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School performance and school behavior of children affected by AIDS in China

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Abstract

It is generally recognized that the AIDS epidemic will have a negative effect on the orphans' school education. However, few studies have been carried out to examine the school performance and school behavior of AIDS orphans and vulnerable children (children living with HIV-infected parents). Using both self-report and teacher evaluation data of 1625 children from rural central China, we examined the impact of parental HIV/AIDS on children's school performances (academic marks, educational expectation, and student leadership) and school behaviors (e.g., aggression, shy/anxious and assertive social skills). Results indicate that AIDS orphans and vulnerable children had disadvantages in school performances in comparison to their peers from the same community who did not experience AIDS-related death and illness in their family (comparison children). AIDS orphans had the lowest academic marks based on the reports of both children and teachers. Educational expectation was significantly lower among AIDS orphans and vulnerable children than comparison children from teacher's perspective. AIDS orphans were significantly more likely to demonstrate aggressive, impulsive and anxious behaviors than non-orphans. Moreover, orphans have more learning difficulties. Vulnerable children were also at a disadvantage on most measures. The data suggest that a greater attention is needed to the school performance and behavior of children affected by AIDS. The findings also indicate that AIDS relief and assistance program for children should go beyond the school attendance and make efforts to improve their school performance and education aspiration.

Keywords

AID orphans; Vulnerable children; School performance; School behavior; Aggression behavior; China

Introduction

Parental death due to AIDS during childhood may have a lasting negative impact on all aspects of children's life. By 2005, 15.2 million children had been orphaned by AIDS worldwide

(Cluver & Gardner, 2007). Based on current trends, it was estimated that the number of AIDS orphans worldwide could reach 25 million by 2010 and 40 million by 2020 (Li et al., 2008; UNICEF, 2004). Many of these children lack sufficient food, shelter, education and medical care (Cluver & Gardner, 2007). The global crisis of AIDS orphans has attracted increasing attention and a number of studies have been carried out to explore the effect of AIDS orphanhood on the children's wellbeing including school education (Shaeffer, 1994; Foster & Williamson, 2000; Ainsworth & Filmer, 2002).

Education plays an important role in child development and it is generally accepted that parental death from AIDS has a serious negative effect on children's education (Bennell, Hyde, & Swainson, 2002). Some recent studies have examined the impact of parental HIV/AIDS-related illness and death on children's education. Findings from these studies suggest that the impact of parent death on children's schooling is persistently disadvantageous.

AIDS orphans usually lack parental care and financial resources for education (Ntozi, Ahimbisibwe, Odwee, Ayiga, & Okurut, 1999), therefore, AIDS-related parental deaths could influence orphans' school attendance, school performance and school completion. However, the majority of existing studies regarding AIDS orphans' education have mainly focused on the issue of school attendance. Results from these studies indicated that AIDS orphans were more likely to lose opportunities to attend school. There was a negative relationship between being orphaned and access to school education (Muller & Abbas, 1990). Children of HIV-positive parents (e.g. children faced the potential of losing parents) were also less likely to be attending school than children of HIV-negative parents (Mishra, Arnold, Otieno, Cross, & Hong, 2007). There was a substantial decrease in primary school participation following a parental death from AIDS, especially for those children whose mother died or who had a low baseline academic performance (Evans & Miguel, 2007). Orphans were less likely to be enrolled at school than non-orphans living in the same households (Case, Paxson, & Ableidinger, 2004). Double orphans (i.e., children who lost both parents to AIDS) were more likely to be disadvantaged in school attendance compared with single orphans (i.e., children who lost one parent to AIDS) (Monasch & Boerma, 2004). Previous studies also found that the effect of parental death on children's schooling was not only on the enrolment itself, but also on the timing of enrolment. Losing one or both parents by AIDS was significantly associated with diminished chances of being at the appropriate grade level for age (Bicego, Rutstein, & Johnson, 2003). The households affected by AIDS often delayed school enrolment of younger children, while tried to maintain enrolment of older children if possible (Ainsworth, Beegle & Koda, 2005). Because of the loss of family adult labor to AIDS, children might be kept out of school if they were needed at home to take care of sick family members or to work in the fields. Children might drop out of school if their families could not afford school fees due to reduced household income as a result of an AIDS-related death and illness (Bollinger, Stover, Kerkhoven, Mutangadura, & Mukurazita, 1999).

