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Depression, Delinquency and Peer Problems among Children and Adolescents Affected by HIV/AIDS in Ghana: The Mediating Role of Child Labour

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Abstract

Background: Although in the developing countries, child labour is still on the increase despite several efforts to end it, little is known about rates of child labour among orphaned and vulnerable children (OVC). The paper explores levels of child labour and its relationship with psychological wellbeing among OVC in Ghana.

Method: This study employed cross-sectional, quantitative survey that involved 291 children aged 10-18 years in the Lower Manya Krobo District of Ghana and examined their psychological wellbeing and child labour.

Results: The findings of the present study indicate that, compared with children who were not experiencing HIV/AIDS in their families, children orphaned by AIDS and children living with HIV/AIDS-affected caregivers had higher levels of psychological symptoms. These associations were mostly unattenuated when relevant socio-demographic factors. Overall, children affected by HIV/AIDS (OVC) reported engaging in significantly more domestic chores and care responsibilities than comparison children and that child labour strongly mediates the association between orphanhood status and psychological problems.

Conclusion: The findings call for the development of comprehensive intervention programmes that address both factors specific to HIV/AIDS and contextual variables such as child labour.

Keywords: Child labour; HIV/AIDS affected children; Psychological wellbeing; Mental health

Introduction

Globally, child labour is still on the increase despite several efforts to end it. Child labour is seen as work that deprives children of their childhood, their potential and their dignity. Because child labour may have negative effects on the child's health, educational achievement, and quality of life, it has become an issue of international concern. Whilst the relationship between child labour and educational achievement and general health seems pretty established, the relationship between child labour and psychological functioning is highly contested [1,2]. Engagement of children in domestic chores is a common phenomenon in Africa and has been suggested that moderate involvement of children in household duties may not harm their psychological functioning [3] but rather promote social responsibility and a sense of inclusion in children [4]. However, Bevegnu et al. [5] pointed out that child labour increase behavioral disorders almost three-fold compared to controls. In Jordanheightened substance use was noted among child laborers compared to controls [6] whilst in Kenya 90% of children engaged in paid labour suffer severe emotional distress including depression, withdrawal and low self-esteem [7]. It has been noted that most children upon parental illness and/orsubsequent death assume expanded household chores and adult roles that could bedistressing for them [8].What is not clear is whether children affected by HIV/AIDS are engaging more in work/labour than other children and whether this could increase their vulnerabilities to poor mental health [2]. The presence of HIV/AIDS in a household means that parental roles and responsibilities toward children will be diminishedas parents fights the harsh impacts of the disease on themselves. A study in Kenya found that orphanhood increased school absenteeism by 52% in order to engage in farming, household chores, caring for siblings as well as nursing ill adults [9].

Lyon [10] foresaw the impact HIV/AIDS would have on future children when he suggested that children are now becoming caregivers instead of receiving care, guidance and support. The children are forced as a matter of necessity to take up adult responsibilities to ensure the survival of the household. Salaam [11] noted that children affected by HIV/AIDS assume adult domestic roles including caring for their siblings and other adult relatives who are sick. It was suggested that taking on parental roles and caring for younger siblings are typical responsibilities of orphans and children made vulnerable by HIV/AIDS [9]. As children act as adults in the absence of adult care-giving, they are eluded by a much needed physical and emotional protection as well as support and guidance: vulnerabilities which could make their childhood lives highly traumatizing and stressful [12]. Caring for sick and dying parents is one of the most traumatizing anddevastating events for children [13,14], and Nyamuk apaand colleagues [15] argued that it exacerbates symptoms of psychological disorders. The World Health Organisation [16] noted that with the consequence of reduced parental care due toHIV/AIDS infection, children now work long hours supervising young siblings, doing tedious household chores and engaging in income generating jobs. In an earlier study, it was suggested that children affected by HIV/AIDS worked more than other children [17].

