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Impact of Parental HIV/AIDS on Children's Psychological Well-Being: A Systematic Review of Global Literature

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Abstract

This review examines the global literature regarding the impact of parental HIV/AIDS on children's psychological well-being. Fifty one articles reporting quantitative data from a total of 30 studies were retrieved and reviewed. Findings were mixed but tended to show that AIDS orphans and vulnerable children had poorer psychological well-being in comparison with children from HIV-free families or children orphaned by other causes. Limited longitudinal studies suggested a negative effect of parental HIV on children's psychological well-being in an early stage of parental HIV-related illness and such effects persisted through the course of parental illness and after parental death. HIV-related stressful life events, stigma, and poverty were risk factors that might aggravate the negative impact of parental HIV/AIDS on children. Individual coping skills, trusting relationship with caregivers and social support were suggested to protect children against the negative effects of parental HIV/AIDS. This review underlines the vulnerability of children affected by HIV/AIDS. Culturally and developmentally appropriate evidence-based interventions are urgently needed to promote the psychological well-being of children affected by HIV/AIDS.

Keywords

Parental HIV/AIDS; Children affected by HIV/AIDS; Psychological well-being; Literature review

Introduction

In consistence with the widely used definition by UNAIDS, "children affected by HIV/AIDS" is defined for the purpose of this review as children under 18 years of age who are in one of the two categories: children who have lost one or both of their parents to HIV-related illness (AIDS orphans), children living with one or both HIV infected parents (vulnerable children). By the end of 2010, roughly 17.1 million (range from 15.4 million to 19.1 million) children under the age of 18 have lost one or both parents to AIDS, and millions more are facing the potential of losing their parents to HIV/AIDS [1]. In the past decade, plights of children affected by HIV/AIDS increasingly received attention from mass media, scholars, government, non-governmental organizations and service providers [2]. Some of the challenges experienced by children affected by HIV/AIDS have been progressively documented. The potential stressors associated with parental HIV/AIDS include economic deprivation, disrupted schooling, multiple losses, uncertainty of clinical course of parental HIV/AIDS, inadequate care, stigma, and social isolation [3].

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The exposure to a number of stressors associated with parental HIV/AIDS is likely to threaten children's psychological well-being [3]. Psychological well-being is "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (p. 2) [4]. Specifically, with regard to the children affected by HIV/AIDS, psychological well-being refers to the procession of emotional, behavioral and social competence appropriate to their developmental stages and the resilience in the adversity of parental illness and death. Psychological well-being is one of the important elements of children's health and development. It's surely important for policy makers and service providers to understand how and to what degree parental HIV/AIDS affects the psychological well-being of children. Despite the potential importance of this issue, the impact of parental HIV/AIDS on the psychological well-being of children was overlooked by researchers during the early stages of the global HIV epidemic [5]. As asserted by Siegel and Gorey [6], there were no published empirical studies that investigated the psychological outcomes and grief reactions of children orphaned by AIDS before 1994.

Rigorous and systematic empirical studies concerning psychological well-being of children affected by HIV/AIDS were emerging in the past decade. Two earlier literature reviews have provided some general knowledge about this research topic. Wild [3], in 2001, found 6 published and 2 unpublished empirical studies which examined the psychosocial well-being of children affected by HIV/AIDS. Seven of them were conducted in the US and one study was in Africa. Four of the reviewed studies included a comparison group. The four studies showed inconsistent findings in terms of the impact of parental HIV/AIDS on children's psychological well-being. Two studies reported higher level of depression, more externalizing problems, lower social competence and lower sense of control among children affected by HIV/AIDS in comparison with the children from HIV-free families; whereas the other two studies did not find such differences. Wild concluded that, based on the few studies that included a comparison group, data were insufficient regarding whether losing a parent to AIDS placed children at an increased risk for psychological distress. Wild also suggested future researchers to identify the personal, familial and community factors that might account for or influence the relationship between parental HIV/AIDS and children's psychological well-being, rather than to simply establish the relationship.

Cluver and Gardner [7], in 2007, reviewed 24 published and unpublished empirical studies that examined mental health of children orphaned by AIDS. Sixteen of their reviewed studies included a comparison group. Three of the studies with a comparison group were conducted in the US and the other studies were in Africa. Their review suggested that children orphaned by AIDS might experience higher levels of psychological difficulties. Also, they found that studies revealed more internalizing problems than externalizing problems among children orphaned by AIDS. Based on this finding, they speculated that orphans, particularly those in Africa, were likely to experience more emotional problems such as depression and anxiety than conduct problems or other problem behaviors. They called for more rigorous studies with standardized instruments, appropriate comparison groups, and large sample sizes. They also indicated the increasing need of research in regions of emerging HIV epidemics such as China, India, and Eastern Europe.

These two reviews were informative in understanding the earlier literature on the psychological well-being of children affected by HIV/AIDS. However, there have been a growing number of studies in the past five years and there is a need to update our knowledge. Therefore, we conducted a systematic review to expand the two previous reviews by examining the existing global literature on psychological well-being of children affected by HIV/AIDS. The objective of this review is to synthesize the major findings of the impact of parental HIV/AIDS on children's psychological well-being in terms of the

following nine specific effects: a) the effect of HIV-related parental illness and death on children's well-being based on the comparison between children affected by parental HIV/AIDS (i.e., AIDS orphans and vulnerable children) and children from HIV-free families; b) the effect of HIV-related parental death versus illness based on the comparison between AIDS orphans and vulnerable children; c) the effect of HIV/AIDS as the cause of orphanhood based on the comparison between children orphaned by AIDS and children orphaned by non-AIDS causes; d) the effect of double vs. single parental loss; e) the effect of paternal vs. maternal loss; f) the effect of parental HIV/AIDS overtime; g) the moderating effects of key demographic characteristics such as child age and gender; h) the mediating or moderating effects of risk factors that might aggravate the negative impact of parental HIV/AIDS on children's psychological well-being; and i) the mediating or moderating effects of protective factors for children's psychological well-being in the context of parental HIV/AIDS.

Methods

Inclusion Criteria

Studies were included in the current review if they met all of the following criteria: (1) peer reviewed articles published in English language journals prior to October 2011; (2) quantitative studies reporting psychological well-being of children affected by HIV/AIDS; (3) studies including at least one of the following comparison groups: children orphaned by non-AIDS causes, and/or children from HIV-free families. Studies that exclusively focused on HIV positive children were not included in the current review, as we think the scope and depth of the issues regarding psychological well-being among HIV positive children merit a separate literature review.

Data Source

Electronic searches of PubMed, Web of Science, PsycINFO, and Sociological Abstract were carried out in October 2011. Each database was searched using the Boolean logic search model (see Appendix 1). All identified records (n = 288) were initially screened to exclude citations that did not provide quantitative data for children affected by HIV/AIDS (n =124), or that did not focus on psychological well-being of children (n = 71) (e.g., studies on children's physical development, nutrition, school enrollment, and caregivers' health), or that did not include a desired comparison group (n = 45). We also hand-searched the reference sections of the previous literature reviews and other relevant articles [3, 7–9] and retrieved three additional articles [10–12]. The search resulted in 51 eligible articles reporting data from a total of 30 studies. For the articles based on the same data, we combined the major findings related to children's psychological well-being to avoid duplication in reporting.

Data Abstraction

Data abstraction forms were developed to retrieve study characteristics and major findings of the reviewed studies. The study characteristics included indicators of psychological well-being, research location and time, sampling strategy, and sample description. The key findings were organized around the nine effects of parental HIV/AIDS on children's psychological well-being that we planned to examine in this review.

