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## Interventions to improve psychosocial well-being for children affected by HIV and AIDS: a systematic review

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### Abstract

In addition to its contribution to child mortality, HIV/AIDS has a substantial impact on the psychosocial well-being of children across the globe and particularly in sub-Saharan Africa. We conducted a systematic review of the literature in order to identify studies that assess the effectiveness of interventions developed to improve the psychosocial well-being of children affected by HIV/AIDS, published between January 2008 and February 2016.

Studies that were eligible for the review included male and/or female children under the age of 18 years of age, who had lost a parent to HIV/AIDS, were living with a parent with HIV/AIDS, or were vulnerable because of other social and economic factors and living in communities of high HIV and AIDS prevalence, including child and caregiver reports. Studies were included if they documented any intervention to improve the psychosocial well-being of children including psychological therapy, psychosocial support and/or care, medical interventions and social interventions, with psychological and/or social factors as outcomes.

We identified 17 interventions to improve the psychosocial well-being of children affected by HIV/AIDS. Of these, 16 studies took place in eight different low and middle-income countries (LMIC), of which 6 were in southern and eastern Africa. One study took place in a high-income setting. Of the total, fifteen showed some significant benefits of the intervention, while two showed no difference to psychosocial outcomes as a result of the intervention. The content of interventions, dosage and length of follow up varied substantially between studies. There were few studies on children under seven years and several focused mostly on girls.

Efforts to improve evaluation of interventions to improve the psychosocial well-being of children affected by HIV/AIDS have resulted in a number of new studies which met the inclusion criteria for the review. Most studies are specially designed research projects and not evaluations of existing services. We call for increased partnerships between policy-makers, practitioners and researchers in order to design evaluation studies and can feed into the growing evidence base.

## INTRODUCTION

HIV exerts a negative influence on child psychosocial outcomes, both directly through infection, and indirectly through increased risk at family and community (Stein et al. 2014). Children who are infected with HIV/AIDS face life-long risk of related illnesses, and are more likely to experience cognitive and motor development delays, stigma, trauma, and low mood (Vreeman et al 2015, Abubakar et al., 2008; Sherr et al., 2009). Children who have lost one or both parents to HIV are at increased risk of mental health problems (Mutumba et al 2016, Stein et al 2014, Sherr et al 2014), such as internalising disorders and post-traumatic stress (Cluver & Gardner, 2007), and are often living in alternative care situations. HIV exhausts family financial resources, through job loss or reduced productivity due to illness, the expenses associated with accessing health care, and the high cost of funerals (Thomas, 2006).

Recent years have seen an increase in the attention and resources dedicated to mitigating the impact of HIV/AIDS on children (Akwara et al. 2010) and there has also been a growing realisation of the importance of community-led initiatives to support families affected by the pandemic (Campbell and Cornish 2012). Across sub-Saharan Africa, there are a vast number of grassroots organisations and programmes activities providing care and support in a variety of different ways, a number of which are supported by international donors. For example in 2009, it was estimated that World Bank, Global Fund, and PEPFAR were providing in excess of 100 million USD funding to support programmes for vulnerable children in Uganda (JLICA 2009). Programme types are varied and include psychological interventions (e.g. support groups, psychological debriefing), support programmes (e.g. home visiting or play groups), and social programmes (e.g. cash transfer programmes, material assistance, skills building programmes) (King et al. 2009). However, there is relatively little evidence available on what types of community-based programmes can improve health and well-being outcomes for children affected by the pandemic. In fact, research suggests the opposite: that there is very little routine evaluation of community programmes, and that the information that is generated is not reaching the evidence base.

The paucity of evidence in this field is problematic. Considering the large burden of disease of HIV/AIDS in the sub-Saharan African region in particular, the moral case for investing in research into these interventions is indisputable. In order to develop evidence-based interventions, we need to design studies that ascertain the efficacy of interventions and define causal pathways more clearly. Reliable evidence is needed to support the efficient use of limited resources for training, supervision and management (Kim, Farmer, & Porter, 2013). It is also important to ascertain whether existing programmes are creating unintended negative effects for the children and their families, for example by singling out certain children for participation, leading to stigma or isolation of the child. Finally, without evidence of what works we also do not know if there are particular groups within the target population that are not responding to community-based programming, and are particularly vulnerable.

The objective of this review was to evaluate the overall effectiveness of interventions that aim to improve the psychosocial well-being of children affected by HIV and AIDS,

conducted since the original King et al (2009) review which did not identify any adequately evaluated interventions. This includes both psychological and social interventions, as well as other interventions that might have a psychosocial impact (e.g. medical interventions). Psychosocial intervention is a broad term referring to interventions that improve the psychosocial well-being of children affected by HIV/AIDS which employ either a psychological, health, general or social approach, or a combination of the two, to improve well-being (Richter et al., 2006). Psychosocial interventions thus place an emphasis on social and psychological factors rather than exclusively focusing on biological factors. Psychosocial interventions make use of a wide variety of delivery methods, which can impact on individual level processes, or improve outcomes at a family, group or community level. Improved psychosocial outcomes can be as a result of psychosocial or other types of interventions, and psychosocial interventions can generate more than psychosocial effects, and other types of interventions, such as biomedical interventions may also affect psychosocial outcomes.

## METHODOLOGY

The methodology utilised standardised systematic review methodology, derived from the original review, with some minor modifications based on some of the constraints of the original systematic review (King et al., 2009).

### Criteria for considering studies for this review

**Types of studies**—The review allowed for inclusion of all intervention studies that carried out as randomized controlled trials, crossover trials, cluster-randomised trials and factorial trials. Data from well-designed non-randomised intervention studies with comparison groups were also included. Studies from both high-income countries (HIC) and low and middle income countries (LMIC) were eligible for inclusion.

