves between homes; [5]Adjusted model controls for age, gender, informal dwelling, migration, >2 moves between homes; [6]Adjusted model controls for age, gender, migration.

symptoms in both the unadjusted model and in the adjusted model which controlled for age, female gender, household size and number of moves. Orphanhood by causes other than AIDS was moderately associated ($p < .05$) in the unadjusted model, but the association was completely eliminated in the adjusted model.

Following DSM-IV criteria for PTSD, we used a clinical cut-off of 1 re-experiencing, 3 avoidance or numbing and 2 hyperarousal symptoms, and a conservative symptom threshold of 'most of the time' (Erwin, Newman, McMackin, Morrissey, & Kaloupek, 2000). In this sample, 50% of AIDS-orphaned children fulfilled criteria for PTSD, compared to 30% of other-orphaned children and 23% of non-orphans. This can be compared to PTSD prevalence rates of 2–13% in US populations (Cuffe & Addy, 1998; Lipschitz, Rasmusson, Anyan, Cromwell, & Southwick, 2000), and 22% in Cape Town community samples (Seedat et al., 2004). In a US study, 25% of AIDS-orphaned children had PTSD (Lester et al., 2006).

Delinquency and conduct problems. On the delinquency scale, orphanhood by AIDS, but not orphanhood by other causes, was significantly associated in both the unadjusted and the adjusted model (controlling for age, male gender, type of dwelling, migration and number of moves). On the conduct problems scale, orphanhood by AIDS, but not orphanhood by other causes, was significantly associated in both the unadjusted model and the adjusted model (controlling for age, male gender and migration).

For the CBCL delinquency scale, a clinical cut-off of 8 for boys and 7 for girls was found to identify scores ≥95th percentile in the US (Achenbach, 1991). Using this cut-off, 7.8% of AIDS-orphaned children, 5% of other-orphaned children, and 5.5% of non-orphans fell within the clinical range. For the SDQ Conduct Problems scale, an abnormal score of 5 identified children >90th percentile in a British normative study (Meltzer et al., 2000). This cut-off identified 5% of AIDS-orphaned children, 3% of other-orphaned children, and 4% of non-orphans. Thus AIDS-orphaned children showed slightly above-US levels for delinquency, but below-UK levels for conduct problems, with both proportions lower than might be expected in the context of high-violence and high-crime research areas.

Discussion

This study provides evidence indicating that AIDS-orphaned children had higher overall levels of psychological difficulties than both children orphaned by other causes and non-orphaned children, and that these associations remained significant when controlling for socio-demographic co-factors such as age and gender. This is among the first known

empirical data reporting on psychological health of AIDS orphans in South Africa compared to relevant controls. Internalising problems of depression, suicidality, and post-traumatic stress were all higher amongst AIDS-orphaned children, and proportions of AIDS-orphaned children within the clinical range for these scales were high compared to Western-established norms. The same was true for peer-relationship problems. Anxiety showed no group differences, and proportions within the clinical range were comparable to norms. For delinquency and conduct problems, AIDS-orphaned children showed higher scores than other groups. However, whilst delinquency showed slightly higher proportions within the clinical range than US norms, conduct problems showed lower than UK norms.

Findings of heightened internalising problems are consistent with other studies from sub-Saharan Africa (i.e., Atwine et al., 2005; Bhargava, 2005). Mixed findings for conduct problems also echo inconsistent findings in the literature (Atwine et al., 2005; Poulter, 1996). Only three previous studies, all uncontrolled, had explored post-traumatic stress amongst AIDS-orphaned children (Cluver & Gardner, 2006; Lester et al., 2006; Makaya et al., 2002), and the findings of this study suggest that PTSD is an important area for future research and intervention. Findings correspond to other studies of parentally bereaved children, which have found emotional and behavioural symptoms, but little evidence of anxiety disorders (Dowdney, 2000).

We hypothesised that a number of community-level risk factors might raise distress levels in all children, and reduce differences between AIDS-orphaned, other-orphaned and non-orphaned children. Firstly, research localities are marked by social instability and high crime levels. Community-based studies report high overall levels of depression and post-traumatic stress (Ensink et al., 1997). Secondly, within the control group of non-AIDS parental deaths, many were violent or gang-related deaths. Violent parental death increases affective distress (Black & Harris-Hendricks, 1992; Yule & Williams, 1990), and this was expected to raise distress levels amongst children orphaned by non-AIDS causes. Thirdly, this study included purposive sampling of street-children, child-headed and youth-headed households (both AIDS-orphaned and controls), all high-risk groups for psychological difficulties (Richter & Van der Walt, 1996; Thurman et al., 2006). We expected that all these factors would reduce group differences, and it is notable that the predictive value of AIDS orphanhood remained significant despite heightened risks for the whole sample.