Results

Study Characteristics

Indicators of psychological well-being—The operationalized definitions of psychological well-being were different across most of the studies. Generally, the indicators of psychological well-being in various studies fell into one or more of the three interrelated domains: emotional adjustment, behavioral adjustment and social adjustment. Twenty nine studies measured the emotional adjustment (e.g., depression, anxiety, anger, traumatic stress, loneliness, hopelessness, psychological distress, internalizing problems, and suicidal ideation). Fifteen studies measured the behavioral adjustment (e.g., delinquency, conduct/behavioral/externalizing problems, risk behaviors, disruptive behaviors, high-risk sexual behaviors, and hyperactivities). Fifteen studies measured the social adjustment (e.g., self-esteem, self-efficacy, future expectation, future orientation, school adjustment, social competence, peer problems, and quality of life). Twenty three studies used standardized or established instruments to measure psychological well-being. We summarized such instruments in the reviewed studies in Table 1. Most of the studies reported their findings based on the scores of the assessment and only three studies [28, 34, 38] reported their findings in terms of clinical diagnoses.

Study site and time—The review included 30 studies, encompassing participants recruited from 12 countries, mostly in Africa. Data were collected from South Africa (number of studies, k = 5), South Africa and Uganda (k =1), Uganda (k = 3), Zimbabwe (k = 3), Ghana (k = 1), Guinea (k = 1), Namibia (k = 1), Benin (k = 1), Ethiopia (k = 1), Tanzania (k = 1), United States (k = 8), Italy (k = 1), and China (k = 3). The included studies were published between 1996 and 2011.

Study design and sampling—Among the reviewed studies, twenty-five studies were based on cross-sectional data (Table 2) and five studies (16.7%) reported the longitudinal outcomes of children (Table 3). The majority of the studies recruited research participants through local communities, schools, NGOs, and public HIV clinics. Five studies used random sampling (including three with stratified random sampling) [15–19]. The sample size ranged from 30 to 5321. Seven studies had sample size over 1000 [16, 17, 19–23], while four studies had sample size below 100 [24–27]. Except for one study only collecting data from caregivers [28], all the other studies collected data from children, among which seven studies recruited caregivers as an additional source of information [12, 24, 29–33].

Target population—Most of the reviewed studies primarily targeted the AIDS orphans, in which four studies only included maternal orphans [19, 27–29]. Seven studies included both AIDS orphans and vulnerable children as study populations [16, 17, 29, 31, 35, 42, 46]. Five studies only included the vulnerable children [12, 24, 30, 32–34]. Most of the participating children were 6 to 18 years of age. Five studies included youth aged 18–19 [21, 36], 19–20 [37], 19–21 [38], and 19–29 [22] in their samples. Two studies specified their participants as “children” but did not report the age range [19, 29].

Effect of HIV-Related Parental Illness and Death

Most of the studies consistently showed that, in comparison with children from HIV-free families, children affected by HIV/AIDS had poorer emotional, behavioral and social adjustment. As shown in Table 4, 77% of the studies that compared emotional adjustment of children affected by HIV/AIDS (either AIDS orphans or vulnerable children) with children from HIV-free families reported that children affected by HIV/AIDS scored higher in emotional/internalizing problems, such as depression, traumatic stress, somatization, anxiety, loneliness, suicidal ideation, and hopelessness [21, 22, 29, 36, 40–42]. Sixty one

percent of the studies that assessed behavioral adjustment reported that children affected by HIV/AIDS presented more behavioral/externalizing problems, such as delinquency, conduct problems, disruptive behaviors, early and high-risk sexual activities, and hyperactivities [13, 16, 18, 26, 43]. About 69% of studies that measured social adjustment found that children affected by HIV/AIDS demonstrated poorer scores on peer problems, peer social skills, school interest, self-esteem, life quality, hope and control toward future, social competence and locus of control [13, 31, 37, 42–45].

A few studies did not find such differences between the children affected by HIV/AIDS and children from HIV-free families. Cluver and colleagues [26] found that AIDS orphans did not show more conduct and emotional problems, more peer problems, more attention difficulties, or less prosocial behaviors than children from HIV-free families in their South Africa sample. As discussed by the authors, this result may be due to the high exposure to violence and hunger affecting not only AIDS orphans but also children from HIV-free families in their research site.. Forehand and colleagues conducted a study [27] in New Orleans, US, and found that AIDS orphans were no different than children from HIV-free families on depression and externalizing problems. They suggested that the stable family transition after maternal death may buffer the traumatic effect of maternal death. In their sample, most orphans moved to a new household of a close relative and had no more than one transition in residence. Regarding the social adjustment, Atwine and colleagues [18] found that AIDS orphans in Uganda did not score lower than children from HIV-free families on self-concept. Furthermore, maternal orphans who lost their mother for more than four years reported less psychological distress than children from HIV-free families [15].

Effect of HIV-Related Parental Death vs. Illness

As shown in Table 4, except for two studies, all the studies that compared the emotional and behavioral adjustment between AIDS orphans and vulnerable children showed that the two groups of children did not differ from each other. A study [45] with a large sample size in a central province of China showed that AIDS orphans (N = 755) and vulnerable children (N =466) demonstrated similarly poorer psychological adjustment in terms of loneliness, self-esteem, future expectation, and hopefulness, than children from HIV-free families in the same rural community. In the same study, vulnerable children even reported higher levels of loneliness and lower levels of self-esteem than AIDS orphans, suggesting that vulnerable children were at higher risk for psychological problems. Similarly, the studies in Africa, including Ghana [46], South Africa [29], Zimbabwe [16], found that AIDS orphans and vulnerable children manifested similarly high levels of emotional distress and conduct problems.

However, a study in New York City found that, around the time of parental death, AIDS orphans experienced higher levels of emotional distress and had more contact with the criminal justice system than vulnerable children [41]. Likewise, Doku's studies in Ghana found that AIDS orphans presented the most peer problems in comparison with vulnerable children, non-AIDS orphans and children from HIV-free families. Most of the AIDS orphans reported that they had just one or no friends at all and expressed the feelings that their peers did not like them [46, 47].

Effect of AIDS Orphanhood vs. Non-AIDS Orphanhood

All the studies that compared AIDS orphans with non-AIDS orphans were conducted in Africa, where AIDS orphans accounted for 30% of all orphans [48]. Most of the studies reported that the psychological well-being of AIDS orphans was significantly poorer than non-AIDS orphans. Of the six studies that compared the emotional adjustment between AIDS orphans and non-AIDS orphans, five studies reported that AIDS orphans

demonstrated more emotional problems, such as depression, anxiety, traumatic stress, anger, and sleeping difficulties [18, 19, 21, 39, 49]. Of the two studies that compared behavioral adjustment between the two groups, one study found that AIDS orphans presented more behavioral problems, such as conduct problems, and delinquency [50]. However, one study in Ghana showed that AIDS orphans and non-AIDS orphans had similar degree of emotional problems and behavioral problems [46].

Only three studies compared social adjustment between AIDS orphans and non-AIDS orphans and the results consistently showed that AIDS orphans presented poorer social adjustment. Specifically, they had more peer problems and lower self-esteem than non-AIDS orphans according to two studies in Ghana, Uganda, and South Africa [46, 51]. A similar result is also reported by a study using a subsample (N = 1,053) of a national survey in Ethiopia [19].

Effect of Single vs. Double Loss Related to HIV/AIDS

Single orphans are children whose mother or father has died and double orphans are children who have lost both parents to HIV/AIDS [2]. Five reviewed studies compared the psychological well-being between double orphans and single orphans but showed inconsistent findings. Two studies in China showed that double orphans and single orphans had a similar level of psychological well-being. Fang and colleagues [45] found that double orphans and single orphans did not differ in depression, loneliness, self-esteem, and future orientation. He and Ji [44] found no significant differences among paternal, maternal and double orphans in depression, self-esteem, and perceived quality of life.

Three studies in Africa showed that double orphans were at higher risk than single orphans. The study by Onuoha and colleagues in Uganda and South Africa [51] showed that double orphans (with 83% of their sample being AIDS orphans) scored significantly higher on anxiety and lower on self-esteem than single orphans. A study in Namibia showed that, compared with children from HIV-free families, double orphans were 3.2 times as likely to fall into the clinical level of depression, while single orphans were about 1.5 times as likely to fall into the clinical level of depression [38]. Another study in South Africa showed that losing both parents imposed greater challenges on children's psychological adjustment than losing one parent [13].