**Types of participants**—Participants included both male and female children under the age of 18 years of age, who had lost a parent to HIV/AIDS, were living with a parent with HIV and AIDS, or were vulnerable because of other social and economic factors and living in communities of high HIV and AIDS prevalence. Reports by caregivers on young children were also eligible for inclusion.

In the King (2009) first systematic review, studies were only included if they were of children who had lost a parent due to HIV and AIDS, or were living with a parent with HIV and AIDS or another chronic illness. Furthermore, King et al. (2009) set a criterion that studies were only included if 80% of the sample could be identified as orphaned or vulnerable as a result of HIV/AIDS. These criteria were considered and questioned as researchers. Researchers may not have been able to establish causes of death or current HIV status of parents and caregivers, or may not have reported the actual percentages. This definition may have excluded more studies of children living in poverty in HIV-endemic communities. Furthermore, the first review also excluded studies based on caregiver-report outcomes. This may have led to the exclusion of studies of younger children, who may be too young to respond to interviews. Validated parent and caregiver measures are a reliable source of information about the psychosocial development of children (e.g. Warnick et al.,

2008) and so for the purpose of this updated review, studies using caregiver report on child outcomes were included.

**Types of interventions**—We included interventions that aim to improve the psychosocial well-being of children affected by HIV/AIDS. We repeated the inclusion criteria included in the first review (King et al., 2009). Thus interventions were generally clustered under four types set out below:

- Psychological interventions, such as cognitive behavioural therapy, interpersonal psychotherapy, psychodynamic therapy, non-directive counselling, psychological debriefing and problem-solving therapy.
- Psychosocial support and/or care, such as play groups, homework clubs and home-based care programmes.
- Physical health interventions, including medical interventions, such as antiretroviral therapy and other pharmacological interventions
- Social interventions, such as economic assistance (e.g. cash transfers, work and skills training programmes) and material assistance (e.g. provision of school materials, food baskets).

We included studies that compared outcomes between groups who received an intervention and those who received usual or no care, and/or those who received a different intervention.

**Types of outcome measures**—Studies that included any outcome measure/s based on psychological or social well-being were included. These included studies that used the following outcome measures:

- Psychological measures to record any form of mental health status
- Measures of social outcomes such as school attendance, quality of life, and/or
- Adverse outcomes such as suicide or incarceration

### **Search methods for identification of studies**

This updated review was set up to include relevant studies which were identified by searching for publications between January 2008 and February 2016.

**Electronic searches**—The methodology utilised standardised systematic review methodology and was derived from the original review, with some minor modifications from some of the constraints of the original systematic review (King et al., 2009). We utilised search strategies on electronic data bases. Using a combination of key terms derived exactly from the previous review, we conducted an updated systematic search using PubMed, Medline, Embase, The Cochrane Library, PsycINFO, LILACS, Social Science Citation Index, Science Citation Index, the International Bibliography of Social Sciences, Web of Science.

**Searching other resources**—Studies were also identified in the following ways:

- Searching for studies and programmatic reports found on websites of relevant organisations involved in providing services for children affected by AIDS, such as governments, non-governmental organisations, international donors and multilateral agencies.
- Direct contact with funding organisations within the Coalition for Children Affected by AIDS network.
- Following references in papers in short-listed studies.
- Hand searching through journals published in the specified time frame that had been identified as being likely to publish papers on this topic.

### **Data collection and analysis**

Two reviewers independently examined the titles and abstracts of all the articles identified in the search using a short checklist of inclusion criteria. In cases of doubt, the full text article was obtained and subjected to adjudication by a senior researcher on the team. From this list, the full-text versions of studies that were deemed to be potentially relevant were obtained and two reviewers independently evaluated each paper using the inclusion flow chart shown in Figure 1.

Data from each of the selected studies was entered into a specially designed database, constructed to extract study details including author, date of study, design, place of study, sample characteristics (age, gender, sample size sampling procedure, participation rate), setting (community-based, school-based, clinic-based, etc) nature of intervention, outcomes and significant findings.

## **RESULTS**

### **Description of studies**

The full search procedure is set out in Figure 2. We identified 17 studies that qualified for inclusion in this review. On inspection it was evident in two cases there was more than one published report of the same intervention study. In both cases we considered this as a single intervention. In one case, several papers had been written on an economic intervention which took place in Uganda, with two of these reporting on psychosocial outcomes specifically. In another case, two papers reported on outcomes from a school support intervention in Kenya, one from the first follow up point of the study and the other from a subsequent follow up.

Sixteen studies took place in eight low and middle income countries, and one study took place in a high income setting. All the studies except three were conducted in southern and eastern African countries. Eleven of the studies were randomized control trials. Twelve of the studies were developed specifically for research purposes and four reported on evaluations of existing and ongoing programmes.

A variety of interventions were included. Three studies reported on a psychological intervention, seven studies were of psychosocial support and/or care interventions, and six

studies were of social interventions, there was one physical health intervention. Two of the interventions were focused on caregivers only, seven were child only, while seven focused on both the child and their caregiver or family (and one did not specify). The psychological and psychosocial interventions were all delivered in group-based settings. All of the social intervention studies focused on providing material support to individual children affected by HIV/AIDS, through cash transfers or school materials. The health intervention was delivered on a one-to-one basis to the child. The length of interventions varied, with some as short as 8 weeks, up to 10 months or in some cases unspecified. In addition, follow up varied from 10 weeks to 2 years.

The outcomes and outcome measures used within the studies differed considerably which prevented us from conducting a meta-analysis. Even when similar concepts were measured, different scales were utilized.

### Sample selection

Sample selection varied, with some studies only including HIV-infected or AIDS orphaned children, and others including all children affected by HIV/AIDS. Eight of the studies were targeted specifically at children who were HIV positive or had HIV positive carers, whilst the others took place in communities with high HIV prevalence.

