

**Parenting and the prevention
of child maltreatment in
low- and middle-income countries**

**A systematic review of interventions and a
discussion of prevention of the risks of
future violent behaviour among boys**

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Abstract

Child maltreatment is a global phenomenon. While definitions of child physical and psychological maltreatment may differ across cultures and countries, poor or harsh parenting is a critical risk factor for maltreatment worldwide, particularly in the early years. Most research on child maltreatment comes from high-income countries, but there have been increasing calls to address the issue in low- and middle-income countries. In addition, there is increasing interest in adapting evidence-based parenting interventions to low- and middle-income countries. This review investigates the effectiveness of parenting interventions for reducing harsh or abusive parenting, increasing positive parenting practices, attitudes and knowledge, and improving parent–child relationships in low- and middle-income countries. In addition, the discussion section considers the potential for adapting parenting interventions from high- to low-/middle-income countries; and the potential role of parenting interventions in addressing current and future violent behaviour among boys and men. A range of electronic databases were searched, including The Cochrane Library, MEDLINE, EMBASE, CINAHL, PsycINFO, Global Health and ERIC, from inception to May 2010. Unpublished reports were sought through: searches of Google Scholar, websites of relevant organisations and theses and dissertation databases; hand-searching reference lists of relevant documents; and personal contacts with experts.

Selection criteria

Randomised or quasi-randomised controlled trials were included in which participants had been randomly allocated to an experimental and a control group, the latter receiving no treatment, treatment-as-usual or an alternative treatment.

Data collection and analysis

Authors were contacted to supply information missing from published reports. Studies were critically appraised for methods of sequence generation, allocation concealment, blinding, attrition and other potential confounders. Meta-analysis was not performed due to very high heterogeneity, but characteristics of included studies were discussed narratively according to type of delivery mode and outcome data, and trends of effect were described narratively where possible.

Main results

The results are based on data from 12 studies with 1580 parents in 9 countries; all reported results favouring the intervention group on a range of parenting measures. The reliability and validity of results for most studies is unclear due to significant or unclear risks of bias. However, the results of the two largest, highest-quality trials suggest parenting interventions are feasible and effective in improving parent–child interaction and parental knowledge and attitudes in relation to child development among parents of young children in low- and middle-income countries.

Conclusions

While limited conclusions can be drawn from this review due to methodological deficiencies in the included studies, the findings suggest parenting interventions may be effective in improving parenting practices and knowledge in low-resource settings. There is a need for more, and more rigorously evaluated, interventions in low-income countries. These should prioritise thorough reporting, use of standardised outcome measures and validated instruments, especially using direct, observational measures, and research with parents of children older than six years. The results provide limited evidence of transportability of parenting interventions from high- to low-middle-income countries, as the level of efficacy of the interventions in their countries of origin is unknown. More needs to be done to understand adaptation in light of the promising body of work on transportability within and among high-income countries. Adaptation to populations strongly affected by HIV and AIDS remains to be investigated. Moreover, there is evidence of the potential contribution of parenting interventions to preventing violence among boys throughout the life cycle, but overall gender socialisation in parenting interventions remains largely unexplored. Donors, researchers and policymakers should consider ways to make adaptation of evidence-based interventions affordable for low-income countries (e.g., fee waivers) and further explore gender issues in parenting interventions.

I. Background

Child maltreatment is a global phenomenon [1-3]. In South Africa, for example, Seedat, Jewkes et al [4] report that “violence against children is ubiquitous. Beatings take place daily or every week. Sticks, belts, or other weapons are used and injury is common.” Throughout the world, child maltreatment is associated with a complex range of factors – from the psychological to the biological, and the sociological to the structural – including the way parents themselves were parented; marital conflict; child temperament; parent and child antisocial behaviour; parental mental health; poverty; inequality; and the potential impacts of HIV and AIDS [5-11]. For children, child maltreatment is linked to short-term impacts such as academic problems, anxiety, conduct disorder, aggression, delinquency, depression, increased risk for suicide, high-risk sexual behaviour, poor physical health, post-traumatic stress disorder and substance abuse [12]. Longer-term effects include mental health problems and drug and alcohol dependency in adulthood [13-14], and higher risks for common causes of chronic diseases, including cigarette smoking, obesity, physical inactivity, attempted suicide, and sexually transmitted infections [2,15].

Child maltreatment encompasses a wide range of behaviours (e.g., moderate neglect and psychological abuse, severe physical abuse, sexual abuse, and exploitation such as child labour and prostitution) and, therefore, is conceptualised within a number of different theoretical or practical discourses. For example, sexual abuse and exploitation are commonly discussed according to predominant theories of crime [16]. Other forms of maltreatment are conceptualised according to theories of violence, since they may take place alongside other forms of violence (e.g., intimate partner violence); are associated with many of the same risk factors as violence (e.g., substance abuse, family isolation, social exclusion or poverty); and children who are maltreated are at increased risk for perpetrating or experiencing violence later in life [2].