Some investigators had examined the issue of school completion. AIDS orphans were less likely to complete the primary school in comparison to other children (Makame, Ani, Grantham-McGregor, 2002). Primary school completion rates of orphans were lower than non-orphans (Nyamukapa & Gregson, 2005). Orphans had lower levels of education attainment than other children in countries with both high and low education attendance levels among general population (Monasch & Boerma, 2004). However, there is limited work in examining academic performance and school behavior of children affected by AIDS. In addition, most of the existing studies have been carried out in Sub-Sahara African countries. The education of AIDS orphans in Asian countries including China has received little attention.

The China Ministry of Health estimated in 2004 that there were at least 100,000 AIDS orphans in China (Zhao et al., 2007). The UNICEF China Office estimated that between 150,000 and

250,000 additional children would be orphaned by AIDS by 2010 (ACF, 2004). Most of the AIDS orphans known to the public in China are living in Henan Province, a central province in China, where many farmers were infected by HIV through unsanitary blood/plasma collection (Rosenthal, 2002). The living situations of orphans have attracted increasing attention recently (China Daily, 2004; UNICEF, 2007). In 2002, Yang and colleagues interviewed 233 children from 266 households with registered HIV-infected drug users in southwest China. They found that orphans were less likely to attend school and more likely to be truant if enrolled in school (Yang et al., 2006). Chinese government has made a number of efforts to provide care and economic assistance to the households affected by HIV/AIDS including free schooling for children orphaned by AIDS and building village schools in areas hard hit by AIDS (Ministry of Health, UNAIDS, WHO, 2005). With these efforts, the school attendance among AIDS orphans seemed on a rapid rising. From the information collected from 43 villages in Henan Province in 2006, for example, Li and colleagues found that only 7% school-age AIDS orphans did not go to school (Li et al., in press). However, most AIDS assistance program for children in China put main emphasis on school attendance. There have been limited data regarding school performance and school behavior among children affected by AIDS. Although most of the school-age children were attending or returning to schools, how they perform or behave in school is unknown. To improve the AIDS assistance effort and to mitigate the negative impact of parental death on children's school education, there is an urgent need to study the school performance and school behavior of children orphaned and made vulnerable by HIV/AIDS.

Accordingly, this study was designed to evaluate the impact of HIV/AIDS-related parental illness and death on children's school performance and behavior. In this study, we examine whether orphans and vulnerable children are disadvantaged in school performance and school behavior in comparison with their peers who did not experience HIV/AIDS in their families.

Methods

Study Site and Sample

The current study was conducted in two rural counties in Henan province of China between 2006 and 2007. Henan Province has a high HIV/AIDS prevalence due to the unsanitary commercial blood collection between the late 1980s and middle 1990s (Rosenthal, 2002). The average HIV infection rate among former commercial blood donors was 8.8% in 2004 (Chinese Center for Disease Control and Prevention, 2005). These two counties in the study have the highest prevalence of HIV infection in this area.

We recruited 1625 children 6-18 years of age from the two counties including 755 orphans who lost one or both of their parents to AIDS, 466 vulnerable children who were living with HIV-infected parents and 404 comparison children who did not experience AIDS-related illness or death in the family. The procedures of recruitment and data collection have been described in detail elsewhere (Li et al., in press). In brief, the orphans sample was recruited from government-funded orphanages, small group homes, and family or kinship care (i.e., extended family care). Two Hundred Forty-Four AIDS orphans were enrolled in the four AIDS orphanages and 176 (72%) participated in the survey. A total of 43 orphans were living in eight small group homes and 30 (70%) participated in the survey. We also recruited 549 orphans including 90 double orphans and 459 single orphans (i.e., children who lost one of the parents to AIDS) who lived with surviving parent or extended families (kinship). Vulnerable children and comparison children were recruited from the same villages where the orphans recruited.