Sampling methods varied. Methods included both one-stage (individuals selected directly) and two-stage sampling (with schools or communities first selected, and then individuals selected within the cluster). At each stage, there were instances of random, systematic and convenience sampling being employed. Studies included children from the age of 2 years into early adulthood, but only one studies included children of 5 or younger. The number of studies per age is included in Figure 2. Most studies included children between the ages of 10 and 14 years, with few studies focusing on early and middle childhood, or the mid-late teen years.

Studies that did include young children did not provide an analysis of their results based on child age. Nine of the nineteen studies in this review focused more or less equally on both girls and boys. Two studies included only girls, while a further three had more than 60% of girls included in their sample. No studies focused only on boys, and two studies did not report child gender at all.

### Effects of interventions

The interventions are clustered into four groups – psychological (n=3), psychosocial (n=7), social (n=6) and physical health (n=1). All three of the psychological interventions identified showed at least one positive result. Six out of seven of the psychosocial interventions, and five out of six of the social interventions also reported a positive impact, as did the physical health interventions.

**Psychological interventions**—All three of the psychological interventions engaged caregivers directly in their delivery. The only high-income country study was a psychological intervention targeting mothers with HIV and their children (Rotheram-Borus et al., 2012). Mothers and their children met concurrently in their own groups for some

sessions, and attended joint groups at certain stages. The intervention took place twice a week over 8 weeks. For adolescents, the intervention had some positive impact in that intervention adolescents had lower frequency of use of alcohol and hard drug users, but findings were mixed in that frequency of marijuana was significantly higher in the intervention group and there were no group differences in the reduction of internalizing and externalizing behaviours over time. In Kenya, Thurman et al (2012) evaluated an ongoing support group programme for caregivers of orphans and vulnerable children. The intervention was delivered on a weekly basis in large caregiver groups. They found that support group members reported higher prosocial behavior and fewer behavioral difficulties for the children under their care and no negative psychosocial impact was reported. Eloff et al. (2014) conducted an individual randomized control trial to promote resilience of young children with HIV-positive mothers. The intervention was delivered over 24 weekly sessions, with over half of the sessions held with caregivers and children separately and the rest held together. The focus of the sessions was to improve the well-being of the mother and child, family relationships, and to provide information about HIV/AIDS. The intervention group children showed a significant improvement in externalizing behaviors, communication and daily living skills, and no difference in internalising behaviour and emotional intelligence between groups. On the other hand, children in the intervention group reported significantly higher levels of anxiety. Boys tended to gain greater benefit from the intervention than did girls.

**Psychosocial interventions**—Of the seven psychosocial interventions, two reported positive results, four reported mixed results, and one reported a null result. Five of the seven identified psychosocial interventions were all delivered in group-based support interventions targeted at peers.

Two family-centred psychosocial interventions were identified. Bell et al. (2008) used a family group-based intervention in South Africa, which included both caregiver and child, delivered each weekend over 10 sessions. The focus was on reducing youth HIV risk behaviors by the strengthening of family relationships, and targeting peer influences through enhancing social problem-solving and peer negotiation skills for youths. While there were differences noted between intervention and control group for AIDS transmission knowledge and stigmatizing attitudes, there was no difference between groups for psychosocial outcomes specifically. In China, Liang et al. (2014) delivered to family groups and at community level in China, was made up of six sessions with adult family members, followed by joint activities with children, and three community events, with a focus on improving family's capacity to overcome the impact of living with HIV. Mixed results were reported, with no differences in psychological measures of self-esteem or problem behaviours between groups, but improved perceived parental care at 6 months in the intervention group compared to controls.

There were four interventions directed at children or adolescents specifically. Carlson et al (2012) report on another group-based intervention that was delivered weekly over 28 weeks, after school or on weekends, focused on increasing self- and collective efficacy through public education and community mobilization. The authors found a positive impact on different types of self-efficacy, but no difference in academic efficacy or peer resistance.

Two school-based interventions were identified. Mueller et al (2009) report on using an art-based intervention to increase increasing self-esteem, self-efficacy and psychological well-being. The intervention was delivered during class over 6 months, meaning that the children received 50 or more sessions. Intervention children in this study also had significantly better self-efficacy than comparisons post-intervention, but similar levels of self-esteem, depression, and behavioural problems. In Uganda, Kumakech et al (2009) reported on a school-based group intervention delivered to groups of children only, in the form of exercise (e.g. a game or play) over a period of 10 weeks. The focus of the intervention was to reflect on the challenges of being an orphan, and to develop coping strategies to deal with these issues. Intervention children had significantly lower anxiety, depression and anger than controls, but similar levels of self esteem. Soccer was used as an intervention tool in the WhizzKids programme, which was delivered in eight sessions over 12 weeks to large groups (Balfour et al, 2013). It aimed to change attitudes towards HIV and to improve self-efficacy to make healthy choices, including the uptake of sexual health services. Intervention participants had a significantly lower likelihood of engaging in drug and alcohol use than the comparison group and lower reported HIV stigma.

Finally, in South Africa, Sherr et al. (2016) compared outcomes for children attending community-based programmes and those who were not, drawing data from two comparable studies. The community-based programmes were specifically for children affected by HIV/AIDS but had different modalities of service provision, including income, emotional, child development, medical provision or emergency support. The authors found that children in community-based programmes were less likely to experience domestic violence, suicidal ideation, depression, stigma, peer problems and conduct problems, and more likely to display prosocial behaviour. However, there was no difference in perceived parental praise or post-traumatic stress symptoms.