Budlender and Bosch [18] suggested that engagement in long hours of domestic work are detrimental to children's physical and psychological wellbeing, whiles Makhoul et al. [19] observe that they interfere with children's development. Gaffeo [20] suggested that some children even have to quit schooling to assume roles as parents, carers,

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nurses and economic providers. Although child labour and HIV/AIDS are not identical, both have been consistentlyassociated with poverty [21], internal migration, abuse and exploitation [22], lack of good educational opportunities [23], and development of high-risk behaviours and psychological problems [2,24-27]. This suggests that child labour might be an important risk factor formental health problems among orphans in general and children affected by HIV/AIDS.HIV/AIDS and its associated poverty are also suggested to heighten the trend of child labour, both paid and unpaid [28]. Child labour will continue to rise because efforts to reduce it are failing due to the weak legal and educational policies aswell as the existing socioeconomic context (poverty, migration etc) within which child labour occurs [23,29,30]. Bunnak [31] also suggested that child labour persists because the harmful effect it has on children has been down played. Despite the prevalent and increasing nature of child labour in Africa, the relationship between mental health outcomes and child labour among children affected by AIDS has not previously been explored in this context [2]. The present study answered two key questions: Do children orphaned by AIDS engage in more child labour compared to other children? Does child labour mediate differences in mental health problems among OVC?

Method

The details of the study's methodology including the study settings, participants and sampling have been described elsewhere [32]. Briefly, this study was given ethical approval by the institutional Research Ethics Review Boards of the University of Glasgow and the Research Unit of the Ghana Health Service. The present study was designed and conducted as a community based cross-sectional survey design utilizing questionnaires. The study was conducted in the rural and urban areas of Lower Manya Krobo District of Ghana. The district, found in the Eastern Region of the country is situated 88 km north-east of Accra (national capital). Currently, it is estimated that the district has 154,301 people, of which approximately 79,047 are females [33]. The study area, the Lower Manya Krobo District, was purposively chosen because within Ghana it has the highest HIV/AIDS prevalence rate of 9.2% than any district since the early 90s. The majority occupants of the district, the krobos, have certain distinct cultural practices such as the traditional practice of yosedofiemi - whereby a man must present certain items, including drinks and money, and he must also publicly perform a traditional dance following the death of either the mother-in-law or the father in-law and dipo - a highly celebrated rites of passage into adulthood for girls. Based on a study conducted in 2008, the total number of orphaned and vulnerable children (OVC) was estimated at 6500 [33]. An orphan in the present study refers to a child between 10 and 17 years who is be reft of at least one parent to death. OVC is used to identify a child who is 17 years or below and has either lost at least a parent or is living with HIV/AIDS-infected parents whilst AIDS-orphans is defined as children who have lost at least one parent to AIDS. The latter term is used interchangeably as children orphaned by AIDS or AIDS-orphaned children.

Study procedures

There was a pilot preceding the present study to validate (examine the appropriateness and comprehensibility of) the study instruments in the research setting. The results of the pilot study indicate appropriate understanding among the Ghanaian children. The surveys worked with four categories of households: 'AIDS orphaned households' (those that contained orphans only), 'other orphans households' (those containing orphans from causes other than AIDS), "infected parents households" (those containing a caregiver infected with HIV/AIDS) and 'non-orphan households' (those containing no orphaned children). 'Caregiver' was defined as the adult in the household who primarily cared for the child participant and was not necessarily a biological parent.

Written informed assents and consents were obtained from the participants and caregivers, respectively. Upon assenting/consenting, participants completed the survey questionnaires separately that followed the steps described by Thomas [34]. The entire assessment inventory took about 30 to 45 minutes to complete.