Survey Procedure

Each participating child in the study completed an assessment inventory including measures of demographic information and some scales of school performance. Meanwhile, their school teachers were asked to provide independent evaluation on the children's school performance and behavior by completing a similar assessment inventory. A total of 1417 (87.2%) of the participating children received the teacher evaluation.

Measures

School performance—Academic marks in school, future educational expectation and student leadership were employed in the current study to measure children's school performance. Using a 5-point scale from “mostly A's” to “mostly E's or worse”, children were asked to categorize their academic marks over the past school year. Due to the proportion of students who got “mostly A's” or “mostly E's” were very low, we combined the original 5 categories into a 3-point scale (i.e., “mostly A's or B's”, “Mostly C's”, and “mostly D's or worse”). A 5-point scale (1=middle school, 2=high school and technology, 3=college, 4=master degree, 5=doctoral degree) was employed to measure education expectation. Because of the low frequency of “master” and “doctoral” degree, this scale was regrouped into a 3-point scale (1=middle school, 2=high school and technology, 3=college or above). Children were also asked whether they had held a student leader position at school or class level (e.g., class monitor).

The same three questions were also used by teacher to evaluate children's school performance (i.e., academic marks, educational expectation, and student leadership).

School behavior—Children's behaviors were evaluated by their teachers using the Teacher Rating Scale (TRS) (Hightower et al., 1986) and a scale of children aggressive behavior (Ladd & Profilet, 1996). The 38-item TRS had been used for teachers to evaluate the children's behavior problems and competencies at school. The seven subscales of TRS and children aggression scale including Cronbach alpha and sample questions were described in Table 1

Statistical Analysis

First, Chi-square test was employed to examine the difference of individual characteristics and school performance in both children and teacher reports by children orphan hood status. Second, one-way ANOVA was performed to compare mean scores of seven subscales of TRS and aggression scale by children orphanhood status, sex and age group. To compare the group difference by age group, children were divided into three developmental groups: pre-adolescence (<12 years of age), early adolescence (12 through 14 years of age), and middle adolescence (>14 years of age). Post hoc multiple comparisons using the criterion of the least significant difference were conducted to identify the pair-wise difference in both orphanhood status and age group. Finally, multivariate analysis using general linear model (GLM) procedure were employed to simultaneously assess the effect of children orphanhood status, gender, and the interaction terms on children's school behavior. Children's age was included in the GLM as a covariate. All TRS subscales and aggression scale were employed as the dependent variables in the GLM analysis. Data were analyzed using SPSS for windows v11.5.

Results

Demographic Characteristics

There were 826(50.8%) boys and 799(49.2%) girls in the current sample. The majority (67.8%) of students were in primary school (grade 1-6). As shown in Table 2, the mean age for the total sample was 12.85 years. Orphans were older (13.1 years) than either vulnerable children (12.36

years) or comparison children (12.83 years). There was no significant difference in perceived health status among three different groups where the majority (63.6%) of children thought that they had very good or good health. The teacher's evaluation was available for 1417 (87.2%) of the participating children, consisting of 685 orphans, 408 vulnerable children and 329 comparison children.

School Performance

Children self-report—As described in Table 2, from children self-report, orphans had lower academic marks than other children. Significantly fewer orphans reported they scored “mostly A's or B's” than comparison children in the past year. There was no difference in educational expectation with about 70% of children wanting to complete at least a college education. Likewise, there was no difference in student leadership with about 10% of children being a student leader at school or class level.

Teacher evaluation—As shown in Table 2, for the teacher's report, approximately half (49.1%) of comparison children had “mostly A's or B's” in the past year. The proportion was significantly lower amongst orphans (29.4%) and vulnerable children (33.3%). Difference in educational expectation among three groups of children was also significant from teacher evaluation. There were more than half (58.3%) of comparison children who would be expected by the teacher to complete at least a college education and such a number was 44.9% for orphans and 52.6% for vulnerable children. Significantly fewer orphans (10.5%) and vulnerable children (9.4%) were student leaders than comparison children (16.8%).