However, since child maltreatment is most frequently perpetrated by parents or primary caregivers [2], it is most commonly conceptualised according to theories of parenting, and viewed within the context of a continuum of culturally defined and accepted childrearing practices – from positive and nurturing to harsh or abusive [17]. Poor parenting and poor parent–child relationships are critical factors in the incidence of child maltreatment [18-19], and while other factors may support or impede parenting, it is generally the primary pathway of child development, at least in the early years [20-22]. The characteristics of parents, parent–child relationships, the family and the wider socio-cultural context can serve to move parents along the continuum of parenting practices, either towards or away from positive or negative (harsh, abusive) behaviours [23]. Severe corporal punishment may be viewed as the extreme end of normal childrearing customs [3]. However, this remains a topic of much debate [25-28], and the line between appropriate or acceptable parenting practices and harsh or abusive discipline remains blurred, particularly across cultures and countries [29].

Even in high-risk situations, positive parent–child relationships and a sensitive, responsive and consistent style of parenting, particularly in early childhood, have been shown to play protective roles in child development [5]. Parenting factors can buffer and mediate the effects of wider family and community factors on children's development, particularly boys' aggression [30-33].

In short, parenting interventions are an important and potentially fundamental approach to the prevention of child maltreatment and promotion of safe, nurturing, non-violent home settings – both in the immediate family and in the next generation [34].

¹“Corporal or physical punishment is the use of physical force intended to cause some degree of pain or discomfort for discipline, correction and control, changing behaviour or in the belief of educating/bringing up children” [24, p1].

This review will focus on child maltreatment which results from poor, negative or harsh parenting practices in the home environment. The primary focus will be on interventions with parents and primary caregivers to prevent physical and, to a lesser degree, psychological abuse and neglect. While many forms of child maltreatment have common risk and protective factors, interventions specifically designed to address other forms of abuse, such as sexual abuse² and exploitation, differ in important ways from those designed to address physical and psychological abuse or neglect which results from poor parenting[e.g., 2,6] and, therefore, are outside the scope of this review.³

Box 1. Harsh parenting and children's rights

The United Nations Convention on the Rights of the Child (CRC) came into force in 1990 as a universal framework for the treatment of children. Article 19 of the CRC is particularly relevant to the issues of harsh parenting and child maltreatment.

Article 19:

1. States Parties shall take all appropriate legislative, administrative, social and educational measures to protect the child from all forms of physical or mental violence, injury or abuse, neglect or negligent treatment, maltreatment or exploitation, including sexual abuse, while in the care of parent(s), legal guardian(s) or any other person who has the care of the child.
2. Such protective measures should, as appropriate, include effective procedures for the establishment of social programmes to provide necessary support for the child and for those who have the care of the child, as well as for other forms of prevention and for identification, reporting, referral, investigation, treatment and follow-up of instances of child maltreatment described heretofore, and, as appropriate, for judicial involvement. [8]

The CRC has been ratified by most countries, with the exception of Somalia and the United States. Somalia delayed ratification due to its ongoing political instability, but announced plans to ratify the CRC in 2010. [9] The United States Government has continually blocked ratification, claiming the CRC will undermine parental authority, interfere with parents' ability to raise and discipline their children, and elevate children's rights above those of parents. [10] This is despite the CRC's clear language acknowledging the primary role of the family and parents in the care and protection of children. [8]

Definitions

Most research on child maltreatment, and more broadly on parenting, has taken place in high-income countries⁴ (HICs). However, the adoption by the United Nations of the Convention on the Rights of the Child in 1989, along with recognition of child abuse as a major global health problem by the World Health Organization (WHO) [35], has increased focus on child maltreatment in low- and middle-income countries (LMICs).

WHO defines child maltreatment as:

... all forms of physical and emotional ill-treatment, sexual abuse, neglect, and exploitation that results in actual or potential harm to the child's health, development or dignity. Within this broad definition, five subtypes can be distinguished – physical abuse; sexual abuse; neglect and negligent treatment; emotional abuse; and exploitation [36].

² Interventions to prevent child sexual abuse are generally aimed at children in school settings rather than at parents. It remains unclear if such interventions are effective, and some reviewers suggest they can be harmful [e.g., 7].

³ It should be noted, however, that the role of parenting in child development suggests that interventions to improve parenting practices may also help to prevent or reduce other forms of maltreatment.

⁴ Country classifications as defined by the World Bank [11].

While this definition provides a basis for policy and practice related to child maltreatment on a global level, a universal definition of poor, negative or harsh parenting (hereafter referred to as 'harsh parenting') is more difficult to determine. In particular, there appear to be few documented or widely accepted definitions or conceptualisations of poor, harsh or negative parenting practices. Butchart [2], however, makes the distinction between positive strategies of discipline and potentially harmful strategies which constitute punishment:

Discipline for children involves training and helping them develop judgement, a sense of boundaries, self-control, self-sufficiency and positive social conduct ... Positive strategies of discipline recognize children's individual worth. They aim to strengthen children's belief in themselves and their ability to behave appropriately, and to build positive relationships [p12].

