

East African Medical Journal Vol. 89 No. 1 January 2012

FACTORS ASSOCIATED WITH INTERNALISING PROBLEMS IN ORPHANS AND THEIR CAREGIVERS IN RURAL MOZAMBIQUE

P. Libombo, MSc, World Health Organisation Country Office, Mozambique, H. Baker-Henningham, PhD. Epidemiology Research Unit, University of the West Indies, Kingston, Jamaica and S. Grantham-McGregor, M.D. Centre for International Health and Development, Institute of Child Health, London, United Kingdom

FACTORS ASSOCIATED WITH INTERNALISING PROBLEMS IN ORPHANS AND THEIR CAREGIVERS IN RURAL MOZAMBIQUE

P. LIBOMBO, H. BAKER-HENNINGHAM and S. GRANTHAM-McGREGOR

ABSTRACT

Objectives: To compare internalising problems reported by orphans and their caregivers with that of non-orphans and their caregivers.

Design: Case control study.

Setting: Cahora-Bassa District of Tete, Mozambique

Subjects: Seventy-six maternal or double orphans (aged 10-14 years) and their caregivers were compared with seventy-four non-orphans and their caregivers living in the same neighbourhood.

Main outcome measures: Children were interviewed with a semi-structured questionnaire concerning their internalising problems, family structure, school attendance, daily experiences and perceived problems. The children's primary caregivers were also interviewed concerning their depressive symptoms, available social support, socio-economic conditions and perceived problems.

Results: Orphans lived in poorer households than non-orphans and reported more internalising symptoms and more economic and psychosocial disadvantages. Orphan caregivers were more depressed and had less social support than non-orphan caregivers. Child internalising symptoms were independently associated with bullying ($B=8.04$, 95% CI:0.24, 15.85), perceived undeserved punishment ($B=11.98$, 95% CI:5.98, 17.98) and orphan status ($B=33.36$, 95% CI:26.67, 40.05). The effect of punishment was stronger for orphans than non-orphans. Frequency of hunger affected internalising symptoms only in orphans. Caregiver depression was independently associated with low social support ($B=-0.35$, 95% CI:-0.51, -0.18), few possessions ($B=-2.10$, 95% CI:-3.42, -0.79) and orphan status ($B=4.54$, 95% CI: 3.30, 5.78) and possessions had a stronger effect in orphan caregivers. Quality of housing caused depression only in caregivers of orphans.

Conclusion: Both orphans and their caregivers were more depressed than the non-orphans and their caregivers. They were exposed to more economic and psychosocial disadvantages and were more vulnerable to risks.

INTRODUCTION

In Sub-Saharan Africa nearly twelve million children under eighteen years of age have lost one or both parents to HIV infection and this figure was set to rise to 18.4 million by the year 2010 (1). In Mozambique, it is estimated that there are 1.5 million orphans (approximately 15% of the total child population) and approximately 34% of these orphans have been orphaned due to AIDS (2). For maternal and double orphans the percentage orphaned due to AIDS is usually higher (41 and 63% respectively) (1).

Many studies of orphans in Sub-Saharan Africa have shown that they often suffer educational, health and economic disadvantages compared with non-orphaned children (3). Fewer studies have examined

the psychosocial functioning of orphans. Eight peer reviewed case-control studies comparing the mental health of orphans versus non-orphans in Sub-Saharan Africa were identified (4-11) and six found to have had significantly higher psychological distress among orphans (4,5,8-11). Three of the above studies examined what factors were independently associated with children's mental health over and above being an orphan. Increased availability of basic goods such as food and clothes (8), living in a household headed by a woman and/or with a relative (9), attending school (8, 9), a supportive relationship with their caregiver (9) and rewards for good behaviour (8) predicted less psychological distress, whilst poverty (9), and experiences of stigma (12) predicted higher levels of children's psychological distress. There is

some evidence that orphaned children may be more susceptible to stressors than non-orphaned children (7,13). The role of the caregiver of orphans is critical and yet there is limited empirical data on their mental health (14).