Effect of Maternal vs. Paternal Loss Related to HIV/AIDS

Of the reviewed studies, four compared the psychological well-being among paternal orphans and maternal orphans and the findings were mixed. Two studies found a similar level of psychological well-being between maternal orphans and paternal orphans. In the study by Ruiz-Casares and colleagues in Namibia [38], maternal orphans and paternal orphans reported similar levels of depression. Also, in another study with a relatively small sample size in Uganda, Atwine and colleagues [18] found that maternal orphans (N = 13) and paternal orphans (N = 65) did not differ in anxiety, depression, anger, self-concept, and disruptive behaviors.

However, two studies in Zimbabwe demonstrated the difference in psychological well-being between maternal orphans and paternal orphans. Nyamukapa and colleagues [15] conducted a study with a randomly selected sample and found an interaction between children's gender and orphanhood types, namely paternal orphans, maternal orphans and double orphans. For girls, paternal orphans presented the most evident psychological distress, and for boys, paternal and double orphans demonstrated the worst psychological well-being. Another study reported that maternal orphans were at particular risk of early debut of sexual intercourse [16].

Longitudinal Impact of Parental HIV/AIDS

Five studies reported the longitudinal effect of parental HIV/AIDS on children's psychological well-being (Table 3). Cluver and colleagues [21] found that, in South Africa, the negative emotional outcomes worsened over a 4-year period amongst AIDS orphans. There was a steep rise in psychological distress (i.e., depression, anxiety, and post-traumatic stress) with age among AIDS orphans. However, the other four studies in the US suggested a different pattern. Using the data over 4 time points relative to the time of parental death (more than one year prior to parental death, from one year before to the day before parental death, from the day of parental death up to one year after parental death, from more than one year after parental death), Rotheram-Borus and colleagues [41] illustrated a curved pattern of psychological adjustment of orphaned children. They found that most of the indicators of psychological distress (i.e., depression, somatization, and contact with the criminal justice system) showed a peak at least one year prior to parental death and a linear decline over the year following parental death. One year later, most of the indicators of psychological distress of AIDS orphans were comparable with that of vulnerable children. Only the rates of unprotected sexual behaviors increased sharply following parental death among AIDS orphans. Also, externalizing problems and anxiety did not shift as a function of parental death [41]. The findings that psychological distress emerged before maternal death and then declined following maternal death were echoed by a longitudinal study by Pelton and colleagues in the US [28]. They found that even though more AIDS orphans had clinical levels of internalizing and externalizing problems than vulnerable children and children from HIV-free families before maternal death, no differences existed at six months after maternal death. However, they found that AIDS orphans developed more internalizing problems than vulnerable children two years after maternal death.

Two other longitudinal studies were also conducted in the US and showed mixed findings. One study investigated a sample of 50 vulnerable children living with HIV positive mother and 124 comparison children from HIV-free families [33]. They found that vulnerable children had a higher level of depression according to child's report but not mother's report, but there were no group difference in externalizing and internalizing problems across their four annual assessments. However, the other study, with a sample of 20 maternal AIDS orphans and 40 comparison children, suggested no group differences in either depression or externalizing problems across their two assessments [27].

Moderating Effect of Children's Gender and Age

Thirteen studies presented the results on gender's effect in the relationship between parental HIV/AIDS and the psychological well-being of children. The findings were inconsistent. Some studies found that boys were more vulnerable to the negative effects of parental HIV-related death. Kaggwa and Hindin [22] found that loss of a parent to HIV was associated with heightened depression and hopelessness among boys but not girls in their Uganda sample. Similarly, He and Ji concluded that, in rural China, orphaned boys were more vulnerable than orphaned girls to depression and decreasing of subjective quality of life in various aspects, such as family life, peer interaction, school life, and living environment [44]. But, some other studies reported that girls were more affected than boys by the loss of parents to HIV and showed poorer emotional adjustment [19, 25] and social adjustment [19].

However, some studies did not find such a gender difference [15, 16, 18, 36, 40, 42]. For example, Li and colleagues found that gender did not intervene the link between parental HIV/AIDS and children's psychological well-being as reflected in either emotional adjustment (depression and anxiety), or behavioral adjustment (conduct problems), or social adjustment (peer social skills and self-esteem) [42]. Nyamukapa and colleagues [16], based on their national survey sample, concluded that the parental HIV/AIDS was negatively

associated with children's psychological well-being regardless of gender. Unfortunately, most reviewed studies did not report the gender effect in moderating the link between parental HIV/AIDS and children's psychological well-being, even though they collected data from both boys and girls.

Ten studies also considered the role of children's age in the impact of parental HIV/AIDS on children's psychological well-being. Most of the studies (80%) reported that age did not influence the impact of parental HIV/AIDS on children's psychological adjustment [12, 16, 18, 32, 34, 42, 46, 51]. Only two studies reported that age moderated the relationship between parental HIV/AIDS and children's psychological well-being, but the findings were inconsistent. One longitudinal study in South Africa [21] found an increase in the psychological distress with age among AIDS orphans. However, another cross-sectional study in Zimbabwe stated that among the double orphans, older children showed less psychological distress than the younger ones [36].

Mediating or Moderating Effects of Risk Factors

Fifteen studies investigated the risk factors that might explain or aggravate the poorer adjustment of children affected by HIV/AIDS. However, many studies did not directly examine the potential interactions between parental HIV/AIDS and various risk factors. The risk factors that were examined by the reviewed studies were summarized into the following three main clusters.

The first cluster of risk factors is HIV-related traumatic or stressful life events. This cluster of factors included: death of family members, death of friends/relatives, violence exposure, child abuse, sibling separation, changes of caregivers/residence, illness in household, parental distress, excessive housework, inadequate care, and lower parent/caregiver connectedness, and parental disclosure of HIV status [13–15, 21, 22, 30, 34, 35, 42, 43, 54, 55]. It was found that children affected by HIV/AIDS reported a higher level of total occurrence, density, duration, initial impact and lasting impact of traumatic events compared to children from HIV-free families [42]. AIDS orphans reported more caregiver illness and excessive housework, which aggravated the strong association between parental HIV/AIDS and psychological distress [43]. Zhao and colleagues [55] found that children affected by HIV/AIDS did not report a significantly higher prevalence of childhood sexual abuse when compared with children from HIV-free families, but about 30% of all the children in their study reported having experienced at least one form of sexual abuse, including physical contact abuse or nonphysical contact abuse. In addition, it was reported that adolescents who knew their mother's HIV status were eight times more likely to score in the clinical range of depression than those who did not know [34].

The second cluster is HIV-related stigma including perceived public stigma against people living with HIV/AIDS, perceived public stigma against children affected by HIV/AIDS, personal stigma against children affected by HIV/AIDS, and enacted stigma [15, 23, 39, 52–54, 62]. Cluver and colleagues [52] reported that stigma mediated the negative association between AIDS-orphanhood and psychological well-being. Nyamukapa and colleagues [15] also reported that maternal AIDS orphans were five times more likely to experience stigma than children from HIV-free families. However, some other studies found that stigma was a pervasive factor that negatively affected all the children living in the HIV concentrated communities. For example, Lin and colleagues [53] differentiated two types of stigma, perceived public stigma and personal stigma against people living with HIV/AIDS, and reported that both of them were negatively associated with children's psychological well-being. They also suggested that AIDS orphans, vulnerable children, and children from HIV-free families from the same community where HIV was prevalent experienced the similar level of stigma. Muller and colleagues [13] reported that after controlling the orphan status

and other confounding factors, HIV-related stigma strongly and negatively predicted children's self-efficacy.