This is contrasted with 'punishment', which is:

... either physical or emotional measures often reflect[ing] the caregiver's anger or desperation, rather than a thought-out strategy intended to encourage the child to understand expectations of behaviour. Such punishment uses external controls and involves power and dominance. It is also frequently not tailored to the child's age and developmental level [p12].

Butchart's definition echoes that of Deater-Deckard, Atzaba-Poria et al. [29] in suggesting that the line between positive discipline and harsh or abusive punishment may be associated with the emotional manner or intention (e.g., emotionally charged or emotionally controlled, planned or impulsive) with which parental discipline is carried out. In addition, Butchart's definition highlights the problems which can occur when parents have inappropriate developmental expectations of their children, which can influence how they choose to discipline [17].

Prevalence and incidence

The complexity of defining child maltreatment or harsh/abusive parenting makes it difficult to develop policies and systems for detecting, collecting data on and addressing child welfare in the home. Few countries have well-functioning social protection systems, which limits their abilities to collect data; but even where well-functioning systems exist there are challenges [21]. For example, morbidity and mortality statistics are commonly used to determine rates of child maltreatment, but these are often inaccurate, as many incidents of abuse go unreported or unrecognised [3]. Nearly 50 million births are estimated to be unregistered every year (mostly in South Asia and sub-Saharan Africa) [22], which makes monitoring the health and well-being of children extremely challenging. Moreover, a strong sense of family privacy and parental rights to raise children as they choose is a barrier to accurate surveillance in most cultures and countries [2,20].

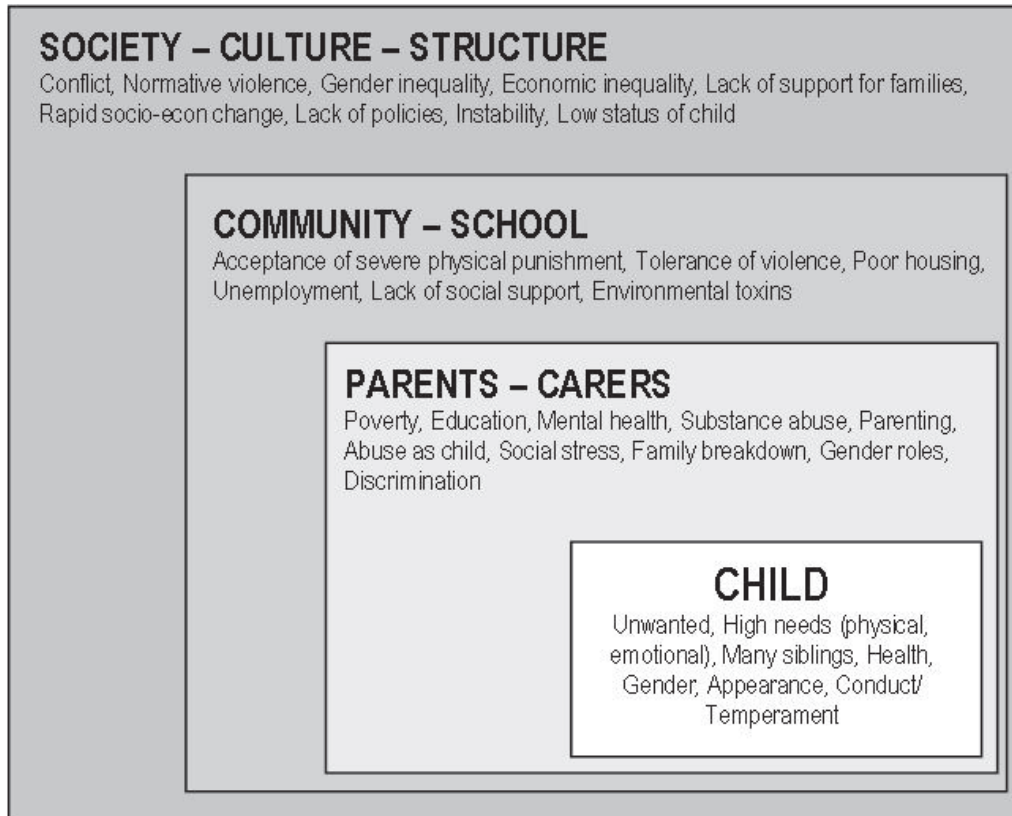
Despite these barriers, WHO estimates that 40 million children worldwide under the age of 14 experience abuse and neglect each year, while other estimates suggest that between a quarter and one half of all children report severe and frequent physical abuse [2].

Comparisons between – and even within – countries of the prevalence and incidence of child maltreatment or harsh parenting are elusive due to dramatic differences in surveillance systems, infrastructural capacity to monitor abuse, and definitions of maltreatment and harsh parenting [20,37-38]. Methodological issues and bias in measuring maltreatment also pose problems across settings [25,37]. One exception is the World Studies of Abuse in the Family Environment (WorldSAFE) survey among mothers in Chile, Egypt, India and the Philippines (n=12,804), which measured the incidence of self-reported parental discipline behaviours. It found that between 4 per cent and 36 per cent of mothers had hit their child with an object on a part of the body other than the buttocks [35,39]. Moderate physical punishment – such as spanking, slapping, pinching, shaking, or twisting the child's ear – was reported by between 18 per cent and 53 per cent of the mothers surveyed [35]. Another cross-country study in the middle-income countries of Latvia, Lithuania, Macedonia and Moldova found that between 18 per cent and 43 per cent of children aged 10–14 (n=1145) reported at least one type of abuse [40]. Searches have not identified any other rigorous cross-country or regional prevalence or incidence studies from LMICs.