The aims of this study were to compare the psychological distress of orphans and their caregivers with that of non-orphans and their caregivers in rural Mozambique and identify associated factors

MATERIALS AND METHODS

Study site: The study was undertaken in the Cabora-Bassa district of Tete, a central province of Mozambique, one of the poorest countries globally. It is a rural area, close to a main transport route for Zimbabwe, Malawi and Zambia and has a high prevalence of HIV infection/AIDS. The Cabora District is divided into four administrative areas. We chose the Chitina administrative area and the four nearest villages in the administrative area of Songo. There was considerable stigma attached to being an orphan, therefore, we selected this location because one author had good relations with local village leaders and voluntary workers and we felt confident that we could identify the orphans discreetly.

Study populations: There were two groups, orphans and non-orphans, aged ten to fourteen years, and their caregivers. Orphaned children, whose mothers or both parents were dead, were identified with the help of local leaders and volunteers. Only maternal and double orphans were recruited as these children are more likely to have lost their parent(s) due to AIDS than paternal orphans (2). Although we were particularly interested in children orphaned due to AIDS, we did not determine the cause of parental death for fear of adding to stigma against HIV infection. The first seventy-six orphans identified and seventy-six children, who lived nearest to each orphan identified and whose parents were both alive, were enrolled. When there was more than one non-orphan in the age bracket, the child closest in age to the target child was selected. Seventy-five children in each group were sufficient to detect a difference of a half a standard deviation between the groups in child and caregiver internalising symptoms with 85% power at the 5% level of significance.

Measurements: Both the child and their caregivers were interviewed privately at home using semi-structured questionnaires.

Child questionnaire: Children were interviewed using a 45 item questionnaire including a twenty-item internalising problem scale. Information was sought on personal details, family structure, schooling, and

possible environmental stressors and protective factors. The following topics were asked about; participation in paid work, hunger at bedtime (as an indicator of serious hunger), bullying, punishment which they perceived as undeserved, the presence of an adult whom they resented at home and presence of a trusted adult at home. They were also asked about the amount of time they had for recreation and what clothes, shoes and exercise books they owned. One open question explored other issues of concern to the child. The internalising problem scale measured the frequency of depression and anxiety symptoms. It was modified from one designed for a study with orphans in Tanzania (8). The scale included two or more questions on the following: mood, somatic symptoms including sleep problems, pessimism, sense of failure, relationships and anxiety. All items were translated into the local language and put into words used by the children with each item inquiring about how many days in the previous week they had felt a certain way. Responses were scored on an 8-point rating (0-7) depending on how many days they felt a particular attribute. All responses were then summed to produce a rating scale of internalising problems with high scores indicating the presence of more problems. The Cronbach's alpha for internal reliability was 0.92 in this sample.

Caregivers' questionnaire: Caregivers were given a 31-item questionnaire with questions on personal characteristics, socio-economic status, affective state and availability of social support as well as an open question on their main concerns. Seven questions, modified from the Centre of Epidemiological Studies Depression Scale (15) were used and sought information on the number of days over the past week the subjects felt sad, not cared for, life a failure, hopeful about the future, cried or felt like crying, could not get going and had not slept properly. The responses were rated on a four point scale according to the frequency of symptoms. All the responses were summed to make a total depression index. The Cronbach's alpha for internal reliability was 0.88. Seven questions on social support were taken from MOS Social Support Survey (16). The index included two questions on tangible support, three on emotional/informational support, two on affectionate support and one on positive social interaction. The questions were rated using a four-point Likert scale (ranging from none of the time to all of the time). The Cronbach's alpha for internal reliability was 0.72.

Data analysis: The variables were assessed for normality and transformed when necessary. Child internalising scores were transformed using a square root transformation. The transformed variable was used in the regression analyses and the analyses were repeated using the raw scores. The results

were unchanged and for simplicity of interpretation the analyses using the raw score are presented. A household possession scale was calculated, giving a score of one for each of six household possessions (bed, chairs, radio, table, bike, stove). A child possession score was calculated by summing ratings of clothing and shoes. A housing score was developed through factor analysis of ratings of the quality of the floor, walls and windows.