The third cluster is poverty and related socioeconomic disadvantages in resource poor countries. The factors examined in the reviewed studies included lack of food, lack of medical care, going to bed hungry, child headed household, child labor, inadequate care arrangement, and poor school attendance and enrollment [16, 17, 25, 37, 43, 49, 54]. Some studies reported that these risk factors were interacted with AIDS-orphanhood or HIV-related vulnerability. For example, one study in Guinea found that AIDS orphans were 3.04 times more likely to be engaged in child labor in framing fields and 2.73 times more likely to go to bed hungry on a daily base in comparison with other orphans [49]. Howard and colleagues found that, in Zimbabwe, AIDS orphans suffered most severe financial hardship compared with non-AIDS orphans and children from HIV-free families. In Benin, researchers also found that children affected by HIV/AIDS, compared with children from HIV-free families, were 1.94 times more likely to get fewer meals, 1.38 times more likely to treat themselves and 1.65 times more likely to go to work when they were sick [17]. Some other studies did not directly examine the interaction of parental HIV/AIDS and poverty-related factors but reported that poverty and related socio-economic hardship were additional risk besides being orphaned by AIDS [25, 37]. In Tanzania, more AIDS orphans than children from HIV-free families reported that they were hungry when they go to bed, which was one of the additional factors besides being an orphan that exert negative effects on children's psychological well-being [25]. As suggested by the studies conducted by Nyamukapa and colleagues in Zimbabwe, being out of school contributed to the greater psychological distress of AIDS orphans, because these AIDS orphans would lose a safe place for learning skills, sharing grief and developing peer networks [15, 16].

Mediating or Moderating Effects of Protective Factors

Ten studies explored the protective factors that might buffer against or mitigate the negative effect of parental HIV/AIDS on children's psychological well-being. These factors can be summarized into individual factors, relational factors, and social factors. Individually, when children have adequate coping skills [14], they can cope well with the traumatic events along with parental illness and death and have a better psychological adjustment. Rotheram-Borus and colleagues provided a coping-skills intervention program for adolescent children of parents living with HIV/AIDS. The children in the intervention group reported significantly fewer problem behaviors and sexual partners, and less substance use two years after the intervention [56].

A trusting relationship with current caregivers might help children affected by HIV/AIDS to cope with life stressors. According to a study in rural China, children affected by HIV/AIDS reported a lower trusting relationship with current caregivers than children from HIV-free families [20]. The association between trusting relationship and psychological adjustment was also found to be independent of children's family HIV/AIDS experiences (parental death, parental illness, or HIV-free). It was suggested that trusting relationship might be a global protective factor for children's psychological adjustment. Furthermore, a positive relationship with caregivers benefited children affected by HIV/AIDS in the long run. Rotheram-Borus and colleagues reported that positive parental bonds reduced children's emotional distress three years after the delivery of intervention and increased children's future expectation six years later [14].

Another robust stress buffer is the perceived or actual social support [13]. Onuoha & Munakata [39] found that AIDS orphans having a natural mentor (e.g., adults other than caregivers to whom a child can go for support) showed significantly better psychological well-being than those who did not have one. Besides the support from adults, access to

support groups was found to be predictive of higher levels of self-concept, but not reduced levels of anxiety and depression among AIDS orphans [18]. In fact, almost all kinds of social support (informational, tangible, affectionate, and social interaction) from various resources (family, teachers, friends and significant others) may exert an positive effect on children's psychological well-being [57]. Different sources and functions of social support were related to different psychological outcomes. Loneliness was negatively associated with tangible, informative, affectionate and positive social interaction from family, teachers and friends. Depression was negatively correlated with tangible support from family/relatives. Delinquency was negatively correlated with tangible support from family, teachers, friends and significant others [57].

Discussion

Our review synthesized the existing literature and found that some promising progress has been made in understanding the impact of parental HIV/AIDS on children's psychological well-being. With the organization of emotional, behavioral and social adjustment of children, we tightened up the major findings to allow communication across studies in the field. We also examined nine specific effects of parental HIV/AIDS on children's psychological well-being, which substantially extend the two prior literature reviews and provide potential directions for future research. The existing literature underscores the vulnerability of children affected by HIV/AIDS, including both AIDS orphans and vulnerable children, despite the variation in measurements of psychological well-being, comparison groups, and age range of children. However, there are a lot of specific issues that remain to be examined among this disadvantaged population. We attempt to identify the knowledge gaps in the field and discuss the future research directions accordingly.

Theoretical framework

Future research and interventions need to be guided by sound theoretical framework and focus on theoretical integration and development. Except for two studies, most of the reviewed studies did not indicate a theoretical framework for their studies. Li and colleagues [58] proposed a developmental psychopathology model to understand the complexity and dynamics of child development in the face of adversities of parental HIV-related illness and death. Guiding by that framework, Li and colleagues [20, 42, 45, 63] evaluated children's psychological outcomes in multiple domains and the risk and protective factors that may account for the outcomes in their studies. Nyamukapa and colleagues [16] developed their theoretical framework to address the causes and consequences of psychological distress among children affected by HIV/AIDS. Guiding by this comprehensive framework, their empirical studies illustrated that the effect of parental loss was moderated by the number, sequence, and timing of parental death, by the child's characteristics, and by family and other social and contextual circumstances. Future research should employ psychological or psycho-developmental theories (e.g., stress and coping theory, resilience framework, developmental pathology) to guide the heath research of children affected by HIV/AIDS. Theoretical or conceptual framework may help us to systematically identify and address specific needs of children in the face of HIV-related parental illness and death.

Longitudinal impact of parental HIV/AIDS

There is also a need for longitudinal studies which will allow us to understand the long-term impact of parental HIV/AIDS and children's needs in the course of the parental illness and parental death. HIV may start to impact a child in an early stage of parental illness and the impact continues through the course of the illness and after parental death [2]. When the parent experiences a period of prolonged, chorionic illness before death occurs, children might repeatedly be exposed to traumatic events, like observing parent's illness-related

distress, taking care of ill parents, doing excessive housework, and losing the opportunity of schooling [22, 25, 56, 59]. The reviewed five longitudinal studies portrayed curved patterns of psychological distress during various stages of parental loss (illness, death, after death) but their results are inconsistent in either the trajectory patterns of their curves (increment, decline, or U-shape) or the domains of children's psychological well-being (emotional, behavioral or social adjustment). Thus, it is not clear regarding the most prominent difficulties for children in various stages of parental loss on the basis of the available data. Future studies could examine the mourning and coping process during various stages of parental loss, which might provide useful information for timing and effective interventions. Longitudinal studies will also afford us to differentiate the impact of parental HIV/AIDS from developmental patterns (e.g., intellectual or emotional maturity) or other confounding factors or contextual factors in these children's life.

Gender difference in vulnerability

Our review demonstrates the lack of attention given to the role of gender in the existing literature. Most of the studies did not directly test the effect of gender in moderating the association between parental HIV/AIDS and psychological well-being. Of a few studies that analyzed data by gender, findings were equivocal. Some evidence supports the traditional focus on female disadvantages [9], whereas some evidence supports the male vulnerability. Developmental psychology theory has suggested that, girls are more likely to present internalizing problems and boys are more likely to present externalizing problems in facing stress [60]. This gender-linked vulnerability was partially related to the developmental characteristics of boys and girls. "Girls' greater socialization for self-regulation and sensitivity to interpersonal concern increase their vulnerability to internalizing/emotional problems. On the other hand, dispositional differences in aggression, as well as the socialization practices that emphasize self-assertion and underemphasize empathy and self-regulation, may put boys at higher risk for externalizing problems" (p. 1269) [60]. However, the existing data are insufficient to draw a definitive conclusion on gender specific vulnerability of children affected by HIV/AIDS. Future researchers may pay more attentions toward this important child developmental issue.

Cultural specific risk and protective factors

There is a need to explore the mediating/moderating processes for any risk of problems and to identify the protective factors that might cultivate the psychological resilience of children in specific cultural contexts. The geographic distribution of the exiting studies did not appropriately reflect the actual global needs of children affected by HIV/AIDS since about two-thirds studies were conducted in sub-Saharan Africa. Although the majority of children affected by HIV/AIDS in the world are living in sub-Saharan, a large and increasing number of children affected by HIV/AIDS lived in low prevalence and concentrated HIV epidemic regions, such as Asia and Europe [61]. Their needs should not be overlooked. Political, economic and cultural factors in different regions may play important roles in the psychological well-being of children affected by HIV/AIDS in those regions [50]. The knowledge obtained from research in higher prevalence countries may not be all applicable to children in lower prevalence countries. One may note that poverty and stigma were mainly suggested as key risk factors by studies in Africa or other low-resource countries, such as China. These two risk factors may not be as prominent as in the US because relatively higher public concerns and resources have been addressed to children and adults affected by HIV/AIDS. The existing literature can also be greatly enriched by the studies addressing specific needs of children in countries with low prevalence and concentrated HIV epidemic.