School Behavior

As shown in Table 3, group difference by children orphanhood status was significant for all the TRS subscales ($p < 0.001$). Teachers reported orphans having a higher score than non-orphans on behavioral problem scales (acting out, shy/anxious and learning difficulties). Both orphans and vulnerable children were rated significantly lower than comparison children on school competency scales (frustration tolerance, assertive social skills, task orientation and peer social skills). From the post hoc pair-wise comparison, AIDS orphans had significantly more behavioral problems than either vulnerable children or comparison children, whereas both AIDS orphans and vulnerable children were rated significantly lower than comparison children on school competency measures. For the aggressive behavior in school, the orphans were rated significantly higher (8.8) than vulnerable children (8.09) and comparison children (8.02).

Table 4 depicted the group difference of teacher reported school behavior by children's gender and age group. Boys and girls were rated significantly different in all of the seven subscales with the exception of shy/anxious and assertive social skills. Boys were rated higher than girls on acting out and learning difficulties, and lower than girls on frustration tolerance, task orientation and peer social skills. For the aggressive behavior, boys were rated significantly higher (8.78) than girls (8.04). From the teacher report, group difference of TRS by children age group was also significant on all subscales except task orientation and frustration tolerance. The pre-adolescents got the lowest ratings on acting out, shy/anxious and learning difficulties, and the highest ratings on assertive social skills and peer social skills. Ratings of aggressive behavior were not significantly different by age group.

As shown in Table 5, the multivariate analysis revealed a multivariate significance ($p < 0.001$) for all the factor variables (children group, gender) and covariate (child age). The interaction between children group and gender was not significant. For the seven subscales of TRS and the scale of aggression, the children group (orphans, vulnerable children and comparison children) had a significant effect on each of them. Likewise, children's gender showed

significant effects on almost each subscale with the exception of assertive social skills. Age was a significant covariate for all TRS subscales except frustration tolerance and task orientation.

Discussion

In the current study, we found that parental death to AIDS had a substantial negative impact on children's school performance and school behavior. Orphaned children were significantly disadvantaged in academic marks compared with non-orphans. We also found orphans and vulnerable children were lower on school competencies and had more behavior problems at school than comparison children. Likewise, orphans were significantly more likely to demonstrate aggressive behavior than non-orphans.

One of the strengths of the current study was that we collected data from both children and their teachers. The characteristics of children sample in student self-report were very similar to those by teacher report. There were some discrepancies between the children report and teacher report in school performance. These discrepancies might be a result of children's socially desirable reporting (e.g., education expectation).

According to our study, losing a parent to AIDS and facing the potential of losing a parent are significant negative factors to children's school performance. Because parent died from AIDS or were infected by HIV, orphaned and vulnerable children usually lost parental attention and care. In addition, some children might have to take care of surviving parent or help with the housework. Therefore they might not devote as much time as they need for school work. Lack of time for learning might have resulted in a lower academic performance among orphans and vulnerable children. Although the government provides free schooling and economic assistance to children affected by AIDS, these households are still very poor owing to the loss of labor force and cost of AIDS treatment. Lack of financial support and low academic performance might make them have lower expectation on education attainment in future. A number of factors may contribute to the lack of student leadership positions among AIDS orphans and vulnerable children. These factors include the low academic performance, frequent absence from school (due to parental illness or death), or possible stigma at school.

The TRS and the aggressive behavior scale were employed to assess children behaviors in school. These teacher evaluation scales demonstrate adequate reliability and validity in providing teacher evaluation data for children orphaned and made vulnerable by HIV/AIDS in China. Results of this investigation highlight significantly more behavioral problems and less school competencies of children affected by AIDS in China. Compared to children who didn't experience HIV/AIDS in their family, children orphaned or made vulnerable by AIDS suffered a more stressful life and more psychosocial symptoms (Zhao, in press). Owing to lack of parental undivided attention, they have more difficulties to adjust to the limits imposed by school environment. They were less likely to be able to concentrate on their study and they were also less confident in interacting with peers. These may be why orphans and vulnerable children had significantly lower school competency than comparison children.