To handle issues of multiple eligible OVC if at least one child in the house was an AIDS orphaned child, then the child was classified as an AIDS-orphaned child and recruited as such. To identify whether children lost one or both parents from AIDS, a verbal autopsy (VA) was used [35]. The present study used the verbal autopsy method to assess the cause of parental death because of the difficulty of obtaining accurate death certificates and because caregivers were often unaware of or did not wish to disclose the parental cause of death. The VA method uses reports on eight signs and symptoms of HIV to verify cause of death. The study used a conservative endorsement of at least 6 HIV/AIDS-defining symptoms compared to the 3 that were often used in earlier investigations [2]. The original study had a sensitivity of 66% and specificity of 76% of predicting death due to AIDS; sensitivity and specificity did not vary significantly according to gender, time of death, and whether the respondent was a primary caregiver, family member, or other relation to the deceased [36,37]. Verbal autopsy validation in Ghana also compared assigned causes of death from verbal autopsy to medically certified causes of death [36] and was found to correctly identify 78% of deaths. Verbal autopsy has since been used in several studies with high predictive powers [38-40]. The World Health Organisation and Health Metrics Network have approved it for use in developing countries and asserted that it is an essential means of ascertaining AIDS deaths in the absence of HIV/AIDS sero-status record of deceased persons [41]. Lopman and colleagues state clearly the value of verbal autopsy: it is the only option to identify cause of death in widespread HIV/AIDS epidemic settings [35,41].

Measures

Child labour: This variable was measured using the Survey of Activities of Young People (SAYP) developed by the Statistics South Africa Services to collect data on work-related activities among children. It provided a quantitative picture and an indication of the different categories of working children who were most in need or who are at the greatest risk of exploitation and employment [18]. In this regard, the SAYP was used in this study to measure and distinguish common child work roles to more critical at risk activities of being absence at school to undertake household responsibilities or engage in begging, selling and other related child labour duties.

Delinquency and risk behaviours: The externalising subscale of the Social and Health Assessment (SAHA) scale [42] was used to measure children's engagement in antisocial behaviour, violence, substance abuse and potentially criminality activities. Children's engagement in these activities was measured by yes or no items. Participants were then asked to indicate how often they had engaged in these behaviours. The responses were on a 6-point Likert scale rating ranging from never to more than 6 times. The scale was found to have a Cronbach's alpha of 0.65. In a recent study in South Africa, 0.84 Cronbach's coefficient alpha was reported [43].

Depression and peer problems: Children's depression and peer

problems were measured using subscales of the well validated Strengths and Difficulties Questionnaire (SDQ). The SDQ is an internationally recognized measure, translated into 62 languages and used already in 40 countries [44]) to assess child emotional and behavioural difficulties or symptoms of maladjustment. The SDQ asks 25 items rated on a three-point likert scale divided between 5 sections: emotional symptoms, conduct problems, hyperactivity/inattention, peer problems and prosocial behaviours. Each of these sections of the SDQ has 5 items with rates that range from "Not True, Somewhat True, and Certainly True". Both a self-completion version and an informant rated version (for completion by caregivers) were utilized. For each of the 5 sections the scores could range from 0 to 10. The summation of the emotional problems, conduct problems, hyperactivity/inattention and peer problems were then computed to yield the total difficulties per participant which could range from 0 to 40. A higher score indicates greater difficulties.

Demographics: A number of socio-demographic factors such as age, gender, family size, number of other minors living at home, number of changes in residence and age at which children were orphaned (where applicable) were measured using items from the Demographic and Health Survey Questionnaire [45]. There were also items regarding children's educational level as well as their present education status (presently at school or not).

Statistical analyses

The collected data were analyzed using SPSS version 18. The analyses followed 3 key steps. First, the relationships between orphanhood groups and child labour, and between child labour and psychological outcomes were examined. One-way ANOVA was used to determine the differences between orphanhood groups on child labour whiles bivariate pearson correlation was used to investigate the association between child labour and psychological outcomes. Associations between socio-demographic factors and child labour were also determined using t-tests, ANOVA and chi-squared. The next step then investigated the potential mediating effect of child labour on the significant association between orphanhood groups and psychological outcomes after controlling for socio-demographic factors. Three Multivariate Linear Regression were conducted on each of the psychological outcomes to develop 3 models: an unadjusted model (Model 1), adjusted model that accounted for relevant demographic variables (Model 2) and an adjusted model that accounted for demographic factors and child labour (Model 3). Child labour has three subscales: caring responsibilities, household chores and paid labour, and so the analyses employed backward elimination to achieve parsimonious models by identifying and eliminating factors that were not contributing significantly to the models on each of the psychological outcomes. In this case all the three subscales were retained. Finally, the coefficients of these models (that controlled for both demographic factors and child labour) were compared to the unadjusted model as well as the model that controlled for only demographic factors. Any significant reductions in the coefficients between these models were suggestive of potential mediating effect of child labour on the association between orphanhood groups and psychological outcomes [2,32]. Finally, Sobel tests were conducted to formally investigate any suggested mediation effects.The mediation analyses followed the procedures outlined by Baron and Kenney and further clarified in Holmbeck [53]. Analyses of data from children and caregivers present similar picture and so the present paper reports only the findings from the children.