Multiple regression analyses: We used multiple regressions to identify independent predictors for child's internalising problems. Because of the large number of variables, we first looked at economic variables then psychological ones in separate regressions. Child age was offered in both regressions. The economic or psychological variables which were significant in bivariate correlations with the internalising scores were offered in the first step and orphan status and interaction terms with orphan were offered in the second step. To select interaction terms we correlated internalising problems with each independent variable in the groups separately, and where the correlation coefficients were significantly different between the groups we computed interaction terms between orphan and these variables. In a final regression we offered all the significant variables from the previous two regressions using a similar model. Variables that were no longer significant at a significance level of $p < 0.1$ at the end of the second

step were removed to form the most parsimonious model. However, when interaction terms were significant but the main effect variable was not significant the variable was retained in the model. In the regression of guardian depression we took a similar approach but offered all psychological and economic variables together.

RESULTS

Family structure and caregiver characteristics: Thirty six (47%) orphans had lost their mothers and forty (53%) had lost both parents. Thirty (40%) of orphans lived with their grandmothers, twenty-five (33%) with other adult relatives and seventeen (22%) with older siblings. Two orphan households were headed by children (caregivers < 18 years). Only one maternal orphan was living with his father. Most (89%) parent deaths occurred more than one year previously. Only seven (9.5%) non-orphans were not living with a biological parent. All but one household with orphans had at least one other orphan child. More caregivers of orphans were over fifty-five years old and three caregivers (all in the orphan group) were less than nineteen years. Other household characteristics are shown in Table 1. Most families were extremely poor but orphans generally came from poorer homes than non-orphans. Caregivers of orphans were significantly more depressed, and had significantly less social support, than non-orphan caregivers.

Table 1
Caregiver and socio-economic characteristics of orphan and non-orphan households

	Orphans (n=76)		Non-orphans (n=74)		P-value
	No.	(%)	No.	(%)	
Caregiver and family characteristics					
Age >55 years	36	47	11	15	<0.001
Not living with one or more younger siblings	12	16	5	7	0.007
Not living with one or more older siblings	38	50	30	41	0.009
Occupation of head of household: peasant or never worked	67	88	51	69	0.004
Number of children in household (Mean (SD))	4.4	2.6	4.6	1.9	0.52
Caregiver Depression Index (Mean (SD))	17.6	5.0	11.3	3.3	<0.001
Caregiver Social Support Index (Mean (SD))	19.6	3.9	22.8	3.3	<.001
Socio-economic Characteristics					
Owns one or more household possessions*	35	46	54	73	0.001
Owns own home	64	84	72	97	0.006
Housing quality (Mean(SD))**	-0.13	1.0	0.14	0.99	0.1

*Sum of presence of six household possessions (e.g. chair, table, bed, radio, bike, stove)

** Factor score of ratings of floor, wall and windows

Child characteristics: There were more boys in the orphan group (Table 2) but both groups were similar in age mean (SD) being 12.1 (1.5) years. Orphans had fewer possessions and reported that they rarely had the same amount of play time as other children. More orphans than non-orphans felt resentful towards an adult in the home and did not have an adult who cared about them whom they could trust. The orphans reported being bullied outside the home more often than non-orphans. Many children in both groups went to bed hungry at least once a week (48% non-orphans and 64% orphans), however, orphans went

to bed hungry more often. There was no difference in the number reporting that they received undeserved punishment. Over half the children from each group reported doing some work outside the home for money; however orphans worked more often. Most children had enrolled in school. However, orphans were more likely than non-orphans to have enrolled late and were less likely to attend school regularly, with 37% not currently in school. Orphans had markedly higher internalising problem scores and more orphans than non-orphans had contemplated suicide in the past year.