Risk and protective factors

Child maltreatment and harsh parenting are associated with a range of interacting factors [1,3,35,37,41-45], thus their causes (i.e. risk factors) and the factors which may protect children from their effects (i.e., protective factors) are best understood using an ecological model of human development [26]. This model describes the interaction of factors at four causal levels – individual, family, community and society/culture/structural – and highlights the fact that child maltreatment and harsh parenting may be influenced by factors both within and outside the home (Figure 1).

Figure 1. Ecological model of risk factors for child maltreatment



Parent-related risk factors

While harsh parenting and poor parent–child relationships are themselves critical risk factors for maltreatment [18-19], they are influenced by a number of individual parent risk factors. These include: poverty; low educational achievement; mental illness, including post-natal depression [14]; substance abuse [3]; difficulty bonding with a newborn baby (e.g., due to a difficult pregnancy, birth complications or an unwanted pregnancy) [2-3]; maltreatment as a child; or witnessing abuse of one's mother [2]. Experiencing child abuse is recognised as a risk factor in perpetrating child abuse in adulthood, thus it plays a significant role in transferring abuse across generations [13]. Lack of awareness of child development (and of appropriate parenting practices for a child's developmental level) and belief in the effectiveness of physical punishment as a means of discipline are also key risk factors [2,27].

Other risk factors

While parenting factors are central to understanding risks for child maltreatment at home, other factors can influence parenting and family environments cumulatively: the more risk factors are present, the higher the risk [18,19]. At the individual level, these include child-related factors⁵, such as being unwanted (i.e. unplanned pregnancy), or being an infant with a high level of needs (e.g., one that is born prematurely, cries constantly or has a chronic illness or disability). A child who does not fulfil its parents' desires in terms of appearance, gender or temperament can be at greater risk of maltreatment, as can children of multiple births or those with siblings close in age or with high needs. Gender can play a role, since boys are more likely to experience physical abuse and girls are more likely to experience sexual abuse [e.g. 1,2,23].

⁵ This does not imply that a child is responsible for maltreatment, but that these are some factors which may make a child more difficult to parent or may otherwise influence parent behaviours toward a child.

Child conduct problems have a two-way risk relationship with parenting: they may be a reaction to harsh parenting or discipline [28], while harsh parenting or discipline can be a reaction to child conduct problems [46]. Child conduct problems, particularly among boys, are closely associated with future violent behaviour and intimate partner violence [47].

At the family level, risk factors associated with maltreatment include social stresses, family breakdown, violence (including intimate partner violence), discrimination against the family (e.g., due to ethnicity, nationality or religion), involvement in criminal activities [2-3], and adherence to traditional gender roles, particularly definitions of masculinity linked with dominance and hierarchical gender relations [2].

At the community level, acceptance of the use of severe physical punishment – either within the family or other institutions – and the general tolerance of violence are associated with child maltreatment [2-3]. Inadequate or lack of housing, high levels of unemployment, lack of social support for families, harmful levels of environmental toxins (e.g., lead), the easy availability of alcohol and the presence of a local drug trade are also associated with child maltreatment within communities [2].

Finally, at the socio-cultural/structural level, conflict and organised violence, including war, and normative violence in the society are risk factors for child maltreatment; this is particularly relevant in LMICs, which are disproportionately affected by violence [3,30,48]. In South Africa, for example, rates of child sexual abuse, intimate partner violence and rape are amongst the highest in the world [32], and the injury death rate is nearly double the global average, largely due to interpersonal and gender-based violence. These major social problems interact with the HIV epidemic to exacerbate risks for already-vulnerable groups of women and children. The importance of early preventative approaches to address both child abuse and gender violence may be particularly vital for sub-Saharan Africa and other regions with very high levels of violence, yet the complex interplay of factors associated with child maltreatment requires careful understanding of how and where to intervene to reduce risk.

Rapid socioeconomic change [1,3] is also implicated. Inequality related to gender (e.g., where boys are valued above girls), low status of the child in parent–child relationships, and social and economic inequality can also increase the risk of child abuse [2]. Inadequate policies or programmes to prevent or address child maltreatment, and social, economic and health policies that lead to poor living standards, inequality or instability [2] can also play a role. Some research suggests that the existence of child pornography, child prostitution and child labour are additional societal-level risk factors [2].