Results

Socio-demographic characteristics of participants

The participants had a mean age of 13.03 years (SD = 2.87), with age range 10-18, there were 51% female, and ethnic origin was 63% krobos. There was an average of 4.3 people living in the household. The majority of the children (81.8%) were currently attending school. About 75% had attained primary or junior secondary level education and 12.7% vocational or technical education. Concerning parental/caregiver educational level, approximately 58% of them had no more than senior secondary level education. Overall, 62% of all children had moved between 2 or more times (55% of non-orphans, 53% of AIDS-orphans, 85% of other-orphans and 56% of HIV/AIDS-infected parents). The majority of parents and caregivers (62%) worked mainly in farming, driving, trading or as artisans (carpentry, masonry, bead making). Eleven percent of parents worked in the formal sector (employment which offer regular wages and hours, which carry with them employment rights, and on which income tax is paid) whilst approximately 13% of them were unemployed. The proportion of households with unemployed parents was higher among children living with HIV/AIDS-infected parents (38%) than AIDS-orphans (9.5%), other-orphans (9%) and non-orphaned children (7%). In the sampled about 56% of the children (69% of non-orphans, 49% of AIDS-orphans, 45% of other-orphans and 56% of those living with HIV/AIDS-infected parents) indicated that they were Christians, 11% Islam, 20.3% Traditional/African beliefs and 12.7% belonging to other faith. The socio-demographic statistics of the participants are summarized in Table 1.

Differences between OVC groups on child labour

One-Way ANOVA analysis indicates a significant association between orphanhood groups and overall child labour [$F(3, 287) = 37.152$, $p < 0.001$]. A subsequent follow-upbonferroni-adjusted multiple comparison showed that comparison children reported asignificantly lower frequency of child labour than children living with HIV/AIDS-infectedparents ($t = 4.540$, $p < 0.001$), AIDS orphaned children ($t = 3.399$, $p < 0.001$) and childrenorphaned by causes other than AIDS ($t = 2.582$, $p < 0.001$). Additionally, children livingwith HIV/AIDS-infected parents also reported significantly more child labour than children orphaned by causes other than AIDS ($t = 1.958$, $p < 0.001$). No further groupdifferences were observed.The caring responsibilities subscale exhibited a similar pattern as the reported overall child labour where comparison children reported lower caring responsibilities than OVC [$F(3,287) = 36.137$, $p < 0.001$]. Children living with HIV/AIDS-infected parents also reportedmore caring responsibilities than other orphaned children ($t = 0.960$, $p < 0.01$). However, no between orphanhood group difference was found on reported levels ofengagement in household chores [$F(3, 287) = 1.775$, p = n. s.].The paid work (direct income activity) subscale also showed significant between groupdifference [$F(3, 287) = 26.616$, $p < 0.001$]. Post hoc bonferroni-adjusted multiple comparison indicated that children living with HIV/AIDS-infected parents ($t = 1.090$, $p < 0.001$), AIDS orphaned children ($t = 1.082$, $p < 0.001$) and children orphaned by causes otherthan AIDS ($t = 0.799$, $p < 0.001$) reported being engaged in more paid work thancomparison children (Table 2).