**Social interventions**—All six of the social interventions that were eligible for the review documented material assistance programmes. Three of the studies reported positive results, two studies had mixed results and one a null result (Table 2). Two of the six studies focused only on girls, while a further three enrolled approximately 60% girls in their samples. No studies focused only on boys.

An economic intervention tested on two different occasions in Uganda tested the impact of the Suubi Maka intervention. In the first study, the intervention group received usual care for orphaned children (counselling and education supplies) plus a comprehensive microfinance intervention consisting of matched savings accounts, financial management classes and an adult mentor for children, over 10–12 months (Ssewamala, Han and Neilands 2009, Ssewamala et al. 2012). Intervention group children had significantly better self-esteem and lower depression compared to controls at follow up. In the second study, the same intervention was delivered, in addition to ten workshops focused on starting family-based income generating activities. Children in the treatment group reported significantly lower levels of hopelessness than control children as well as significantly higher scores of self-concept (Ssewamala et al. 2016).



Similarly, a community-based conditional cash transfer intervention in Malawi to promote staying in school for girls resulted in significantly higher rates of school retention in the intervention group (Baird et al., 2010). Cash transfers were paid to households over 10 months, split between caregiver and child, conditional on school attendance record, and secondary school fees were paid to schools on behalf of families upon confirmation of enrolment. Being involved in the programme was associated with large increases in self-reported school enrolment, as well as declines in early marriage, teenage pregnancy, sexual activity, and risky sexual behavior. Two related interventions, in Zimbabwe and Kenya, tested the provision of material support for schooling, including fees and school supplies to provide comprehensive support for girls to stay in school and reduce HIV risk. In Zimbabwe, this was coupled with an assigned teacher from the girl's school to monitor her attendance and assist with issues relating to absenteeism. In this study, girls were significantly less likely to drop out of school, engage in early marriage, while they were more likely to attend school, have higher educational aspirations and delay sexual debut. There were no differences in their perceptions in the caring of teachers and in gender equity attitudes compared to the comparison group. In Kenya, however, where teachers were replaced with visits from a female community visitor, there was no significant intervention effect 2 years post-intervention. Finally, a Zimbabwean study comparing three groups (receiving unconditional or conditional cash transfers and control group) found that receiving cash transfers was associated with significantly better schools attendance in the conditional cash transfer group, but insignificant in the unconditional group compared with controls (Robertson et al, 2013).

**Physical health intervention**—The only physical health intervention section looked at the impact of a massage intervention vs. play group attendance for HIV+ children. The authors found a positive impact of massage therapy on internalizing behaviour and self-help skills for children over 6y, but no impact on social development and no impact for younger children (Hernandez-Reif et al., 2008).

### Measurement of outcomes

Outcome measures were diverse. Nine of the studies directly measured mental health problems, with a focus on depression, anxiety and behavioural problems, using validated tools. However, these studies used a variety of different instruments. The most commonly used measures were the Child Behaviour Checklist, used in three studies, and the Child Depression Inventory, used in three studies. Nine of the studies measured positive mental health outcomes, such as self-esteem, self-efficacy, positive behaviour and feelings of social connection. Widely different measurement tools were used for these outcomes. Only the Rosenberg Self-Esteem scale was used more than once. Finally, ten of the studies measured social outcomes, including substance use and school attendance indicators.

### Studies that were not included

We found a number of studies that were relevant to the research question but that did not meet the criteria for the review. For example, a comprehensive study which took place at six different Partners in Health sites in Haiti showed that participation in a psychosocial support group for youth affected by HIV and their carers led to positive mental health and social

functioning outcomes for both sets of participants (Smith Fawzi et al., 2012). No comparison between sites or with different forms of the intervention was reported, and thus this study did not meet design criteria for inclusion in our review. An evaluation of a sports project for Kenyan girls compared participants who were attending the same intervention at newly established vs. long running sites and found that girls at well-established project sites had better psychosocial outcomes, however there was limited information given about any differences in the delivery of the intervention at these sites (Woodcock, Cronin, & Forde, 2012). A study from the United States showed that accessing child development services was associated with significantly higher rates of children remaining in their family homes and not having contact with child protective services (Reich & Fuger, 2012). This study focused particularly on mothers who were substance users or HIV+, however, only 2 of the 17 sites in the study focused on HIV-affected families, and HIV prevalence rates were not reported.

Other studies of intervention for children affected by HIV/AIDS were identified that focused on outcomes that beyond the scope of this review, due to the specific focus on psychological or social outcomes. For example, we located two studies from the same home-based visiting programme in South Africa which showed that undernourished children who are recipients of a home-visiting programme are more likely to achieve healthy weights for their age than controls (le Roux et al., 2010, 2011). We also found that several studies focused purely on improving knowledge about HIV transmission and reducing risky sexual behaviour, which fell beyond the scope of our review and has been investigated separately (e.g. Medley et al. 2009). Finally, we also found studies that made use of psychological intervention, but which only reported child survival outcomes. Van Wingham et al (2008) describe an intervention in Kenya which employed a range of techniques, including the provision of psycho-social support with HAART services, to significantly improve child survival rates for children under 15 who were receiving anti-retroviral treatment. Similarly, Grimwood et al. (2012) report on a community-based adherence support programme that improved retention in care of children in antiretroviral therapy services. Children in the intervention group received visits from Patient Advocates, who worked in designated geographical areas to provide psychosocial support to children's caregivers, monitored medication taking, and helped families to identify and address barriers to adherence in the home.

## DISCUSSION

In contrast to the earlier review on this topic, we identified a growing set of interventions to improve the psychosocial well-being of children affected by HIV/AIDS, most of which took place in low and middle income countries. More specifically, the majority took place in eastern and southern Africa where the burden of HIV is greatest. This increase in the evaluation of interventions is promising, and shows that there has been a shift towards the prioritization of generating evidence in this area.