Vulnerability among sub-populations

There is a need for more rigorous and systematic quantitative research aimed at establishing the specific vulnerability in different sub-populations (i.e., double orphans vs. single orphans, maternal orphans vs. paternal orphans). The existing literature shows mixed results regarding the effects of orphanhood types on the psychological well-being of children. There are some possible explanations for the mixed results. First, the potential cultural factors may confound the effect of orphanhood types. For example, in Namibia, where a large proportion of children are raised by extended family, the importance of mother and father may be similar in such a pattern of child rearing [38]. But in other cultures with emphasis on mother's role in children caregiving, like China and the US, maternal death might lead to more stress for children. Second, the transition and quality of care arrangement after parental death may explain the differences among single orphans and double orphans. As discussed by several authors [19, 27, 35], if a double orphan smoothly transitions to a close adult caregiver and was provided with more stable care, he/she may not show more psychological distress than a single orphan living with a parent who was struggling with HIV. Actually, the length of orphanhood, children's age at the time of parental death, and the other socio-demographic-economic factors can all confound the effect of orphanhood types on children's psychological well-being. Therefore, future studies need to test the interactive effects among orphanhood types and other confounding factors on children's psychological well-being.

Limitations

This review is subject to some limitations. First, we did not include articles that were published in other languages in the review because of the accessibility concerns. Second, we only included the articles published in peer-reviewed journals, although some government reports, NGO documents, or unpublished manuscripts may provide valuable information on the psychological well-being of children affected by HIV/AIDS. Third, the grouping of risk factors and protective factors is helpful to understand the findings but may be categorically biased. Fourth, studies that do not include control groups but only follow an HIV infected sample of parents often tend to focus on the level of parental illness, which has been found to be significant factor in child outcomes. Evidence in such studies should not be ignored by researchers and practitioners. Fifth, the organization of the outcome measures into emotional, behavioral and social adjustments provides a vehicle for communication across studies, but it may subject to the possibility of conceptual overlapping. Finally, the current review did not focus on the children who are HIV positive, although some recruited children might be HIV positive. Also, there is growing evidence that an HIV infection has adverse effects independent of orphanhood on children's mental health [7]. This most vulnerable group needs particular attention in future research.

Conclusion

In conclusion, parental HIV/AIDS exposes children to significant challenge for psychological adjustment. Future studies need to be guided by appropriate conceptual or theoretical framework to depict the psychological needs of these children. Methodologically, further studies need to employ sufficient sample size, use standardized instruments, and include appropriate comparison groups of children from HIV-free family or children orphaned by other causes. In addition, future researchers may make more efforts to identify the gender difference in HIV-related vulnerability, variation of the vulnerability among sub-populations, and the risk and protective factors within specific cultural contexts. It is urgent to implement evidence-based interventions to support children from individual, familial and community levels in a culturally and developmentally appropriate manner. Ideally, professionals from different disciplines, such as medical providers, social workers,

psychiatrists, psychologists, and other related professionals should work collaboratively to provide comprehensive support to children affected by HIV/AIDS worldwide.

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Appendix Boolean Logic Search Model

(AIDS*[Title/Abstract] OR HIV*[Title/Abstract]) AND (orphan[Title/Abstract] OR vulnerable children[Title/Abstract] OR parental HIV[Title/Abstract] OR parental death[Title/Abstract] OR children affected by HIV*[Title/Abstract] OR children affected by AIDS*[Title/Abstract]) AND (mental health [Title/Abstract] OR psychological* [Title/Abstract] OR adjustment [Title/Abstract] OR distress[Title/Abstract] OR emotional*[Title/Abstract] OR behavioral*[Title/Abstract]) AND (English[lang])

Table 1

Standardized or established measurement tools for psychological indicators used in the reviewed studies

Indicators	Standardized measurement tools	Authors, years
Emotional adjustment		
Depression	CDI [a]	Kovacs, 1992
	CESD-C [d]	Fendrich, Weissman, & Warner, 1990
	Reynold Child Depression Scale [s]	Reynold, 1999
	Beck Depression Inventory [u]	Beck, Wald, Mendelson, Mock, & ErBaugh, 1961
	Depression Subscale, BYI [y]	Beck, Beck, & Jolly, 2001
Anger	Anger Subscale, BYI [y]	Beck, Beck, & Jolly, 2001
Anxiety	Children's Manifest Anxiety Scale-Revised [b]	Reynolds & Richmond, 1978
	Anxiety Subscale, GHQ [o]	Goldberg & hillier, 1979
	Anxiety Subscale, CRS [h];	Hightower, 1987
	State Trait Anxiety Inventory Child Version [n]	Spielberger, 1973
	Anxiety Subscale, BYI [y]	Beck, Beck, & Jolly, 2001
Post-traumatic stress	Child Post-Traumatic Stress Disorder Checklist [c]	Amaya-Jackson, Newman & Lipschitz, 2000
	Trauma Symptom Checklist for Children [i]	Birere, 1996
	Trauma Symptom Checklist for Children [r]	Townsend, 2002
	Impact of Event Scale-8 [x]	Horowitz, Wilner, & Alvarez, 1979
Loneliness	Children's Loneliness Scale [j]	Asher, Hymel, Renshaw, 1984
Hopelessness	Beck Hopelessness Inventory [m];	Beck, Weissman, Lester, & Trexier, 1974
Emotional problems	Emotional Problems Subscale, SDQ [l]	Goodman, 1997
	Internalizing Problems Subscale, CBCL [z]	Achenbach, 1991
	Emotional adjustment items, MMPI-2 [p]	Butcher, 1995
	Emotional problems, Conner's Parent's Rating Scale [q]	Conners, Parker, Sitarenios, & Epstein, 1998
Behavioral adjustment		
Hyperactivity	Hyperactivity Subscale, SDQ [l]	Goodman, 1997
Disruptive behaviors	Disruptive Behaviors Subscale, BYI [y]	Beck, Beck, & Jolly, 2001
Delinquency	Delinquent Subscale, Youth Self Report [w]	Achenbach, 1991
Behavioral problems	Acting Out Subscale, CRS [h]	Hightower, 1987

Indicators	Standardized measurement tools	Authors, years
	Conduct Problems Subscale, SDQ [l]	Goodman, 1997
	Externalizing Problems Subscale, CBCL [z]	Achenbach, 1991
	Behavioral problems, Conner's Parent's Rating Scale [q]	Conners, Parker, Sitarenios, & Epstein 1998
Social adjustment		
Self-esteem	Self-Esteem Scale [e]	Rosenberg, 1965
	Self-Concept Subscale, BYI [y]	Beck, Beck, & Jolly, 2001
Self-efficacy	Self-Efficacy Questionnaire for Children [k]	Muris, 2001; Suklo & Shaffer 2007
Future expectation	Children Future Expectation Scale [f]	Bryan, Rocheleau, Robbins, & Hutchison, 2005
Future orientation	Hope and Control about Future [g]	Whitaker, Miller, & Clark, 2000
Peer skills/problems	Peer Social Skills Subscale, CRS [h]	Hightower, 1987
	Peer problems Subscale, SDQ [l]	Goodman, 1997
School interest	School interest Subscale, CRS [h]	Hightower, 1987
Social competence	Perceived Competence Scale for Children and Parents [t]	Harter, 1982
	Items of social competence, CBCL [z]	Achenbach, 1991
	Social adjustment items, MMPI-2 [p]	Butcher, 1995
Pro-social behaviors	Pro-social Subscale, SDQ [l];	Goodman, 1997
Quality of life	Inventory of Subjective Life Quality for Children and Adolescents [v]	Cheng, Gao, & Peng, 1998
	The PedsQL 4.0 [α]	Varni, Burwinkle, & Seid, 2006

Note. CDI = Children's Depression Inventory; CESD-C = Center for Epidemiological Studies Depression Scale for Children; BYI = Beck Youth Inventories; GHQ = General Health Questionnaire; CRS = Child Rating Scale; SDQ = Strengths and Difficulties; CBCL = Child Behavior Checklist; Questionnaire; MMPI = Minnesota Multiphasic Personality Inventory.