Our study also suggests significant aggressive behaviors among children orphaned by AIDS in China. In addition to experiencing parents' death, AIDS orphans might expose to significantly more traumatic events including victim or witness of accidents, injury and death than other children. They were also likely to suffer AIDS-related discrimination and stigma. The absence of parental protection and experience of negative life events might result in orphans to be more offensive as a means of self-protection in school.

Several limitations must be considered when interpreting the results in the current study. First, the children's data were subject to self-reporting bias. Because 74.5% of the student sample

were younger than 14, these children might misrepresent their actual school performance due to either socially desirable reporting or error in recall. Second, student sample were all from one province with relative high HIV prevalence in China. Most of the infected persons are poor farmers who lived in the remote rural areas and sold their blood to commercial blood station. Such a pattern of infection may not reflect the AIDS epidemic in other places of China. The orphan sample in the current study might not be representative of other AIDS orphan populations in China.

Despite these limitations, this study is the first effort to examine the AIDS orphans' school performance and behavior in China. The findings in this study should help policy makers to improve the care effort for children affected by AIDS. Government's current efforts (Financial assistance and free schooling) have helped orphans and vulnerable children attend school. Our findings underscore the need to expand AIDS assistance program to include means to improve children's school performance and education aspiration. We think orphans and vulnerable children should have more opportunities to participate in class activities or to be student leaders. These may contribute to enhance their confidence and improve their school performance.

Our study also suggests disadvantageous school behavior of children living with HIV-infected parent. Compared to orphans, they might receive less attention from society. Most of the AIDS assistance programs aimed at orphans and more economical assistance were provided to the households caring for orphans. We hope our study can bring more attention to children who face the potential of losing parents to AIDS. Care efforts should be developed to mitigate the negative impact of parental illness on children's school performance and behavior.

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Table 1

Measures of Children School Behaviors

Scale	Number of items	α	Sample question	Response option
Teacher Rating Scale				
Acting out	6	0.82	Disruptive in class	From "1=not a problem" to "5=very serious problem"
Shy/anxious	6	0.68	Does express feelings	From "1=not a problem" to "5=very serious problem"
Learning difficulties	6	0.91	Poor work habits	From "1=not a problem" to "5=very serious problem"
Frustration tolerance	5	0.71	Ignores teasing	From "1=not at all" To "5=very well"
Assertive social skills	5	0.81	Comfortable as a leader	From "1=not at all" To "5=very well"
Task orientation	5	0.87	Well organized	From "1=not at all" To "5=very well"
Peer social skills	5	0.87	Has many friends	From "1=not at all" To "5=very well"
Aggression	7	0.88	Roars at other students	From "1=doesn't apply" to "5=certainly apply"

Table 2
Individual characteristics and group difference of school performance by children self-report

	Student sample				P-value
	Overall	Orphans	Affected children	Comparison children	
N(%)	1625	755(46.5)	466(28.7)	404(24.9)	
Mean age(sd)	12.85(2.21)	13.16(2.20)	12.36(2.24)	12.83(2.10)	<0.001
Gender					
Boy	826(50.8)	53.4	47	50.5	
Girl	799(49.2)	46.6	53	49.5	
Age group					<0.001
≤11	441(27.3)	22.9	35.1	26.8	
12--14	761(47.1)	46	46.2	50.4	
≥15	412(25.5)	31.1	18.1	22.8	
Current grade					<0.001
≤6	1095(67.8)	57.8	78.2	74.5	
≥7	519(32.1)	42.2	21.8	25.5	
perceived health					n.s.
Good	987(63.6)	62.7	65.2	63.5	
Fair	499(32.2)	32.5	30.2	33.7	
Poor	65(4.2)	4.7	4.6	2.8	
Academic marks					<0.001
Mostly A's or B's	621(39.5)	34.3	40.5	47.9	
Mostly C's	441(28)	29.5	27.6	25.7	
Mostly D's or worse	512(32.5)	36.2	31.9	26.4	
Educational expectation					n.s.
Middle school	85(5.5)	4.1	7.6	5.7	
High school and technology	386(24.9)	25.9	24.7	23.1	
College and above	1081(69.7)	70	67.7	71.2	
Being a student leader					n.s.
Yes	158(10.2)	10.9	8.9	10.4	