Table 2
Characteristics of orphaned and non-orphaned children

	Orphans (n=76)		Non-orphans (n=74)		P-value
	No.	(%)	No.	(%)	
Sex (number of boys)	43	57	30	41	0.049
Rarely have time to play	11	14	3	4	0.03
Resented adult present at home	26	35	13	18	0.02
No trusted adult at home	22	29	5	7	<0.001
Reported being Bullied	44	58	24	32	0.002
Hunger at bedtime for two or more days in last week	43	57	19	26	<0.001
Reported undeserved punishment	33	43	33	45	0.89
Worked outside the home	46	61	43	58	ns
Worked outside the home 6 or 7 days/week	12	16	2	3	0.02
Enrolled in school before 8 years	29	38	48	65	<0.001
Changed school in last 2 years	9	12	14	19	0.31
School attendance					
Everyday	25	33	67	91	<0.001
Not everyday	23	30	3	4	
Currently not at school	28	37	4	5	
Suicidal ideation	15	20	6	8	0.04
Child possessions ^a	1.3	1.1	2.4	1.0	<0.001
Internalising problems ^b	64	6-107	22	0-66	<0.001

^achild possession = sum of ratings of clothes (0=0-3, 1=4-9, 2=10-33) and shoes (0=0, 1=1, >2=2). Values are mean (SD), ^bmedian (range)

Table 3
Expressed concerns of orphans and non-orphans and their caregivers

	Orphans (n=76)		Non-orphans (n=74)		P-value
	No.	(%)	No.	(%)	
Children's expressed concerns					
Hunger	50	66	25	34	<0.001
Lack of love and care	18	24	1	1.4	<0.001
Rejection by peers	17	22	1	1.4	<0.001
School advancement	1	1.3	14	19	<0.001
Other basic needs	25	33	26	35	0.77
None	9	12	28	38	<0.001
Caregivers' expressed concerns					
Economic difficulties	53	70	31	42	0.001
Lack of food	14	18	8	11	0.19
Inability to pay school fees	30	40	4	5	< 0.001
Uncertainty about school advancement	43	57	10	14	<0.001
Child behaviour	10	13	1	1	0.006
Grief	14	18	4	5	0.014

Volunteered problems of children and their caregivers: Orphans more frequently mentioned hunger, lack of love or care, and rejection by peers as a particular concern. In contrast, non-orphans were more likely to report difficulties with school lessons or not having any worries (Table 3). Caregivers of orphans mentioned economic difficulties, inability to pay school fees and concern about child's schooling and behaviour more often than caregivers of non-orphans. They also more often mentioned grief for loss of a family member.

Analyses of factors associated with child internalising symptoms: The relationship between internalising problems and other socio-economic or child experience variables were examined with Pearson Product or Spearman's correlations (Table 4).

Economic regression: In the economic regression we offered household possessions, quality of housing, occupation of head of household, regular school attendance, child possessions and going to bed hungry. Interaction terms between orphan and hunger and orphan and child possessions were also offered with orphan status in a second step. We excluded variables, which were highly related to orphan status such as the relationship of caregiver and having an older caregiver. Independent economic predictors of

child internalising problem were child possessions, bedtime hunger, and orphan status and there was a significant interaction between hunger and orphan status with hunger having a greater effect in orphans (Table 5).

Psychosocial regression: In the regression with psychosocial variables, time for play, bullying, undeserved punishment, presence of a trustworthy adult and a resented adult and caregiver depression and social support were offered and interaction terms between punishment and orphan and resented adult and orphan were offered with orphan status in a second step. Independent psycho-social predictors of child internalising symptoms were bullying, undeserved punishment, time for play and orphan status and there was a significant interaction between punishment and orphan with punishment having a greater effect in orphans (Table 5).

Combined socio-economic and psycho-social regression: The independent predictors of internalising problems with economic and psycho-social variables combined were bullying, undeserved punishment, orphan status and the interaction terms between hunger and orphan and punishment and orphan, with orphans being more significantly affected than non-orphans (Table 5).