There are lessons to be learned from the identified studies. In the final set of identified studies, most studies showed at least one significant benefit of the intervention on psychosocial outcomes, with only two showing no difference between those receiving the intervention and a control or comparison group. While it is possible that this reflects a

publication bias towards positive outcome reporting, most of the studies reported mixed results. Overall, psychological changes noted for children included the reduction in internalizing and externalizing behaviours, decrease in symptoms of depression, anger, and anxiety, and higher rates of prosocial behaviour, self-help abilities and communication. Positive social outcomes that were recorded included retention in school, better school attendance, and less early marriage. There was no clear pattern in terms of type of intervention, target recipient, length of intervention, length of follow up, or intensity of delivery, but each of the four different types of intervention (psychological, psychosocial, social, and physical health) showed at least one positive benefit on child psychosocial wellbeing. It is also interesting to note that interventions targeting the child only, caregiver only, caregiver and child together and entire family all showed some positive impact.

However, it is important to note that the identified studies differed greatly and there are already emerging gaps in the existing database. Firstly, sampling techniques used were diverse. Some studies employed random community-based sampling techniques or random sampling of schools, and others used convenience sampling selecting participants from registers of children or adults seeking treatment for HIV. These reflect the 'real life' contexts in which these studies took place, but may also mean that some study results have not accurately represent the study population (Suresh, Thomas and Suresh 2011). Inclusion criteria also varied, with eight of the studies targeted specifically at children who were HIV positive or had HIV positive carers. The remainder of the studies used a broader approach, and included all potentially vulnerable children within the study population. This is promising, as definitions of vulnerability shift from focusing purely on HIV child and carer diagnosis to looking at the broader social context which places children at risk in an era of HIV/AIDS (Sherr et al., 2008). Studies were also more likely to include girls and children aged 10–14 years. In particular, research on younger children was particularly scarce. Given the impact of HIV on early child development (ECD) outcomes, there is a need to prioritise the evaluation of these types of interventions targeted at children affected by HIV/AIDS (Chandan and Richter 2009). In terms of gender, recent research on children affected by HIV has shown that while girls often bear the brunt of additional caregiving, boys may be worse off in terms of exposure to violence and related externalizing behaviours (Hensels et al., 2016). Gender issues are rarely discussed in child HIV research, for example, UNAIDS does not provide a breakdown of child data by gender until early adolescence or adulthood (UNAIDS 2015). It is thus important that we continue to include both boys and girls in programming and research, and that we endeavor to find a balance between promoting equity for girls in these efforts, and ensuring that boys are included.

Secondly, studies showed wide variation in outcome measurement, meaning that for this review, it was difficult to compare outcomes across studies. This is partly due to the broad nature of psychosocial interventions and outcomes. Most studies focused on mental health problems, but some included positive measurement of mental well-being and other social factors. School retention was widely used as a social measure of well-being. The variety of measures used may relate to the broader problem of a lack of standardized outcome measurement tools for child-related research in low and middle income countries, and in sub-Saharan Africa in particular (Holding et al. 2004). Globally, there are no accepted indicators or frameworks to measure child development, partially due to concerns about

training and administration of tools and cultural differences between different groups (Engle et al. 2007). A recommended set of measurements or a database of tools available for programmers and researchers to draw from would make evaluation studies more comparable.

Thirdly, study design also varied. For example, some studies had as much as two years follow up time, but in most cases follow ups were confined to immediate post-intervention assessments. This may have affected the reported results of the identified studies. For example, in Hallfors et al. (2012) the length of follow up was shown to be crucial in understanding the impact of the intervention. The material support intervention that the authors described showed a positive impact after one year, but the impact had disappeared by two years post-intervention. Similarly, the Thinking Healthy programme in Pakistan improved maternal and infant outcomes, but a longer term follow up when the children were aged 7 years showed no impact of the intervention (Maselko et al. 2015). Programmers and researchers should be encouraged to include longer-term follow ups in the designs of their studies. The Blueprints for Healthy Youth Development registry of evidence-based positive child and youth development programs (Mihalic and Elliott 2015) requires a follow up period of at least one year beyond the end of the intervention, which is likely to be feasible for psychosocial programmes for children affected by HIV who are often operating in short funding cycles.

Surprisingly, given the community contexts of the studies in this review, 11 out of the 19 studies included were randomized control trials. This is a positive finding, given that randomised controlled trials are the gold standard for intervention evaluation and provide the best evidence of a programme's effectiveness (Campbell and Russo 1999). On the other hand, only four of the studies in the review were of existing, real-life programmes, meaning that the rest were developed specifically for research purposes only. This is likely due to the challenges of evaluating these types of community-based programmes, where study methodology often needs to fit into the reality of how programmes are delivered. As a result, it will be important to assess issues of context and implementation for these programmes before scale up of these interventions can be recommended. In addition, increased investment in promoting partnerships between programmers and researchers is required. There are good examples of collaboration where strong study designs can be integrated into existing programming without compromising intervention delivery. One example is the Philani Maternal, Child Health and Nutrition Project, a non-governmental organization that provides home visits through its Mentor Mother programme to pregnant women, new mothers and their infants. They have been engaged in a collaborative project with researchers over several years to assess the impact of their intervention, using a cluster randomized controlled trial (Rotheram-Borus et al. 2011, Rotheram-Borus et al. 2014).

This study has shown that there are effective and proven programmes to improve outcomes for children affected by HIV/AIDS. Funders and NGO partners should undertake to share these lessons learnt with their community-level partners and find ways to make these stories of success accessible to different stakeholders in these programmes. It is imperative that there are ongoing efforts to support community-based programmes in their work to improve the psychosocial well-being of their children. Funders and NGOs should continue to develop

their research capacity, in partnership with researchers, to find innovative solutions to measuring their impact.