Association between child labour and psychological outcomes

The psychosocial adjustment outcomes were correlated across overall child labour as well as its subscales using Pearson correlation. All three psychosocial outcomes were significantly correlated with total child labour, with higher levels of child labour associated with higher levels of psychosocial distress (Table 3). Specifically, children who reported higher levels of child labour showed more symptoms of delinquency and risk behaviour, depression and peer problems. Similar correlations were found with thepaid work and caring responsibilities

	Non-orphaned and vulnerable children (n = 100)	AIDS-orphaned vulnerable children (n = 74)	Other-orphans (n = 67)	Children with HIV/AIDS infected parent/caregiver (n = 50)	P value (t-test/chi-square)
Age	11.53 (2.683)	13.78 (2.624)	13.09 (2.673)	14.84 (2.324)	F = 21.131[c]
Gender: Girls	52	50	50.7	48	
Boys	48	50	49.3	52	n. s.
Ethnicity: Dangme/ Krobo	63.0%	59.5%	73.1%	56.0%	X = 40.051[c]
Household size	4.98 (0.995)	3.73 (0.969)	4.27 (1.226)	3.96 (1.068)	F = 22.604[c]
No. of changes in residence	1.35 (1.336)	2.76 (1.524)	3.09 (1.685)	1.72 (1.471)	F = 23.844[c]
No. of siblings	1.21 (0.946)	1.95 (0.935)	2.22 (1.277)	2.44 (1.198)	F = 19.807[c]
Location where child lives: urban	50.0%	60.8%	59.7%	58.0%	n. s.
Age child first bereaved		6.27 (4.339)	8.81 (3.456)		
Parental educational level: > Junior Secondary					
Parental unemployment	7.0%	9.5%	9.0%	38.0%	X = 39.695[c]
Parental Loss					
Mother	-	33.8%	34.3%	-	
Father	-	37.8%	41.8%	-	n. s.
Both	-	28.4%	23.9%	-	
Religion: Christianity	69.0%	48.7%	44.8%	56.0%	X = 36.271[c]
Note: [a] Denotes significance at the 0.05 level, [b] denotes significance at the 0.01 level, [c] denotes significance at the .001 level					

Table 1: Socio-demographic characteristics of the participants.

Source	Comparison group of children (n = 100) [1]	Orphaned and vulnerable children			F/X
		AIDS-orphaned children(n = 74) [2]	Other-orphans (n = 67) [3]	Children with HIV/AIDS-infected parents (n = 50) [4]	
Total Chores and Responsibility (M, SD)	6.06 (2.67)	9.46 (2.78)	8.64 (2.90)	10.60 (2.94)	37.152[c]
Household Chores (M, SD)	3.21 (1.51)	3.49 (1.17)	3.54 (1.27)	3.70 (1.27)	1.775
Fetching water/wood (%): YES	66.O	68.9	70.1	76.0	1.596
NO	34.0	31.1	29.9	24.0	
Tending animals (%): YES	8.0	9.5	9.0	10.0	0.202
NO	92.0	90.5	91.0	90.0	
Farming (%): YES	49.0	56.8	58.2	66.0	4.168
NO	51.0	43.2	41.8	34.0	
Caring Responsibilities (M, SD)	1.67 (1.19)	3.30 (1.50)	3.00 (1.55)	3.96 (1.50)	36.137[c]
Caring for sibling (%): YES	26.0	63.5	56.7	58.0	30.562[c]
NO	74.0	36.5	43.3	42.0	
Caring for adults (%): YES	13.0	40.5	31.3	56.0	32.509[c]
NO	87.0	59.5	68.7	44.0	
Absent from Sch. to care (%): YES	19.0	56.8	52.2	72.0	47.510[c]
NO	81.0	43.2	47.8	28.0	
Paid work (M, SD)	0.35 (0.59)	1.43 (1.04)	1.15 (1.06)	1.44 (1.05)	26.616[c]
Direct Income work (%): YES	6.0	51.4	37.3	50.0	51.846[c]
NO	94.0	48.6	62.7	50.0	
Note: [a]Denotes significance at the 0.05 level, [b] denotes significance at the 0.01 level, [c] denotes significance at the 0.001 level					

Table 2: Differences between Orphanhood groups on child labour.