Methodological limitations

Although all scales had been previously used with this population, no standardised psychological scales for this age group have been validated in South Africa. The use of clinical cut-off scores and comparison with Western norms can only provide tentative conclusions in a differing cultural context. Hence we focused primarily on continuous outcomes. Although cut-offs were not locally validated, they are useful in giving some indication of distress levels.

A limitation in this study is the unavailability of HIV serology prior to parental death, and poor reliability of local death certificates regarding HIV/AIDS. However, the 'verbal autopsy' method has been validated in South Africa, and we used a conservative threshold of 3+ AIDS-defining symptoms. It was also unknown whether parents of control group children may have been HIV-positive but asymptomatic, and with prevalence of up to 28% in study areas, many participants were likely to have AIDS-affected family members (Department of Health, 2005). However, illness amongst families of control children would tend to have the effect of reducing group differences, and yet differences were highly significant.

There were limitations in the research design, which was retrospective with respect to bereavement, and cross-sectional, limiting capacity to determine whether AIDS-orphaned children experienced distress prior to orphanhood. This further precluded measurement of potentially confounding variables concerning family and parental relationships prior to bereavement. A further limitation is unknown HIV-status of participants. Rates of testing in South Africa are extremely low (Kalichman & Simbayi, 2003). Perinatal infection was unlikely, as survival rates into adolescence (before the 2004 rollout of anti-retroviral medication) were minimal (Newell et al., 2004). Children who were AIDS-unwell or who disclosed HIV+ status were excluded. However, HIV-prevalence for Western Cape adolescents is estimated at 2–6%, implying that some participants may have been infected postnatally, with potential neurocognitive effects of even asymptomatic HIV.

Strengths of this study design and sampling should be noted. To our knowledge, this is the largest study in any country to explore psychological outcomes amongst children orphaned by AIDS. The study uses well-validated standardised scales with good psychometric properties, and is one of only 2 known studies (the other currently unpublished) to include control groups of both non-orphans and children orphaned by non-AIDS causes. The study also included groups frequently omitted from community samples: children living on the streets, child-headed and youth-headed households, and children not attending school.

Conclusions

Generalisability of findings to other areas and other groups affected by HIV/AIDS should be made

with caution. However, in this large sample of children from deprived urban areas in South Africa, orphanhood by AIDS (but not orphanhood by non-AIDS causes) was shown to be independently associated with depression, post-traumatic stress, peer relationship problems and suicidal ideation, and this association remained above and beyond the effects of socio-demographic factors. Evidence for increased externalising problems was also found. Use of clinical cut-offs (whilst not validated in a sub-Saharan context) show above-expected proportions of clinical-range scores for internalising problems and delinquency, and below-expected proportions for conduct problems. These findings suggest that AIDS-related parental bereavement can contribute to heightened levels of internalising and some externalising distress, beyond that even for other orphans.

This study contributes to our understanding of how children respond to parental death in a context of additional stressors associated with a debilitating and highly stigmatised illness. For example, PTSD levels were comparable to those found in children experiencing war (Thabet, Abed, & Vostanis, 2004) and sexual abuse (Rowan & Foy, 1993). This study also adds to emerging evidence suggesting that orphanhood, and particularly AIDS-orphanhood, may adversely affect a range of child outcomes, including education (Case, Paxson, & Ableidinger, 2002) and risk of contracting HIV (Operario, Pettifor, Cluver, MacPhail, & Rees, 2007). Initial fears of an unsocialised 'delinquent' generation of orphans (e.g., Barnett & Whiteside, 2002) have not been substantiated by these and other research findings. However, this study contributes to increasing international evidence that AIDS-orphaned children are at heightened risk of mental health problems, and may experience particularly debilitating symptoms of depression, post-traumatic stress and suicidal ideation. Causal mechanisms for this merit further exploration, and may include AIDS-related factors such as poverty, stigma or responsibilities of caring for an AIDS-ill parent. Implications of these findings may include the need for targeted services, based on evidence of risk and protective factors in spheres such as home, school and community. It is essential that further research and interventions are focused towards reducing distress amongst this already-vulnerable group.

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