## Conclusion

Efforts to improve evaluation of interventions to improve the psychosocial well-being of children affected by HIV/AIDS have resulted in a number of new studies which met the inclusion criteria for the review. However, studies are highly heterogenous, employing different methods of implementation and evaluation, meaning that it is difficult to compare them. Existing evaluation studies should be broadly disseminated and programmers should take account of the existing evidence which shows that different types of interventions can have an impact on psychosocial outcomes, including material or financial support. Finally, we call for increased partnerships between policy-makers, practitioners and researchers in order to design evaluation studies that are comparable and can feed into the growing evidence base.

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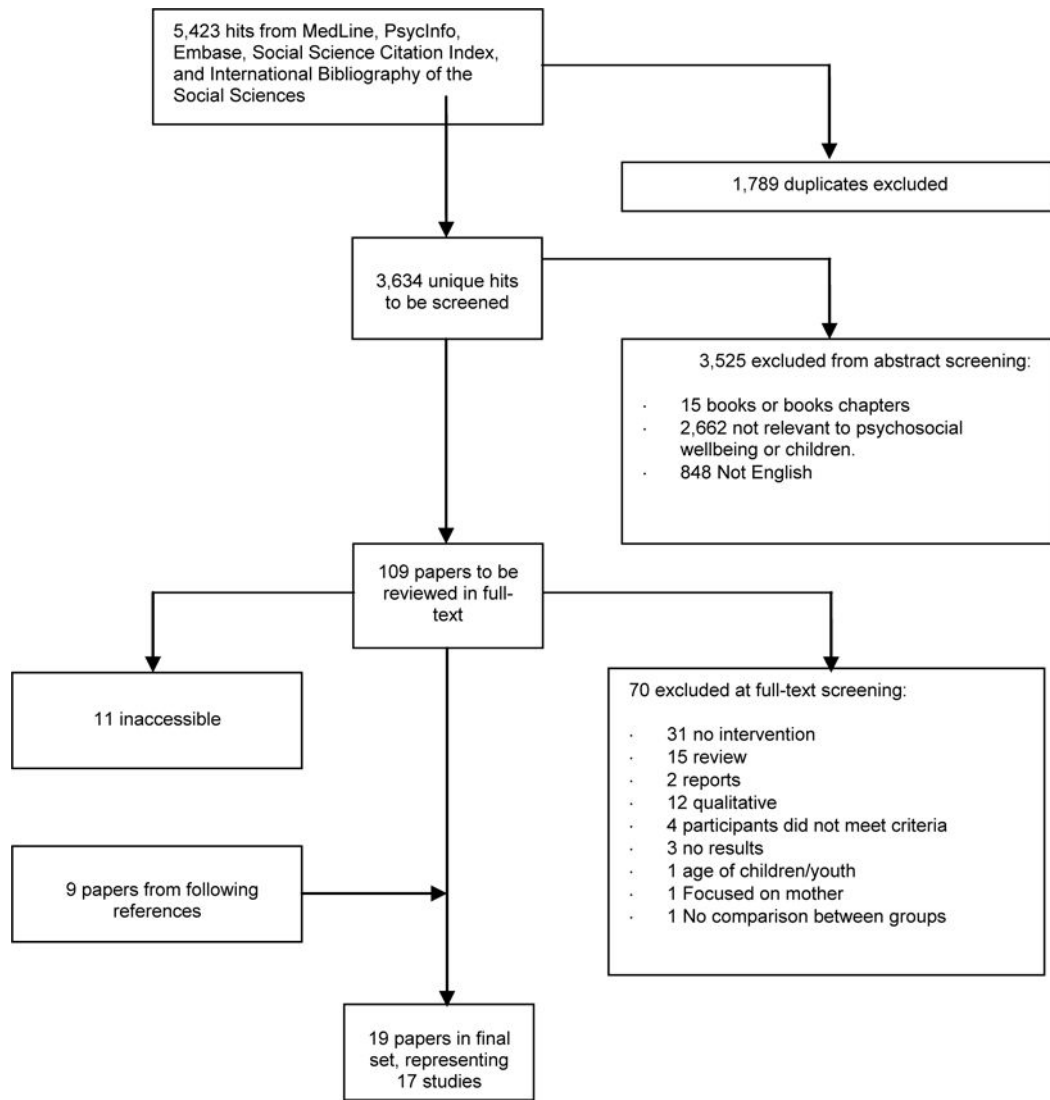
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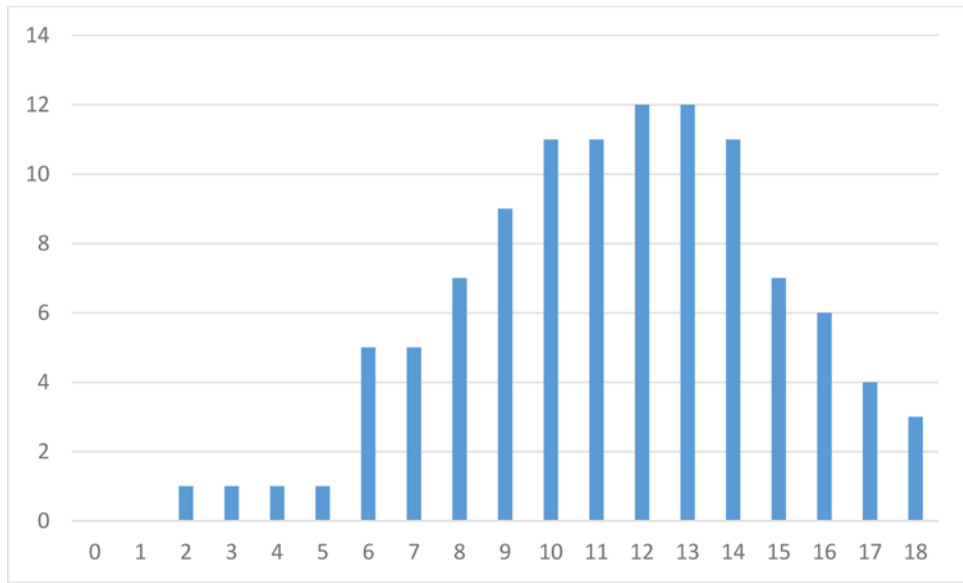
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	Type of study		
1. Is it randomised, including cross-over, cluster and factorial trials?	Yes ↘ Go to question 3	Unclear ↙	No ↓ Go to question 2
2. Is it a non-experimental intervention study with a comparison group? (before and after study, cohort, case control or cross-sectional observational study)	Yes ↘ Go to question 3	Unclear ↙	No ↓ Exclude
Participants in the study			
3. Are the participants under the age of 18 years?	Yes ↘ Go to question 5	Unclear ↙	No ↓ Go to question 4
4. Are the participant's carers of children under the age of 18y?	Yes ↘ Go to question 6	Unclear ↙	No ↓ Exclude
5. If some of the participants are over the age of 18 years can the data be disaggregated to show that 80% of the sample are under 18 years?	Yes ↘ Go to question 6	Unclear ↙	No ↓ Exclude
6. Are participants either orphaned due to HIV/AIDS, or vulnerable due to HIV/AIDS (living with a family member with HIV/AIDS or in a HIV-endemic community)	Yes ↘ Go to question 7	Unclear ↙	No ↓ Exclude
Interventions			
7. Does the intervention aim to improve the psychosocial well-being of children affected by HIV/AIDS either as a primary or secondary aim?	Yes ↘ Go to question 8	Unclear ↙	No ↓ Exclude
8. Is the intervention psychological therapy, psychosocial support and/or care, medical and/or socioeconomic?	Yes ↘ Go to question 9	Unclear ↙	No ↓ Exclude
9. Are participants receiving the intervention compared to other children affected by HIV/AIDS who received usual care, no care or a placebo, or a different intervention?	Yes ↘ Go to question 10	Unclear ↙	No ↓ Exclude
Outcomes			
10. Does the study measure psychological and/or social factors measured by validated instruments or education, quality of life, socioeconomic status, school attendance, suicide or criminal behaviour using validated instruments?	Yes ↘	Unclear ↙ Clarify unclear points and include if relevant	No ↓
Final decision	Include	Unclear (more info)	Exclude