Source	Total chores and Responsibilities	Household chores	Caring Responsibilities	Paid Work
Delinquency and Risk Behaviours	0.148[b]	-0.092	0.111	0.262[c]
Depression	0.300[c]	0.038	0.330[c]	0.267[c]
Peer Problems	0.468[c]	0.143[a]	0.393[c]	0.252[c]
Note: [a]Denotes significance at the 0.05 level, [b] Denotes significance at the 0.01 level, [c] Denotes significance at the 0.001 level				

Table 3: Bivariate Pearson r associations between child labour and psychological outcomes [1].

subscaleswhilst the positiveassociation between symptoms of delinquency and caring responsibilities did not reach statistical significance (r = 0.111, p = n. s.).The household chores subscale, however, showed a different pattern, where higher scoreson the subscale were associated with only more symptoms of peer problems ($p < 0.05$). Certain socio-demographic factors showed significant associations with

child labour. Significantly higher reported levels of child labour were associated with increased age (r =0.420, p < 0.001), living in smaller households (r = -0.195, p < 0.001), having more siblings (r = 0.209, p < 0.001), frequent changes in place of residence (r = 0.144, p < 0.05) and currently notattending school (t = 3.135, p < 0.001). Although the gender difference in child labour did not reach statistical significance, it is observed that boys reported being engaged in paidwork more than girls whilst girls reported higher scores on the caring responsibilities andhousehold chores.

Mediating effects of child labour on associations between orphanhood and mental health outcomes

Delinquency: In the unadjusted model (Model 1) orphanhood by AIDS, orphanhood by other causes and living with HIV/AIDS-infected parent, were each, independent associated with significantly higher delinquency. This association was completely eliminated for orphanhood by other causes in the two adjusted models that controlled for demographic variables (Model 2) and child labour and demographic variables (Model 3). Controlling for age, household size and number of changes in residence in an adjusted model (Model 2), orphanhood by AIDS was significantly associated (p < 0.001) with higher delinquency and the association was maintained but weakened (p < 0.05) when child labour was accounted for in a subsequent regression model (Model 3). Living with an HIV/AIDS-infected parent was significantly associated with more delinquency problems in a model that controlled for only relevant demographic co-factors (Model 2) but the association was completely eliminated when reported child labour was controlled for (Model 3) (Table 3).

Peer problems: In a Regression analysis, orphanhood by AIDS was significantly correlated with peer problems in the unadjusted model (Model 1) and this relationship although weaken, was maintained after controlling for relevant demographic variables (Model 2) and child labour and demographic variables (Model 3). Orphanhood by other causes was significantly associated with peer problems in the unadjusted model. This relationship was completely eliminated in both adjusted models that controlled for relevant demographic variables (Model 2) and child labour and demographic variables (Model 3). Finally, living with an HIV/AIDS-infected parent was significantly associated with peer problems in the unadjusted model (Model 1). This association was weaken in adjusted model that controlled for only demographic variables (Model 2) and completely eliminated in adjusted model that controlled for both child labour and demographic variables (Model 3).

Depression: In Multiple Linear Regressions indicated that orphanhood by AIDS and orphanhood by other causes were each independently, significantly positively related to depression in an unadjusted model (Model 1), and these associations remained even after controlling for demographic variables (Model 2) and the adjusted model that controlled for both child labour and demographic variables (Model 3). However, living with HIV/AIDS-infected parents was significantly associated with more depression in the adjusted model (Model 2) that controlled for socio-demographic factors but this association was completely eliminated in the model that controlled for both socio-demographic factors and scores of child labour (Model 3).

These results, reported in Table 4, support a full mediation effect on the relationship between living with an HIV/AIDS-infected caregiver and heightened levels of symptoms of depression, peer problems, and delinquency and risk behaviours. The results also indicate full mediation effect on the relationship between being orphaned by other causes and heightened levels of symptoms of delinquency/risk behaviours and peer problems. Finally, the results support a partial mediation effect on the relationship between being an AIDS orphaned child and heightened levels of symptoms of depression, peer problems, and delinquency and risk behaviours. The more conservativeSobel test, assessing statistical significance of the extent of mediation (i.e., the magnitude of the indirecteffect, accounting for error and variance) also supportedthese observed mediation effects (p < 0.05).