Protective factors

Most research on protective factors focuses on child resilience⁶, which is facilitated, for example, by an infant having a secure attachment to an adult family member; high levels of paternal care during childhood; and not associating with delinquent or substance-abusing peers [2]. As with risk factors, evidence shows that parenting factors can buffer and mediate the effects of wider family and community factors on children's development [44-47]. Positive parent–child interactions and attachment [15-16,26], positive, non-physical disciplinary techniques [2], and positive parenting attitudes, beliefs and practices [13] are all potential protective factors. At the community level, strong social cohesion and stable family units are cited as protective factors [2], as is social capital at the wider socio-cultural level.

Interventions

Interventions to address child maltreatment fall into one of three categories, or may combine elements of one or more of these approaches:

- primary – aiming to prevent maltreatment from occurring, and delivered to the population at-large rather than to a select at-risk group;
- secondary – aiming to prevent further maltreatment, and requiring detection of the problem and identifying those at risk;
- tertiary – providing treatment to children (and, in many cases, families) already affected [49].

⁶ Resilience is an individual's relatively positive adaptation in the face of heightened risk for maladaptation [33].

Most interventions designed specifically to address child maltreatment are secondary- or tertiary-level interventions focused on treating child-abusing parents, preventing recidivism among abusing parents or delivering services to families at particular risk for abuse [21,50].⁷ However, primary interventions are often more desirable, affordable and feasible in many settings [2], as preventing maltreatment is more effective and more cost-effective than secondary prevention or treatment [51]. Secondary- and tertiary-level interventions require detection of families or children at risk for or affected by child abuse, which is difficult in most settings, but particularly in many LMICs, which may not have resources to monitor child welfare. Moreover, since child maltreatment is grossly underreported [3,52], accurately measuring intervention effects of secondary or tertiary interventions, which are often based solely on maltreatment outcomes,⁸ is difficult or impossible in many settings.

Primary prevention with parents

Parenting interventions (or 'parent training') are the most common form of primary (i.e., preventive) interventions for addressing child maltreatment in the home. However, the concept of 'parenting intervention' encompasses a broad range of programmes aimed at many different outcomes, some of which may influence risks of maltreatment or harsh parenting more than others. They include:

- pre-natal and post-natal programmes for improving maternal and child health outcomes (e.g., growth, nutrition, cognitive development);
- safety training for parents to reduce unintentional injury;⁹
- interventions which address specific health conditions, such as those designed to help parents deal with a child's disability or chronic disease or to help parents afflicted with a disability or disease to better manage parenting;
- parent–infant psychosocial, psychological or psychotherapeutic interventions designed to improve the parent–child relationship and attachment, and encourage play and supportive interactions; and
- interventions focused on reducing children's aggression and conduct problems.

These may be delivered to individual parents, groups of parents or parents along with their children, at home or in health or community settings.

A number of other types of interventions indirectly address child maltreatment by aiming to alleviate family, community or social/structural risk factors. These include interventions focused on drug and alcohol treatment for substance-abusing parents, poverty alleviation, improving social support or services to families, increasing access to family planning or other health services, and general violence prevention, including prevention of intimate partner violence in the home [2-3].

Although parenting interventions vary widely in design and outcome measures, even those which do not include explicit maltreatment-related outcome measures are highly relevant in efforts to reduce child maltreatment. Proxy measures may include responsiveness to child needs, strength of the parent–child bond, use of more appropriate or positive disciplinary strategies, or reduction in child misconduct. Child conduct-related parenting interventions have a strong evidence base in HICs. They generally aim to improve parents' abilities to manage their children using less harsh discipline, reduce conflict and confrontation and increase co-operation and positive interactions in the home [44,54-55].

⁷ An important exception are interventions aimed exclusively at preventing child sexual abuse, which tend to be child- rather than parent-focused and are mostly delivered in schools [6].

⁸ These include police reports, hospital admissions or child deaths related to abuse, out-of-home placement of children, or parent-report.

⁹ Safety training for parents has shown some effectiveness in reducing unintentional child injury [53]. Unintentional injury is not equivalent to child maltreatment, though it could be sign of neglect or poor parenting practices [49]. As such, interventions to reduce unintentional injury in the home could be considered general parenting interventions, but those with a narrow focus on specific types of injuries, such as poisoning or burns, may be considered less relevant.

While most parenting interventions are designed to improve parenting skills, those most relevant for reducing harsh parenting focus on increasing responsive parenting and parent–child bonding [24,56-57]; helping parents to develop more appropriate expectations of their children and to empathise with and nurture their children; and promote positive rather than negative or harsh forms of discipline [e.g., 22,23,58-61]. Parenting interventions which exclusively promote nutrition or breastfeeding, address specific parent or child physiological (e.g., malnutrition, stunting) or mental health conditions, or those aimed at preventing a narrow range of unintentional injuries (e.g., paraffin burns or poisoning), may affect some of the risk factors for maltreatment but, for the purposes of this review, do not fall under the umbrella of 'general' parenting interventions for reducing harsh parenting.