**Figure 1.** Study inclusion flow chart (adapted from King et al, 2009).



**Figure 2.**  
Systematic review results



**Figure 3.**  
Number of studies per age year

Table 1

Year	Author	Country	Study Design	Sample	Intervention	Outcomes	Results
<b>Psychological</b>							
2012	Rotheram-Borus et al., 2012	USA	Randomized control trial	339 mothers with HIV and 259 of their school-age children, children aged 6–20 years, mean age 15y.	Group, bi-weekly, mother and adolescent sessions, 8 weeks.	Internalising and externalising behaviours, school attendance, grades, problem behaviour	Mixed - alcohol and hard drug use reduced marijuana use increased in intervention group. No difference in internalising and externalising behaviours.
2012	Thurman, et al., 2012	Kenya	Cross-sectional post-intervention design.	766 caregivers and 1028 children aged 8 – 14 years.	Group, weekly, ongoing intervention for caregivers	Child psychosocial well-being: emotional and behavioural problems, prosocial behaviour	Higher prosocial behaviour and fewer behavioural problems.
2014	Eloff et al (2014)	South Africa	Randomised clinical trial.	HIV positive mothers and their children, 390 mother-child pairs. Children 6–10y.	Group, weekly, caregivers and children, 24 weeks in duration	Children's behaviour (internalising and externalising problems), adaptive functioning, depressive symptoms, anxiety, emotional intelligence	Decreased externalising problems, improved communication and daily living skills, no difference for internalising behaviour and emotional intelligence, negative outcome for anxiety.
<b>Psychosocial</b>							
2014	Liang et al., 2014	China	Cluster randomized design. Interviews were administered at baseline, 3 and 6 months.	79 families in four village clusters. Participants: (1) with confirmation of an AIDS diagnosis or HIV-positive status; (2) having a seronegative family member living at home; and (3) having at least one child aged 6 to 18 years living with a PLH participant. Two age groups of children (6–12 and 13–18 years) were included in the study.	Family groups and community events.	Children's self-esteem, perceived parental care, and problem behaviour	No difference in self-esteem or problem behaviour, increased in perception of parental care
2008	Bell et al., 2008	South Africa	Randomized control trial	281 intervention and 298 control children, aged 9 to 14y. Being reared by an adult caregiver age >18 years that fulfills parenting responsibilities, enrolled in school, and indicated agreement to participate in the study via caregiver consent and child assent.	Group, caregiver and child, weekly, 10 sessions.	Anxiety, AIDS transmission knowledge, stigma, psychological autonomy, range of parenting skills	No differences between groups in child psychosocial outcomes