Discussion

The findings of the present study indicate that, compared with children who were not experiencing HIV/AIDS in their families, children orphaned by AIDS and children living with HIV/AIDS-affected caregivers had higher levels of psychological symptoms. These associations were mostly unattenuated when relevant socio-demographic factors such as gender, household size, age, being out of school and number of changes in residence were controlled.

Both AIDS orphaned children and children living with HIV/AIDS-infected parents had significantly higher scores than other groups for delinquency and risky behaviours. This finding is consistent with other investigations where children affected by AIDS were found to exhibit higher risk behaviours compared to other children [2,15,46-49].

Cluver [49] noted that it is not clear whether children affected by AIDS do engage in more child labour and domestic work than other children. In Ghana, 90% of the 2.47 million children who are engaged in child labour are still in school [50]. Globally, child labour is still on the increase despite several efforts to end it [29]. Although, in the literature, the relationship between mental health and child labour among the general population of young people is contested [1], it has been suggested that child labour has adverse effects on children's mental health. However, despite child labour and domestic responsibilities being prevalent in Africa, the relationship between mental health outcomes and child labour among children affected by AIDS has not previously been explored in this context [2,49]. The present analysis is the first quantitative examination of child labour as a potential risk

Source	Delinquency and Risk Behaviour[1]			Depression[2]			Peer problems[3]		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Orphaned by AIDS	0.345[c]	0.278[b]	0.130[a]	0.604[c]	0.394[b]	0.173[c]	0.493[c]	0.265	0.129[a]
Orphaned by other causes	0.126[a]	-0.055	-0.110	0.609[c]	0.495[c]	0.208[c]	0.252[c]	0.037	-0.076
Living with HIV/AIDS infected parent	0.348[c]	0.249[b]	0.102	0.552[c]	0.321[c]	-0.033	0.518[c]	0.164[a]	0.076

Note: [a]Denotes significance at the 0.05 level, [b] Denotes significance at the 0.01 level, [c]Denotes significance at the 0.001 level; Model 1: Unadjusted model
Model 2: Adjusted model controlled for relevant demographic variables; Model 3: Adjusted model controlled for relevant demographic variables and child labour; [1]Adjusted model controls for age, household size, no. of changes in residence; [2]Adjusted model controls for age, household size, no. of changes in residence, gender, no. of children at home, presently in school; [3]Adjusted model controls for age, household size, no. of changes in residence, no. of children at home.

Table 4: Multivariate associations between orphanhood by AIDS, orphanhood by other causes, living with an HIV/AIDS-infected parents, and psychological outcomes controlling for socio-demographic cofactors and Child Labour.

factor contributing to heightened psychological distress among children affected by HIV/AIDS. The present analyses indicate that higher levels of overall child labour showed significant associations with higher symptoms of psychological difficulties including delinquency and risky behaviours, depression and peer problems.

The present study also found significant differences between the orphanhood groups on domestic chores and responsibilities. Overall, children affected by HIV/AIDS (OVC) reported engaging in significantly more domestic chores and care responsibilities than comparison children. Furthermore, controlling for child labour eliminated many of these symptoms among OVC. This suggests that child labour might be an important risk factor for mental health problems among orphans in general and children affected by HIV/AIDS. The present finding supports earlier qualitative observations that domestic chores are highly distressing for orphans [8]. Aside from the risks for occupational diseases and injuries noted among child labourers, in South Africa, it was also suggested that working for long hours among children was detrimental to their wellbeing [18,19].

Additionally, the household responsibilities subscale showed weak associations with psychological outcomes suggesting that this might not be a risk factor for mental health. This echoes suggestions by some researchers that domestic chores, in moderation, promote social responsibility and a sense of inclusion in children in ways that may not harm children's psychological functioning [3,4]. Overall, children living with HIV/AIDS infected parents are actually the group most likely to miss school because of caring responsibilities and are as likely as children orphaned by AIDS to be doing paid work. This underlines again that this group is just as vulnerable as the orphans.