Evidence-based primary parenting interventions

There is a vast literature on parenting interventions in HICs [e.g., 14,62,63-65], but far fewer rigorous studies from LMICs [e.g., 2,51,66]. Many parenting studies from HICs are targeted at low-income families or implemented in low-income areas.¹⁰

To date, only one rigorously tested primary intervention has been shown to be effective in preventing child maltreatment: the Triple P programme. Triple P was evaluated using a randomised controlled trial design in the USA [21] and is primarily aimed at addressing child conduct problems. While it stands out as an example of primary prevention, it also has secondary prevention components. The Incredible Years programme is another parenting intervention which has been rigorously tested in a wide range of settings and countries over the past 30 years [21,69]. It is most commonly targeted at at-risk children or families, thus it is considered a secondary intervention. Both the Incredible Years programme and Triple P have been shown to be effective in reducing risk factors for maltreatment, particularly harsh parenting, and for improving general parenting practices.

Overall, while some parenting interventions target common risk factors for abuse and have been shown to improve parenting practices, only a few (e.g., The Incredible Years [67-68]; Triple P Parenting Program [21,69]) have proven effectiveness in preventing maltreatment in some settings. Nonetheless, improving parenting skill and parent–child relationships is recognised as an important lever for reducing child maltreatment and its short- and long-term effects on children, families and societies. Barth [49] states that an intervention aimed at improving parenting skills would be considered effective in preventing child maltreatment if it changed parental behaviours from what is deemed 'abusive' to 'non-abusive'. As discussed previously, such thresholds are blurred and vary considerably between (and within) countries and cultures, highlighting some of the challenges in delivering effective interventions to prevent maltreatment. Thus, reducing harsh parenting and improving parent–child interaction and general parenting skills could be considered logical proxies for primary prevention of child maltreatment based on existing evidence, and a logical focus for interventions to prevent maltreatment.

Why is it important to do this review?

To date, searches have revealed no reviews of parenting interventions specifically focused on reducing harsh, negative or abusive parenting and improving parent–child relationships in LMICs. This is despite calls from international bodies to expand the evidence base on reducing family violence to include LMICs [e.g. 2,20,36,38]. A few reviews have covered topics which include some parenting aspects, but which differ significantly from the current review. For example, a 2009 systematic review of reviews on child maltreatment interventions [51] aimed to include evidence from all countries and regions which had specific child maltreatment outcomes, and with any population group, not just parents. It retrieved information about 298 studies, none of which took place in low-income countries and only two in middle-income countries, neither of which would be considered a general parenting intervention.¹¹ Moreover, this review of reviews involved limited searching of grey literature.

¹⁰ While much can be learned from these studies which may be relevant to LMIC settings, the general lack of resources and child welfare systems and more extreme levels of poverty and inequality, as well as dramatically different cultural contexts between LMICs and HICs, limits the direct transferability of such intervention research between these settings.

¹¹ One was an intervention with adolescents rather than parents [70], and the other focused on a specific physiological condition (premature birth) [71].

Other reviews have primarily emphasised early child development interventions focused on child physical and cognitive development and early stimulation, with limited focus on general parenting and few assessments of parent outcomes or harsh parenting [72-73]. Many of these studies have focused on at-risk children (e.g., those who have experienced pre-term birth, malnutrition or stunting), rather than the population at large. Other reviews which touch on similar topics were not systematic or did not seek unpublished literature [66]; did not assess study quality [74]; or focused on specific types of parent–infant interventions, with little evidence identified in LMICs [66].

These limitations and the limited evidence base on parenting interventions to reduce harsh parenting and address risk factors for child maltreatment in LMICs suggests the need for a systematic review of rigorous studies which aims to capture both published and unpublished literature on the topic.

Objectives

The objectives of this systematic review are to investigate the effectiveness of parenting interventions for reducing negative, harsh or abusive parenting, increasing positive parenting practices, attitudes and knowledge, and improving parent–child relationships in LMICs. It aims to explore the potential for intervening directly with parents in the home environment to address parenting risk factors for child maltreatment or poor or dysfunctional parenting within diverse socio-cultural settings. The parenting interventions in this review are those aimed at changing general parenting skills, knowledge and attitudes. The focus is on high-quality studies – defined as having a randomised controlled design [75] – which have specific parenting components, the effects of which can be isolated from other, non-parenting components.¹²

In addition to assessing relevant studies, this review will also examine the extent to which the identified interventions have been adapted from one setting, culture or context to another, and considerations related to such transportability of interventions. Finally, this review will consider the evidence base on parenting interventions and its implications for preventing child conduct problems and aggression and the relevance of this to preventing future interpersonal and gender-based violence perpetrated by men and boys.

II. Methodology

Criteria for considering studies for this review

The following sections provide detailed information about inclusion and exclusion criteria (Table 1 summarises the research question in 'PICO' format: population, intervention, comparison and outcomes [76]).

Types of studies

Randomised or quasi-randomised controlled trials were considered for inclusion in this review as they provide the highest level of evidence and the least risk of bias which could influence effect size or direction [75].

Types of participants

Participants included parents or primary carers of children aged 0–18 years, in home (rather than institutional) settings, in low- or middle-income countries as defined by the World Bank [11].