The upper class alphabets can be used to match the specific tools used in Table 2 and Table 3.

Table 2

Summary of findings of twenty-five cross-sectional studies

Author(year)	Location (year of the study)	Sampling	Sample description	Indicators of psychological well-being	Major findings	Moderating/mediating factors
Mueller et al. (2011) [13]	Nekkies, South Africa (2001)	Recruited from schools	N = 281 Age: 8–18 66 AIDS orphans (17 maternal, 33 paternal, 16 double), 215 comparison children	*Standardized instruments*: Self-esteem [e], self-efficacy [k], depression [a], emotional problems [l], behavioral problems [l]	Loss of both parents exerted a robust effect on child psychosocial health after controlling confounding factors	*Risk factors:* AIDS-related stigma, community and household violence *Protective factors:* Social connection
G. Zhao et al. (2011) [57, 62]; J. Zhao et al. (2011) [20]; Q. Zhao et al. (2011) [55]; Hong et al. (2010) [63]; Lin et al. (2010) [53]; Zhang et al. (2009) [64]; Fang et al. (2009) [45]; Li et al. (2009) [42]	Henan, China (2006–2007)	Recruited from orphanages, group homes, and family or kinship care	*N* = 1625 Age: 6–18 755 AIDS orphans; 466 vulnerable children; 404 comparison children	*Standardized instruments:* Depression [d], self-esteem [e], future expectation [f], future orientation [g], school adjustment [h], traumatic stress [i], loneliness [j]	AIDS orphans and vulnerable children showed lower psychological well-being than comparison children Double orphans and single orphans had the similar level of psychological well-being	*Gender effect:* Not significant *Age effect:* Not significant *Risk factors*: Traumatic events, stigma, child abuse *Protective factors*: Trusting relationship with caregivers, social support
Cluver et al. (2010–2007) [23, 43, 50, 52, 54, 65]	Cape Town, South Africa (2005)	Recruited from urban settlements, schools, community organizations, street-children, and child-headed households	*N = 1025* *Age: 10–19* 425 AIDS orphans; 241 other orphans, 278 comparison children	*Standardized instruments:* Depression [a], anxiety [b], traumatic stress [c], peer and conduct problems [l], delinquency [w]	AIDS orphans showed higher level of depression, anxiety, post-traumatic stress, conduct problems, peer problems, delinquency, and suicidal ideation than the other two groups	*Risk factors:* Food insecurity, bullying, child abuse, domestic violence, sibling separation, changes of caregiver *Pathway:* AIDS orphanhood → caregiver illness, excessive housework, stigma, poverty → psychological distress
Doku (2010 – 2009) [46, 47]	Odumase, Ghana	Recruited from communities	*N* = 200 Age: 10–18 50 AIDS orphans, 51 other orphans, 48 vulnerable	*Standardized instruments:* Emotional-behavioral problems [l]	AIDS orphans had the most peer problems among the four groups Both AIDS orphans and other orphans had more conduct	*Gender effect:* Vulnerable boys had more peer problems than vulnerable girls, and such gender difference did not exist among AIDS orphans

Author(year)	Location (year of the study)	Sampling	Sample description	Indicators of psychological well-being	Major findings	Moderating/mediating factors
			children, 51 comparison children		problems than the other two groups Emotional problems were very high in all the groups except among the comparison children	*Age effects:* Not significant
Kaggwa & Hindin (2010) [22]	Mukono, Uganda (2007–2008)	Recruited from 10 randomly selected schools	*N* = 1309 youth Age: 12–29 459 orphans (28.7% AIDS orphans, 35.8% other orphans, 35.5% orphan of unknown causes), 850 comparison children	*Standardized instruments:* Depression [a], hopelessness [m]	AIDS orphans did not show higher levels of depression and hopelessness than comparison children	*Gender effect:* Loss of a parent to HIV was associated with worse psychological distress among the males but not females *Risk factors:* Lower parent/guardian connectedness, chronically illness of adults in the household, ill treatment in residence
Nyamukapa et al. (2010) [15]	Manicaland, Zimbabwe (2002–2003)	*Stratified random household sampling:* Recruited from 8 rural locations	*N* = 527 Age: 12–18 444 AIDS orphans (185 double orphans, 109 maternal orphans, 150 paternal orphans), 83 comparison children	*Investigator-developed questions:* Psychological distress (20 questions on depression and anxiety)	AIDS orphans suffered greater psychological distress than comparison children after controlling sex and age Paternal orphans had greater psychological distress for all durations of parental loss Maternal orphans who lost their parents more than four years ago reported less psychological distress	*Gender effect:* Not significant *Risk factors*: A recent death in the household, a seriously ill adult in the household, stigma, inadequate care, child labor, physical abuse, and being out of school
Onuoha et al. (2010–2009) [39, 40, 51]	Kampala, Uganda; Mafikeng/Klerksdorp, South Africa	Recruited from 9 local community schools and 6 child-care centers	*N* = 952 Age: 10–17 373 AIDS orphans, 287 other orphans,	*Standardized instruments:* Depression [d], self-esteem [e], anxiety [o]	AIDS orphans scored higher in depression, anxiety than the other two groups AIDS orphans scored lower on	*Gender effect:* Not significant *Age effect:* Not significant *Risk factors:* Child abuse, stigma

Author(year)	Location (year of the study)	Sampling	Sample description	Indicators of psychological well-being	Major findings	Moderating/mediating factors
			290 comparison children		self-esteem than the other two groups Double orphans scored higher anxiety and lower self-esteem than did single orphans	*Protective factors:* Natural mentorship, social support
Xu T. et al. (2010) [35]	Yunan, China	Recruited from local health service providers	*N* = 215 Age: 8–17 116 AIDS orphans and vulnerable children, 109 comparison children	*Standardized instruments:* Health related quality of life [a],	AIDS orphans and vulnerable children scored lower on subjective quality of life, especially in emotional functioning and school functioning domains	*Risk factors:* Parental disclosure of HIV/AIDS status *Protective factors:* Caregiver's perceived quality of life, grandparents fostering, more company time provided by the caregiver
Delva et al. (2009) [49]	Conakry and N'Zerekore, Guinea (2006)	Recruited with the assistance of local authorities, NGOs and CBOs	*N* = 397 Age: 10–18 124 AIDS orphans, 133 other orphans, 140 comparison children	*Investigator-developed questions:* Psychological well-being (difficulties falling asleep, feeling safe, etc.)	AIDS orphans reported significantly lower psychological well-being than other orphans and comparison children	*Risk factors:* Bed hungry, child labor
Ruiz-Casares et al. (2009) [38]	Caprivi and Kavango, Namibia (2004)	Recruited from 3 schools	*N* = 157 Age: 7–21 73 AIDS orphans (50 single plus 23	*Standardized instruments:* Depression [a]	21.9% of single and double orphans and 11.9% of non-orphans exhibited depressive symptoms. Double orphans were 3.2 times and single orphans were 1.5 times as likely to fall into clinical range of depression than comparison children Maternal orphans showed similar	N/A