The present analyses identified that child labour strongly mediates the association between orphanhood status and psychological problems. The analyses also indicate that, child labour when controlled for, the strong associations between living with HIV/AIDS-infected parents and psychological symptoms of delinquency and risky behaviours, depression and peer problemswere eliminated. Among other orphaned children, accounting for child labour eliminated associations with psychological outcomes of delinquency and peer problems and reduced association with symptoms of depression. Similarly, controlling for child labour significantly reduced associations with symptoms of delinquency and risky behaviour, peer problems and depression among AIDS orphans. Makhoul et al. [19] noted earlier that child labour interferes with children's health (both physical and mental) and development. The present findings thus provide strong evidence that child labour is an important mediating risk factor for mental health outcomes for orphaned and vulnerable children affected by HIV/AIDS (OVC) in Ghana. Thus, the key finding of the present analyses is the demonstration that among OVC, child labour could explain psychological distress above and beyond the impact of orphanhood per se.

Limitations

The first limitation of this study is that all the data reported in this present study were based on self-reporting by both children and their parents or caregivers. With self-reported data, the shortcomings are related to self-selection, recall bias, and social desirability effect. These elements are always present when assessing the behaviours and attitudes associated with sensitive topics including HIV/AIDS. The second limitation is related to the nature of cross-sectional study designs. The direction of any causation is problematical in cross-sectional associations. The cross-sectional design did not allow for any conclusions to be drawn regarding causal relationships because exposure (contextual factors and HIV/AIDS-related exposures) and event (mental health outcomes) were measured at the same time. Because data were collected at one point in time, the direction of causation is not implicated in this study. Third, the study population included only samples from one district in Ghana. It did not consider children affected by HIV/AIDS in the other districts. The samples might not be representative of all children affected by HIV/AIDS in other areas of Ghana, more so when the participants were recruited from the district with highest HIV prevalence in Ghana. The findings of this study, therefore, may not be generalizable to other settings. Future research need to recruit samples from the other districts. Finally, the findings should be interpreted cautiously as assessments of mental health outcomes were not diagnostic but pencil and paper measures. These measurement tools do not identify specific mental disorders but symptoms of psychological illnesses. Hence the levels of mental health outcomes obtained in this study herein do not indicate clinical diagnosis of specific mental disorders.

Conclusion

One implication of the present findings is that efforts aimed at improving the psychological wellbeing of AIDS-affected children should be a holistic approach that is applicable to all children affected by AIDS and not the usual "selective action" targeted at only AIDS-orphaned children [51]. Many have argued that formulating interventions for only AIDS-orphaned children places a tag on these children. Consequently, such interventions are not only recipes for discrimination and stigmatisation of these children but also highlight the danger of failed efforts to reach out to other vulnerable children affected by the HIV/AIDS pandemic in our society [51,52].

A policy implication of the present findings is that intervention programmes that focus on eliminating child labour may be effective in alleviating or significantly reducing psychological difficulties and symptoms among children affected by the HIV/AIDS pandemic. However, alleviating child labour is a complex and difficult challenge compounded by observations that child labour is often tolerated by societies, and seen as part of cultural and family expectations. Bunnak [31] suggested that child labour persists because the harmful effect it has on children has been downplayed. Additionally, economists cited attractiveness of child labour to employers as they pay children little, manipulate and exploit them. In Ghana, it has been noted that child labour laws are not enforced effectively and consistently as enforcement officials are not even familiar with the legal provisions [50]. Despite these challenges, it is suggested that government agencies, NGOs, district assemblies and communities need to promote good economic, social and educational policies to curb child labour since it is a risk factor for various kinds of psychological difficulties. The evidence further suggests that such child labour reduction strategies should aim at children before they are orphaned and should continue thereafter to achieve optimal results in alleviating psychological distress. Addressing the issue of child labour should be given priority because child labour may also be a barrier to school attendance.

Authors' Contributions

PND designed and conducted the study and prepared and edited the manuscript.

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