Table 1. Research question in PICO format

Population	Parents or other primary carers of children aged 0–18 years
Intervention	Parenting for reducing negative or harsh parenting, increasing positive parenting strategies and improving parent–child relationships
Comparator	No intervention, services as usual or alternative services
Outcomes	Parent–child interaction; parenting skill, behaviour, attitudes or knowledge; harsh, abusive or dysfunctional parenting; child abuse or neglect
Context	Low- and middle-income countries [11]
Study designs	Randomised and quasi-randomised controlled trials

¹² While non-randomised intervention trials which include well-matched comparison groups may provide valuable evidence on this topic, it is more challenging to determine the validity and reliability of non-randomised compared to randomised designs, therefore non-randomised designs were excluded.

Types of interventions

Interventions included in this review are those designed to reduce negative or harsh parenting, teach positive child behaviour management strategies, or improve parent–child attachment and relationships. Relevant interventions are those with specific parenting components or curricula aimed at changing general parenting knowledge, attitudes or skills.

Complex interventions in which it was not possible to assess the independent effect of the parent-training component were excluded, though interventions which included, for example, both parent and child components were included, as long as their effects could be isolated from one another. Parenting interventions for addressing specific physical or mental health issues or conditions (e.g., HIV/AIDS, malnutrition, pre-term birth, breastfeeding, malaria, attention-deficit disorder etc.) were excluded.

All identified trials which met the criteria and could be accessed were included. They were critically appraised for quality, and results have been synthesised to the degree possible. Comparative interventions included 'no treatment', 'treatment-as-usual' or an alternative treatment.

Types of outcome measures

This review focuses on (but is not limited to) interventions with the following outcome measures:

- parent–child relationship measures, including parental sensitivity, intrusiveness or attachment;
- parenting skills, behaviour, attitudes towards or knowledge about parenting;
- harsh, abusive or dysfunctional parenting;
- child maltreatment (either from child report, official reports or proxy measures such as rates of visitation to hospital emergency rooms or injury rates).

In particular, it is important to distinguish between directly observed measures versus parent- or child-reported measures of parenting skill and parent–child interactions. Observational assessment of parenting behaviour is considered the 'gold standard' measurement for parenting intervention trials [58,77] and involves trained and blinded independent observers conducting ratings or frequency counts of parent behaviour, according to a pre-specified, reliable coding system.

Search methods for identification of studies

Electronic searches for published literature

The following electronic databases were searched: The Cochrane Library, MEDLINE, EMBASE, CINAHL, PsycINFO, Global Health and ERIC, from inception to May 2010.

Search terms were restricted to titles, abstracts and keywords, and differed based on the search platform requirements. Generally the search strategies included filters for population (e.g., parents, families), context (i.e., low-income countries, developing countries, middle-income countries) and type of study (i.e., randomised, controlled trial, intervention).¹³ No date or language restrictions were applied. (A detailed list of all sources searched and search terms used can be found in Appendix 1.)

Other searches

Grey literature

Unpublished or non-indexed reports were sought through searches using Google Scholar, targeted searches of websites of relevant organisations and two theses and dissertation databases. (Appendix 2 includes a complete list of the grey literature search strategy.)

Reference lists

Reference lists of articles identified through database searches and bibliographies of relevant papers were examined to identify further studies. (See Appendix 2 for the list of articles.)

¹³ A filter representing 'parenting interventions' was not used, because relevant interventions are not uniformly referred to as such, thus a filter could have excluded potentially relevant records.

Correspondence

The reviewer contacted 23 experts in the field of parenting interventions and early child development to solicit potentially relevant unpublished papers, ongoing research and suggestions for other contacts. (See Appendix 2 for the complete list of contacts.)

Data collection and analysis***Selection of studies***

Titles and abstracts of studies identified through searches of electronic databases were reviewed to determine whether they met the inclusion criteria. Full copies of those which appeared to meet the criteria were assessed by the reviewer.

Data extraction and management

Data were extracted by the reviewer using a data extraction form (Appendix 3), and selected data were entered into RevMan 5. Where data were not available in the published reports, authors were contacted to supply missing information.

Quality assessment

Critical appraisal of the studies was based on the Cochrane Collaboration's Tool for Assessing Risk of Bias [76, Table 8.5a]. This involved assessing whether there was an adequate method of sequence generation and allocation concealment, whether there was blinding of assessors, if attrition or drop-outs were dealt with satisfactorily, and whether there was an assessment of other potential confounders.

Measures of treatment effect

In studies for which effect sizes (Cohen's *d*) were not reported by study authors, they were calculated for reports which provided scores for T-tests, or F-tests with one degree of freedom, and size of intervention and control groups. This was done using equations published by Thalheimer and Cook [78]. Discussion of the magnitude of effects was based on Cohen's [79] suggestions that effect sizes of .20 are small, .50 medium, and .80 large.¹⁴

Dealing with missing data

Missing data and drop-outs were assessed for each included study. The extent to which studies conformed to an intention-to-treat analysis was also assessed.