Table 4
Bivariate analyses of factors associated with child and caregiver internalising problems1

	Child internalising problems	Caregiver internalising problems
Perceived undeserved punishment	0.25 (p=0.002)	
Hunger at bedtime	0.38 (p<0.0001)	0.34 (p<0.0001)
Bullying	0.35 (p<0.0001)	
Less time to play	0.29 (p<0.0001)	
Resented adult at home	0.33 (p<0.0001)	
Child age	0.21 (p=0.01)	
Child possessions	-0.47 (p<0.0001)	-0.36 (p<0.0001)
Absence of trusted adult at home	-0.35 (p<0.0001)	
Regular school attendance	-0.56 (p<0.0001)	-0.44 (p<0.0001)
Occupation of head of household	-0.29 (p<0.0001)	-0.27 (p<0.0001)
Quality of housing	-0.21 (p=0.01)	-0.29 (p<0.0001)
Caregiver depression	0.50 (p<0.0001)	-
Caregiver social support	-0.34 (p<0.0001)	-0.54 (p<0.0001)
Household possessions		-0.42 (p<0.0001)
Caregiver age		0.20 (p=0.02)

Values are Pearson's or Spearman's correlation coefficients. Significant correlations only are shown.

Table 5
Multiple regression analyses on children's internalising problems

Independent variable	Regression coefficient	95% confidence interval
^a Economic Factors		
Child possessions	-6.09†	-13.15, 0.97
Bedtime hunger	8.49*	1.86, 15.12
Orphan status	32.73***	25.81, 39.65
Orphan x hunger	23.32**	10.20, 36.44
^b Psychosocial Factors		
Rarely have time to play	9.62†	-0.88, 20.22
Bullying	7.97*	0.05, 15.90
Undeserved punishment	12.99***	7.02, 18.95
Orphan status	33.75***	27.18, 40.31
Orphan x punishment	19.45**	7.78, 31.13
^c Combined economic and psychosocial factors		
Bullying	8.04*	0.24, 15.85
Bedtime hunger	4.45	-1.90, 10.78
Child punished	11.98***	5.98, 17.98
Orphan	33.36***	26.67, 40.05
Orphan x hunger	14.58*	1.90, 27.25
Orphan x punishment	16.63**	4.74, 28.52

Analysis of factors associated with caregiver depression: Variables significantly correlated with caregiver depression are shown in Table 4 and these variables were offered with interaction terms orphan X household possessions and orphan x housing and orphan status offered in a second step. Social support,

household possessions, quality of housing, orphan status and the interaction terms between orphan status and household possessions and orphan status and quality of housing were significant with few possessions and poor housing having a greater effect on depression in caregivers of orphans (Table 6).

Table 6
Multiple regression analysis on caregivers' depression

Dependent variable	Independent variable	Regression coefficient	95% confidence interval
Caregiver depression	Social support	-0.35***	-0.51, -0.18
	Household possessions	-2.10**	-3.42, -0.79
	Quality of housing	-0.28	-0.91, 0.35
	Orphan status	4.54***	3.30, 5.78
	Orphan x household possessions	-4.46**	-7.14, -1.78
	Orphan x quality of housing	-1.37*	-2.62, -0.12

Factors associated with internalising symptoms in the orphan group only: Finally, we examined relationships with internalising problems in orphan groups alone to determine whether factors that occurred mainly in orphans were associated with child and caregiver internalising problems. Bivariate correlations showed no significant association between child internalising problems and time since parental death, number of caregivers in the past two years, separation from siblings, regular school attendance, being a maternal or double orphan and whether other members of the child's family had died. There were also no significant correlations between caregiver depression and caregiver age, other deaths in the family or number of orphans in the household. Multiple regression of child internalising scores showed that independent predictors were undeserved punishment B (95%CI) = 19.95 (9.62, 30.28), bedtime hunger B (95%CI) = 11.45 (1.16, 21.75) and bullying (95%CI) = 0.9.21 (-0.44, 18.86) and explained 33% of the variance in child internalising scores. Multiple regression of caregiver depression showed that social support B (95%CI) = -0.41 (-0.64, -0.17) and number of household possessions B (95%CI) = -5.15 (-6.96, -3.33) explained 47% of the variance.

DISCUSSION

Orphans in rural Mozambique had markedly more internalising problems than non-orphans. This was not an acute response to parental loss as scores were not related to time since their death. Caregivers of orphans also reported more depressive symptoms than caregivers of non-orphans.