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Year	Author	Country	Study Design	Sample	Intervention	Outcomes	Results
2009	Kumakech et al., 2009	Uganda	Cluster randomised control trial	326 AIDS 'orphans' (lost one or both parents to HIV/AIDS) aged 10–15y	Groups, children in school, 10 weeks.	self-concept, anxiety, anger, and depression	Lower anxiety, depression and anger.
2011	Mueller et al., 2011	South Africa	Quasi-experimental, cross-sectional post-intervention	177 intervention group and 120 control group children aged 8–18 years.	Groups, children in school, 50 or more sessions over 6 months. Focus on increasing self-esteem, self-efficacy and psychological well-being.	self-esteem, self-efficacy, child depression was, emotional-behavioural problems	No differences in depression, emotional and behavioural problems and self-esteem, but increase self-efficacy.
2012	Carlson et al., 2012	Tanzania	Cluster randomised control trial	726 children, aged 9–14y.	Group, adolescents, weekly, 28 weeks	Five aspects of self-efficacy	Improvements in deliberative self efficacy, communicative self efficacy and emotional control, no difference in academic efficacy or peer resistance.
2016	Sherr et al., 2016	South Africa	Longitudinal study	1848 children aged 9–13 years old from South Africa and Malawi who were either CBO attenders or had not received CBO support (control group)	Range of different community-based programmes for children affected by HIV/AIDS with different modalities of provision	Depressive symptoms, suicide ideation, post-traumatic symptoms, harsh discipline, perceived praise for child	Less suicidal ideation, depression, stigma, domestic violence, peer problems and conduct problems, and improved prosocial behaviour. No difference in perceived parental praise or post-traumatic stress symptoms.
2013	Balfour et al., 2013	South Africa	Quasi experimental design	629 participants, age range not reported	Group sport, children, eight sessions over 12 weeks.	HIV stigma, substance use.	Lower HIV stigma and drug use.
<b>Social</b>							
2011	Hallfors et al., 2011	Zimbabwe	Randomised control trial	329 girls in Grade 6 in 25 schools (ages range 10–16 years)	Individual material support, child and family support, duration not specified	Child perceptions of caring adults, school dropout, educational aspiration, gender equity, attitudes towards sex, sexual debut, marital status, pregnancy	Reduced school drop out, early marriage and increased school attendance, educational aspiration, and delayed sexual debut. No difference for perceptions of caring of teachers and gender equity.

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Year	Author	Country	Study Design	Sample	Intervention	Outcomes	Results
2012	Cho et al, 2011 and Hallfors, et al., 2012	Kenya	Randomized control trial. 2 year follow up.	105 children, 11–14y	Ongoing programme delivered on an individual level to learners to provide material support for school supplies, as well as visits from a female community visitor, as a means to provide comprehensive support for girls to stay in school and reduce HIV risk.	School absence, perceptions of caring adults, school dropout, educational aspirations, future expectations, gender equity, attitudes towards sex	No differences between groups.
2010	Bard et al., 2010	Malawi	Quasi-experimental, intervention and control group	1225 adolescent girls, 13–22 years old (mean <18)	Cash transfers paid to households over 10 months, split between caregiver and child, conditional on school attendance record, and secondary school fees paid to schools upon confirmation of enrolment.	school attendance, early marriage	Increased school enrolment, reduced early marriage, pregnancy, sexual activity, risky sexual behaviour.
2009, 2010, 2012	Ssewamala et al 2009; 2010; 2012	Uganda	Randomised control trial	2009: 267; 2010: 260; 2012: 286. Mean age 13.71.	Intervention group received usual care for orphaned childrne (counselling and education supplies) plus a comprehensive microfinance intervention	Depression, self-esteem	Reduced depression, higher self-esteem

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Year	Author	Country	Study Design	Sample	Intervention	Outcomes	Results
2013	Robertson et al., 2013	Zimbabwe	Cluster randomized control trial	5172 children aged 6–12y in 4043 households	Comparison of conditional and unconditional cash transfers delivered at household level over 12 months. UC and CC groups received same cash amounts, but CC group had to comply with various conditions, including applying for a birth certificate, vaccinations, attending parenting classes and others.	School attendance for 6–12 year olds and other non-relevant outcomes	Increased school attendance
2016	Ssewamala et al., (2015)	Southern Uganda	Quasi-experimental design (schools randomised, not individuals)	317 AIDS-orphaned adolescents	An further study of the Suubi Maka intervention focused on matched savings for promoting monetary savings for educational opportunities for children, financial management	Hopelessness and self concept	Lower levels of hopelessness, higher self-concept.

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Year	Author	Country	Study Design	Sample	Intervention	Outcomes	Results
					workshops and family level income generating projects, and providing mentors to children (one mentorship meeting per month for the 12-month intervention period), and an additional 10 workshops about starting family-based income generating activities.		
<b>Physical Health</b>							
2008	Hernandez-Reif et al., 2008	Dominican Republic	Randomized control trial	52 HIV infected children, data for 48 children reported, 2-8y.	Bi-weekly massage sessions or group play sessions, 12 weeks.	Internalizing and externalizing problems, self-help age, social age.	Children under 6y no differences between group but positive results for internalising and self help for children over 6y, negative for social development.

**Table 2**

Positive effects of interventions (interventions showing any positive effect included below)

Psychological	Psychosocial	Social	Medical/physical
<ul style="list-style-type: none"> <li>• Joint mother-child groups (USA)</li> <li>• Carer support groups (Kenya)</li> <li>• Multilevel family intervention (China)</li> <li>• Resilience-promoting intervention (South Africa)</li> </ul>	<ul style="list-style-type: none"> <li>• Peer support programme (Uganda)</li> <li>• School-based art intervention (South Africa)</li> <li>• Group-based family counselling (South Africa)</li> <li>• Group-based health promotion and citizenship intervention (Tanzania)</li> <li>• Educational soccer program</li> </ul>	<ul style="list-style-type: none"> <li>• Conditional cash transfer to keep girls in school (Malawi)</li> <li>• Material support for schooling for girls (Zimbabwe)</li> <li>• Economic education programme with matched savings accounts (Uganda)</li> <li>• Conditional and unconditional cash transfers (Zimbabwe)</li> <li>• Family-level economic strengthening intervention – (Uganda)</li> </ul>	<ul style="list-style-type: none"> <li>• Massage therapy (Haiti)</li> </ul>

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