Table 3

Group difference of school performance evaluated by teacher report

	Children Group				P-value
	Overall	AIDS Orphans	Affected children	Comparison children	
N(%)	1417	685(48.4)	403(28.4)	329(23.2)	
Academic marks					<0.001
Mostly A's or B's	492(35)	29.4	33.3	49.1	
Mostly C's	389(27.7)	29.2	28.5	23.5	
Mostly D's or worse	523(37.3)	41.4	38.2	27.5	
Educational expectation					<0.01
Middle school	72(5.1)	5.1	5.2	4.9	
High school and technology	631(44.7)	49.9	42.2	36.8	
College and above	709(50.2)	44.9	52.6	58.3	
Being a student leader	160(11.6)	10.5	9.4	16.8	<0.01

Table 4

Teacher Rating Scales (TRS) and Aggression scale by children groups

	Overall Sample	AIDS Orphans (1)	Vulnerable Children (2)	Comparison Children (3)	Post Hoc Comparison
TRS					
Acting out	9.51	9.94	9.2	8.99 ^{***}	(1>2); (1>3)
Shy/anxious	11.08	11.74	10.66	10.24 ^{***}	(1>2); (1>3)
Learning difficulties	12.3	12.84	11.42	11.1 [*]	(1>2); (1>3)
Frustration tolerance	13.46	13.4	13.01	14.12 ^{***}	(1<3); (2<3)
Assertive social skills	13.51	13.14	13.1	14.79 ^{***}	(1<3); (2<3)
Task orientation	14.79	14.69	14.19	15.74 ^{***}	(1<3); (2<3)
Peer social skills	15.99	15.72	15.53	17.14 ^{***}	(1<3); (2<3)
Aggression	8.41	8.8	8.09	8.02 ^{***}	(1>2); (1>3)

^{**} p<0.01

^{*} p<0.05

^{***} p<0.001

Table 5

Teacher Rating Scales (TRS) and Aggression scale by gender and age groups

TRS	Gender		Age group			Post Hoc Comparison
	Boys	Girls	6–11 (1)	12–14 (2)	15–18 (3)	
Acting out	10.13	8.86***	8.99	9.74	9.69**	(1<2); (1<3)
Shy/anxious	10.95	11.22	10.72	11.05	11.57**	(1<3)
Learning difficulties	12.78	11.26***	11.27	12.14	12.66**	(1<2); (1<3)
Frustration tolerance	13.16	13.76**	13.57	13.55	13.11	
Assertive social skills	13.3	13.72	14.01	13.73	12.47***	(1>3); (2>3)
Task orientation	14.09	15.52***	14.9	15.02	14.23	
Peer social skills	15.5	16.5***	16.35	16.2	15.15**	(1>3); (2>3)
Aggression	8.78	8.04***	8.24	8.5	8.45	

* p<0.05

** p<0.01

*** p<0.001

Table 6

Multivariate analysis (GLM) of effect of children orphan hood status on school behavior

	Children group	Gender	Children group by Gender	Age
Multivariate test	6.91***	8.70***	1.01	4.52***
Acting out	6.92**	28.16***	0.95	4.76*
Shy/anxious	22.64***	4.01*	0.93	9.39**
Learning skills	13.52***	21.61***	0.16	9.06**
Frustration tolerance	9.06***	7.83**	1.75	2.73
Assertive social skills	19.30***	2.30	0.95	18.37***
Task orientation	10.69***	25.77***	1.82	2.32
Peer social skills	15.16***	14.11***	0.06	6.61*
Aggression behavior	10.23***	21.19***	0.79	0.35

*
p<0.05**
p<0.01***
p<0.001