Orphans not only came from poorer households but they had many other disadvantages compared with non-orphans. They worked more frequently, played less, were more likely to be bullied, had an adult at home they resented and went to bed hungry. They were also less likely to have a trusted adult at home and attend school. Punishment that children perceived as undeserved and bullying independently predicted children's internalising problems. It is likely that orphans were exposed to stigma, not only did they report more bullying but they also identified being rejected by peers as one of their main concerns. It may be that children whose parents died from AIDS were the ones affected. Cluver and colleagues (12) showed that stigma contributed to orphans' poor mental health.

Importantly, certain stressors including perceived undeserved punishment and frequent hunger had a greater effect on internalising problems in orphans than in non-orphans. Multiple risks can have additive or interactive effects on children's development (17). Two recent studies have explored interactions between orphan status and other influences on psycho-social function. Fotso

and colleagues (7) found that the effects varied by neighborhood but not by poverty whilst Cluver and Orkin (13) reported differential effects by child reports of being bullied.

Caregivers of orphans were usually relatives and had less social support and fewer household possessions than non-orphan caregivers. Social support and household possessions independently predicted their depression. Analogous to the children's situation, caregiver's depression was more strongly affected by having few possessions and poor housing than was depression in caregivers of non-orphans.

The finding of poor mental health in orphans concurs with most other studies conducted in Sub-Saharan Africa. The mental health of caregivers was also poor and there is less information on this. It is frequently recommended that interventions should focus on the entire community rather than orphans alone because most of the children are poor (1). While most children were poor in this study, the orphan households were poorer. Furthermore, it is important to recognise that even if the risk factors were similar, psycho-social function of both orphans and their caregivers was more vulnerable to risk factors than that of other children and caregivers.

The study has limitations. The measure of internalising problems was not standardised for Mozambique and we were unable to determine its clinical significance. However, the measures had good internal reliability and correlated with other measures in a theoretically sensible way which promotes confidence in their validity. We did not match the groups by sex and there were significantly more boys in the orphan group. However, there was no difference between the sexes on the outcome variable of child internalising problems so this is unlikely to have biased the results. A further limitation is that the percentage of children orphaned by AIDS is unknown; therefore we may have underestimated their problem because these children often have worse psychological functioning than other orphans (5). However, most community programmes designed to alleviate the difficulties faced by orphans target all orphans regardless of cause of parental death (3) and hence the findings have important policy and practice implications. None of the children had a history of frequent illness and none were acutely ill at the time of the study so it is unlikely that any of them were HIV positive.

The implications of the findings for the orphans' future are of great concern. Not only are their increased depressive symptoms likely to persist into adulthood (18) but the reduced schooling will affect their employment opportunities (9). Following this study school fees were abolished in Mozambican primary schools so that attendance should improve. Most countries now acknowledge the importance of providing education.

The situation of orphans may vary by country but the findings should be relevant to other rural areas in Mozambique, and may be relevant to other rural areas in similarly poor Sub-Saharan African countries.

There is an obvious need to increase economic support for high risk families with orphans and this should benefit their psycho-social health as well as providing for basic needs (19). However, social and emotional support is also needed both for guardians and children. The caregivers were depressed and had little social support and many orphans felt rejected by peers, were bullied and often lacked access to a trusted adult. Home visiting programmes such as the ones piloted in Kenya (20) could be developed. Community and school education programmes could also help reduce stigma.

In conclusion, orphans and their caregivers in rural Mozambique had many disadvantages and reported higher levels of internalising problems than non-orphans and their caregivers. Economic and psycho-social stressors contributed to their internalising problems and they were more susceptible to external stressors than non-orphans and their caregivers.

ACKNOWLEDGEMENTS

All participants either signed a consent form or if illiterate gave verbal consent. There was no incentive for participation. The Tete Provincial Directorates of Health, Education and Women and Social Affairs granted permission to conduct the study. The Ethical Committee of the Centre of International Child Health (University College of London) approved the protocol.