Author(year)	Location (year of the study)	Sampling	Sample description	Indicators of psychological well-being	Major findings	Moderating/mediating factors
			double), 84 comparison children		level of depression with paternal orphans	
Killian and Durrheim (2008) [29]	KwaZulu Natal, South Africa	Recruited from communities with profound poverty and problems	*N* = 741 Age: 10.05 ± 1.57 319 maternal AIDS orphans, 276 vulnerable children, 146 comparison children	*Standardized instruments:* Emotional and behavioral difficulties [q], traumatic stress [r], depression [s],	AIDS orphans and vulnerable children showed similar higher degree of emotional distress and behavioral difficulties (caregiver report), depression and traumatic stress (child report) than comparison children	*Risk factors:* Bereavement, taking care of dying people, child abuse, poverty, protracted hospitalization *Protective factors:* Perceived social support
Mellins et al. (2008) [30]; Brackis-Cott et al. (2007) [34]	New York City, US	Recruited from 5 medical centers, 3 CBOs, and one network of HIV care provider	*N = 220* *Age: 10–14* 120 vulnerable children with HIV+ mother; 100 comparison children	*Standardized instruments:* Depression [a], anxiety [n], internalizing problems and externalizing problems [z]	Vulnerable children and comparison children were not different in clinical range of depression, anxiety symptoms (child report), and internalizing/ externalizing problems (mother report)	*Gender effect:* Not significant *Age effect:* Not significant *Risk factors:* Maternal disclosure of HIV/AIDS status, being in Latina families, overall health of mothers *Protective factors:* Parent-child communication and involvement, youth autonomy
Nyamukapa et al. (2008) [16]	Zimbabwe (2004)	A subsample from National Survey: *Probability*	N = 5321 Age: 12–17 1952 AIDS orphans (548 double orphans, 281 maternal orphans, 1123 paternal orphans), 543 vulnerable children,	*Investigator-developed questions:* Psychological distress (25-item)	AIDS orphans showed higher psychological distress than comparison children Vulnerable boys but not girls, showed evidence of more psychosocial distress than comparison children	*Gender effect:* Not significant for AIDS orphans, but significant for vulnerable children *Age effect:* Not significant *Risk factors:* Poverty, care arrangement and quality, no school enrollment

Author(year)	Location (year of the study)	Sampling	Sample description	Indicators of psychological well-being	Major findings	Moderating/mediating factors
		proportional to size sampling	2165 comparison children		The above link was regardless of orphanhood types (i.e., maternal, paternal, double) Maternal orphans were at particular risk of early onset of sexual intercourse	*Protective factors:* Being connected with a close adult
Ostergaard and Meyrowitsch (2008) [17]	Benin (2005)	Multistage random sampling	*N* = 2043 Age: 10–16 1033 children affected by HIV/AIDS, 1010 comparison children	*Investigator-developed questions:* Psychosocial condition (3-item)	Children affected by HIV/AIDS had higher levels of psychological distress than comparison children Children affected by HIV/AIDS were as much as five times as likely to reported negative perception of themselves	*Risk factors:* Lack of food, lack of medical support
He and Ji (2007) [44]	Henan, China. (2005)	Recruited from four schools	*N* = 186 Age: 8–15 93 AIDS orphans (48 paternal orphans, 25 maternal orphans, 13 double orphans) 93 comparison children	*Standardized instruments:* Depression [u], self-esteem [e], subjective life quality [v]	AIDS orphans had less self-esteem and lower life quality and were more depressed than comparison children No differences were found between paternal, maternal and double orphans	*Gender effect:* Boys were more vulnerable than girls in psychological well-being and life quality
Cluver et al. (2006) [26]	Cape town, South Africa. (2002–2003)	Recruited from Child Welfare Society	*N* = 60 Age: 6–19 30 AIDS orphans, 30 comparison children	*Standardized instruments:* Traumatic stress [x],	AIDS orphans did not show more traumatic stress and prosocial, conduct,	N/A

Author(year)	Location (year of the study)	Sampling	Sample description	Indicators of psychological well-being	Major findings	Moderating/mediating factors
				emotional and behavioral problems [l]	emotional, peer and hyperactivity problems than comparison children	
Howard et al. (2006) [36]	Rural eastern area, Zimbabwe (2003)	Recruited from 34 schools	*N* = 340 Age = 6–19 253 AIDS orphans(144 double orphans and 109 single orphans), 87 comparison children	*Investigator-developed questions:* Feeling of scared, worried, overwhelmed, difficulty sleeping, anxiety, unhappiness, future education orientation	Double orphans and single orphans had more feeling of scared and worried than comparison children. Double orphans felt overwhelmed more frequently than single orphans and comparison children Double orphans were less likely to say they hope to go to college	*Age effect:* Distress was greatest among younger children among double orphans, but not among single orphans or non-orphans *Gender effect:* Not significant *Risk factors:* Lack of meals
Atwine et al. (2005) [18]	Bushenyi District, Uganda	*Multistage stratified random sampling:* Recruited at homes & schools	*N* = 223 Age: 11–15 123 AIDS orphans, 110 comparison children	*Standardized instruments:* self-concept [y], anxiety [y],	AIDS orphans had greater risk for higher levels of anxiety, depression, and anger than comparison children AIDS orphans showed more disruptive behaviors AIDS orphans did not score lower than comparison children on self-concept Maternal orphans and paternal orphans did not show differences in depression	*Gender effect:* Not significant *Age effect:* Not significant

Author(year)	Location (year of the study)	Sampling	Sample description	Indicators of psychological well-being	Major findings	Moderating/mediating factors
				depression [y], anger [y], disruptive behavior [y]	12.2% orphans wished they were dead	*Protective factors:* Support from extended family, peer support groups
Bhargava, (2005) [19]	Ethiopia (2001–2002)	*Stratified random sampling:* A subsample of National Survey of Prevalence of Orphans in Ethiopia	*N* = 1053 Age: >10 Ethnicity: 479 maternal and double AIDS orphans, 574 other orphans	*Standardized instruments:* 60 items from MMPI-2 measuring social and emotional adjustment [p]	AIDS orphans showed lower emotional and social adjustment than other orphans	*Gender effect:* Girls were more affected than boys *Protective factors:* Presence of the father, higher household income, adequate feeding and clothing condition, sympathetic attitude of the fostering family
Makame et al. (2002) [25]	Dar El Salaam, Tanzania (2000)	Recruited from local NGOs, ward, and local leaders in three poor suburbs	*N* = 82 Age: 10–14 41 AIDS orphans, 41 comparison children	*Investigator-developed instruments:* Internalizing problems (derived from Rand Psychological well-being and Beck Depression Inventories)	AIDS orphans had more internalizing problems and higher level of depression 34% or the orphans reported had contemplated suicide in the past year	*Risk factors:* Poor school attendance, lack of economic resources and basic need, being hungry
Esposito et al. (1999) [31]	Milan, Italy	Recruited from HIV medical providers	*N* = 117 Age: 6–11 39 AIDS orphans or vulnerable children (18 maternal AIDS orphans), 78 comparison children	*Standardized instruments:* Internalizing and externalizing problems [z], social competence [z], anxiety [b], depression [a]	AIDS orphans and vulnerable children scored higher in anxiety, depression (children n report), externalizing problems, attention and social problems, and lower in social competence (caregiver report) than comparison children AIDS orphans were not different with vulnerable children on psychological problems	N/A
Forehand et al. (1998) [32]	New Orleans, USA	A subsample of Family Health Project	*N* = 236 Age: 6–11	*Standardized instruments:* Depression [a],	Vulnerable children	*Gender effect:* Not significant *Age effect:* Not significant