REFERENCES

1. Children on the Brink. A joint report of new orphan estimates and a framework for action. Washington DC: UNAIDS, UNICEF, USAID, 2004.
2. UNICEF. Africa's orphaned and vulnerable generations. Children affected by AIDS. New York: UNICEF, 2006.
3. Foster, G. and Williamson, J. A review of current literature on the impact of HIV/AIDS on children in Sub-Saharan Africa. *AIDS*. 2000; **14**: S275-S284.
4. Atwine, B., Cantor-Graae, E. and Banjunirwe, F. Psychological distress among AIDS orphans in rural Uganda. *Soc. Sci. Med.* 2000; **61**: 555-564.
5. Cluver, L., Gardner, F. and Operario, D. Psychological distress among AIDS orphaned children in urban South Africa. *J. Child Psychol. Psychiatry.* 2007; **48**, 755-763.
6. Cluver, L. and Gardner, F. The psychological well being of children orphaned by AIDS in Cape Town, South Africa. *Ann. Gen. Psychiatry.* 2006; **5**: 8-15.
7. Fotso, J., Holding, P. and Ezeh, A. Factors conveying resilience in the context of urban poverty: The case of orphans and vulnerable children in the informal settlements of Nairobi, Kenya. *Child Adolesc. Ment. Health.* 2009; **14**: 175-182.
8. Makame, V., Ani, C. and Grantham-McGregor, S. Psychological well being of orphans in Dar El Salaam, Tanzania. *Acta. Paediatr.* 2002; **91**: 459-465.
9. Nyamukapa, C., Gregson, S., Lopman, B., et al. HIV-associated orphan hood and children's psychosocial distress: theoretical framework tested with data from Zimbabwe. *Am. J. Public Health.* 2008; **98**: 133-40.
10. Ruiz-Casares, M., Brett, T. and Rousseau, C. (2009) The association of single and double orphan hood with symptoms of depression among children and adolescents in Namibia. *Eur. Child Adolesc. Psychiatry.* 2009; **18**: 369-376.
11. Sengendo, J. and Nambi, J. The psychological effect of orphan hood: a study of orphans in Rakai district. *Health Transit. Rev.* 1997; **7**: 105-124.
12. Cluver, L., Gardner, F. and Operario, D. Effects of stigma on the mental health of adolescents orphaned by AIDS. *J. Adolesc. Health.* 2008; **42**: 410-417.
13. Cluver, L. and Orkin, M. Cumulative risk and AIDS-orphan hood: Interactions of stigma, bullying and poverty on child mental health in South Africa. *Soc. Sci. Med.* 2009; **69**: 1186-1193.
14. Kuo, C. and Operario, D. Caring for AIDS-orphaned children: A systematic review of studies on caregivers. *Vulnerable Child. Youth Stud.* 2009; **4**: 1-12.
15. Radloff, L. The CES-D Scale: A self-report depression scale for research in the general population. *Appl. Psychol. Meas.* 1997; **1**: 385-401.
16. Sherbourne, C. and Stewart, A. The MOS Social Support Survey. *Soc. Sci. Med.* 1991; **3**: 705-714.
17. Wachs, T. Necessary but not sufficient. The respective roles of single and multiple influences on individual development. Washington DC: American Psychological Society, 2000.
18. Brent, D. and Weersing, Y. R. Depressive disorders in childhood and adolescence. In: M. Rutter, D. Bishop, D. Pine, S. Scott, J. Stevenson, E. Taylor and A. Thapar (eds.). Rutter's child and adolescent psychiatry, fifth edition. Oxford, UK: Blackwell Publishing. 2008, pp 587-612.
19. Phiri, S. and Webb, D. Programme and policy responses to the impact of HIV and AIDS on children. In: GA Cornia (ed.). Florence, Italy: UNICEF. 2002, pp 317-342.
20. Lusk, D., Mararu, J., O'Gara, C. and Dastur, L. Community care for orphans and AIDS affected children. Kakamega, Western Province, Kenya: The Academy for Educational Development/Speak for the Child, 2003.