Author(year)	Location (year of the study)	Sampling	Sample description	Indicators of psychological well-being	Major findings	Moderating/mediating factors
			87 vulnerable children with HIV+ mother, 149 comparison children	externalizing and internalizing problems [z], social competence [t]	reported higher degree of depression and externalizing problems, and were rated lower on social competence according to the mother report but not child report	
Forehand et al.(1997) [12]	22 hemophilia treatment centers, US	A subsample of Hemophilia: Parent and Children Project	*N* = 137 Age: 3–18 67 children living with HIV+ father, 70 comparison children living with father with Hemophilia	*Standardized instruments:* Externalizing and internalizing problems [z]	Vulnerable children had higher levels of internalizing problems, but did not differ from comparison children on externalizing problems (child + parent report)	*Gender effect:* Not significant *Age effect:* Not significant
Sengendo and Nambi (1997) [37]	Rakai district, Uganda	Recruited with the help of community workers.	*N*=193 Age: 6–20 169 AIDS orphans, 24 comparison children	*Investigator-developed questions:* Depression, locus of control	AIDS orphans had a higher average score of depression than comparison children AIDS orphans were less optimistic about the future than the comparison children	*Risk factors:* Poverty, child headed household
Forsyth et al. (1996) [24]	Connecticut, US	Recruited from a hospital	*N*=52 Age: 6–16 26 vulnerable children with HIV+	Standardized instruments: Externalizing and	Vulnerable children were found to be more withdrawn, have more problems with attention (mother report), report higher level of depression than comparison children	*Risk factors:* Mother presenting symptoms of HIV

Author(year)	Location (year of the study)	Sampling	Sample description	Indicators of psychological well-being	Major findings	Moderating/mediating factors
			mother, 26 comparison children	internalizing problems [z], depression [a], anxiety [b]	(children report) Vulnerable children were not more anxious than comparison children (children report)	

Note. The upper class alphabets can be used to match the specific tools described in Table 1.

Table 3

Summary of findings of five longitudinal studies

Author(year)	Location (year of the study)	Study design	Sampling	Sample description	Indicators of psychological well-being	Major findings	Moderating/mediating factors
Cluver et al. (2011) [21]	Cape Town, South Africa (2005–2009)	4-year time span, two assessments (baseline, 4-year follow-up)	Recruited from urban settlements, schools, community organization s, street-children, child-headed households	*N* = 71% of the baseline (*N* =1025) Age: 11–19 (baseline) 425 AIDS orphans; 241 other orphans, 278 comparison children (Baseline)	*Standardized instruments:* Depression [a], anxiety[b], post-traumatic stress[c]	AIDS orphans showed higher level of depression, anxiety, and trauma scores in either baseline or 4-year follow up than the other two groups Negative psychological well-being outcomes amongst orphans were worsen over a 4-year period	*Age effect:* There was a steep rise in psychological distress along with age among AIDS orphans, but no rise with age amongst other orphans and comparison children
Rotheram-Borus et al. (2006–2001) [14, 41, 56]; Lee et al. (2007) [10]; Lester et al. (2006) [11]	New York City, USA (1993–1995)	Randomized control trial, follow-up were conducted every 3 months for 2 years and then at 6-month until 6 years	Recruited from the NYC Division of AIDS Services.	*N = 413* *Age: 11–18* 44.5% AIDS orphans by three-year follow-up, 51.5% by six-year follow up	*Standardized instruments:* depression and somatization [w], risk behaviors, conduct problems (investigator-developed), positive expectation (investigator-developed)	Bereaved adolescents reported more somatization experienced higher levels of emotional distress about a year prior to parental death, and then declined to the level similar as non-bereaved youths by one year following parental death Parental death was not associated with externalizing problems such as substance abuse, school problems, and peer conflicts, with an exception of contact with criminal justice system. The contact with criminal justice system was also decreased after parental death Parental death predicted more sexual risk behaviors and lowed future expectation	*Risk factors:* Stressful life events in over a year prior to parental death, parent health symptoms, parent emotional distress *Protective factors:* Positive parental bonds, coping skills, social support
Pelton et al., (2005) [28]	New Orleans, USA	Longitudinal: 4-year time span, assessments selected according the	A subsample of Family Health Project (Recruited from primary public HIV clinic and private practices of	*N = 105* *Age: 6–11* 35 maternal AIDS orphans, 35 vulnerable children,	*Standardized instruments:* Internalizing and externalizing problems[z]	More AIDS orphans fell into the clinical range of internalizing and externalizing problems before their mother's death than the comparison children No differences emerged at 6 months after	*N/A*

Author(year)	Location (year of the study)	Study design	Sampling	Sample description	Indicators of psychological well-being	Major findings	Moderating/mediating factors
		time of maternal death	physicians in the inner city)	35 comparison children		maternal death among the three groups More orphans had clinical level of internalizing problems 2 years after maternal death than vulnerable children	
Forehand et al. (2002) [33]	New Orleans, USA (1994–2000)	Longitudinal: 4-year time span, 4 annual assessments	A subsample of Family Health Project	*N* = 249 at baseline, 175 follow ups *Age:* 6–11 51 vulnerable children of HIV+ mother, 124 comparison children	*Standardized instruments:* Internalizing and externalizing problems[z], depression[a]	Vulnerable children reported higher depressive symptoms than comparison children across four assessments, according to child report but not mother's report There were no group differences on other measures	*Protective factors:* Warm and supportive mother-child relationship
Forehand et al. (1999) [27]	New Orleans, USA	Longitudinal: 4-year time span, two assessments: 6-month after maternal death, 2–3 years after maternal death	A subsample of Family Health Project	*N = 60* *Age: 6–11* 20 maternal AIDS orphans, 40 comparison children	*Standardized instruments:* Externalizing problems [z], depression[a]	AIDS orphans did not differ from comparison children in externalizing problems and depression across the two assessments	*Protective factors:* Stable family environment, a close relative (mostly maternal grandparents) becoming caregivers after mother's death

Note. Refer to the *Note* of Table 1 for the specific instrument used in these studies.

Table 4

Summary of the findings of group comparison among children affected by HIV/AIDS, children orphaned by non-AIDS causes, and children from HIV-free families

Studies	Emotional Adjustment				Behavioral Adjustment				Social Adjustment			
	A vs. C	V vs. C	A vs. V	A vs. O	A vs. C	V vs. C	A vs. V	A vs. O	A vs. C	V vs. C	A vs. V	A vs. O
Cluver et al. (2010–2007)	<			<	<			<				
Li, Zhao, & Zhao et al. (2011–2009)	<	<	ns		<	<	ns		<	<	ns	
Muller et al. (2011)									<			
Doku (2010–2009)	<	<	ns	ns	<	<	ns	ns	<	ns	<	<
Kaggwa et al. (2010)	mixed								ns			
Nyamukapa et al. (2010)	<											
Onuoha et al. (2010–2009)	<			<					<			<
Xu et al. (2010) [b]		<								<		
Delva et al. (2009)	<			<								
Ruiz-Casares et al. (2009)	<											
Killian et al.(2008)	<	<	ns		<	<	ns					
Mellins & Brackis-Cott et al. (2008–2007)		ns				ns						
Nyamukapa et al. (2008)	<	mixed	ns		<	mixed	ns					
Ostergaard et al. (2008) [b]		<										
He et al. (2007)	<								<			
Cluver et al. (2006)	ns				ns				ns			
Howard et al. (2006)	<								<			
Atwine et al. (2005)	<				<				ns			
Bhargava et al. (2005)				<								<
Makame et al. (2002)	<											
Esposito et al. (1999)[b]		<				<				<		
Forehand et al. (1998)		<				<				<		
Forehand et al. (1997)		<				ns				ns		
Sengendo et al.(1997	<								<			
Forsyth et al. (1996)		<										
Cluver et al. (2011) [a]	< to <			< to <								

Studies	Emotional Adjustment				Behavioral Adjustment				Social Adjustment			
	A vs. C	V vs. C	A vs. V	A vs. O	A vs. C	V vs. C	A vs. V	A vs. O	A vs. C	V vs. C	A vs. V	A vs. O
Rotheram-Borus, Lee, & Lester et al. (2007–2001)[a]			< to ns				mixed to mixed					
Pelton et al. (2005) [a]	< to ns		ns to <		< to ns		ns to ns					
Forehand et al (2002) [a]		mixed to mixed				ns to ns						
Forehand et al.(1999) [a]	ns to ns				ns to ns							

Note.

[a]longitudinal studies;

[b]studies that combined AIDS orphans and vulnerable children as one study group.

ns, no significance; <, poorer than; A = AIDS orphans, V = Vulnerable children, C = Comparison children, O = Other orphans