Assessment of heterogeneity and data synthesis

Due to significant differences in the populations, settings, outcomes, data analyses and reporting of included studies, no attempts were made to combine the data in a meta-analysis. Where appropriate, characteristics of included studies were discussed narratively according to delivery mode (i.e., in the home, group-based, clinic-based or combined). Outcome data and trends of effect (significance and direction of effect) were described narratively where possible, and for each study in associated data tables.

The effects of the studies were grouped by comparator, and then by outcome type, producing the following four groups for narrative synthesis:

- intervention compared to no-treatment or treatment-as-usual control:
 - effects on parent–child interaction;
 - effects on negative, harsh or abusive parenting;
 - effects on parent attitude or knowledge.
- intervention compared to alternative treatment:
 - effects on parent–child interaction.

¹⁴ However, this was analysed with caution, as the effectiveness of a particular intervention can only be interpreted in relation to other interventions which seek to produce the same effect [80] and effect sizes are calculated independently of sample size.

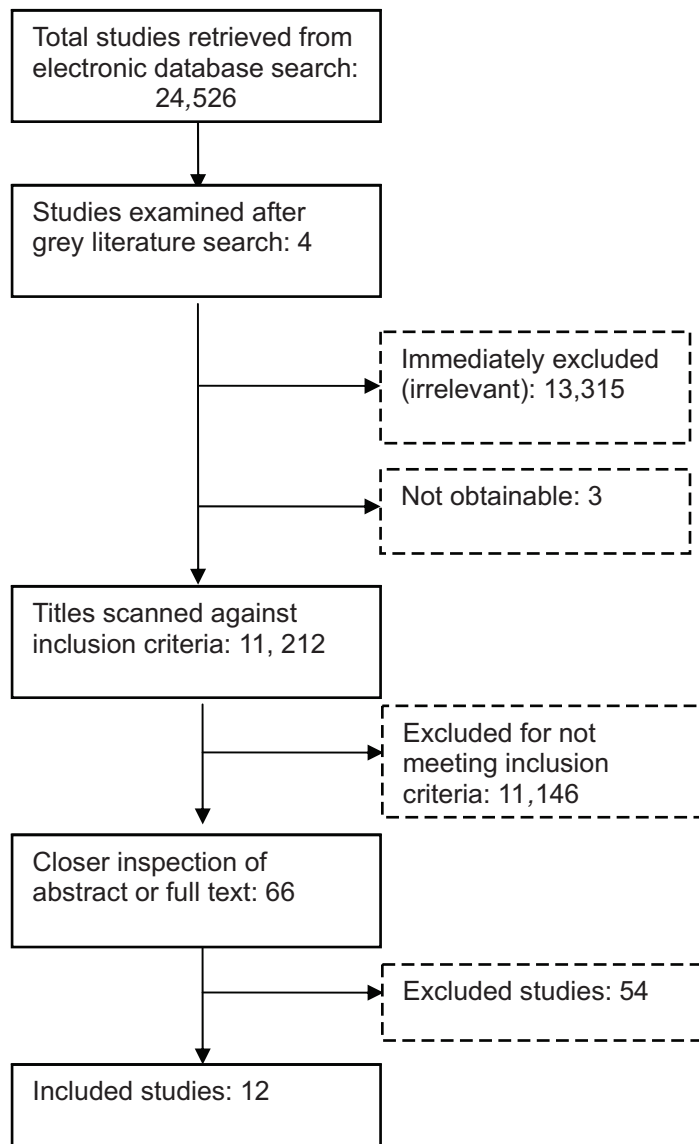
III. Results

Description of studies

Results of the search

A highly sensitive electronic database search yielded 24,526 records, which were imported from OVID and other databases into EndNote bibliographic management software. Electronic sorting using EndNote found 13,315 records with key non-relevant terms in their titles (such as 'cancer', 'tuberculosis', 'diarrhea', 'schizophrenia', 'Typhoid', 'dental') and terms indicating non-relevant geographical focus of studies (e.g., 'Japan', 'Taiwan', 'New Zealand', 'Australia'); these were eliminated. Titles of the remaining 11,211 records were scanned by the reviewer and abstracts or full text of 65 records inspected more closely; of these 11 were suitable for inclusion. Grey literature searches (see Appendix 2) identified four additional studies. One [60] was suitable for inclusion, and two may or may not fit the criteria [56-57], but attempts to obtain these studies (through electronic searching and contacting authors and associated organisations) were unsuccessful. (See 'Excluded studies' on page 21 for more information). Figure 2 shows a diagram of included and excluded records.)

Figure 2. Flow diagram of included and excluded records



Included studies

(Tables summarising the individual characteristics of each of the included studies can be found in Appendix 5.)

Design and sample size

Eleven of the 12 included studies were randomised by individual, and one was cluster-randomised by village [61]. One study [59] employed minimisation, which is considered equivalent to randomisation and to have a very low risk of bias [76, Table 8.5c]. Sample sizes of the studies ranged from n=26 [81] to n=449 [59], with most between 30 and 100 participants. Three of the studies had what could be considered very small sample sizes (n<50), and only two of the included studies [59,61] reported a power calculation to determine sample size.

Setting

The studies took place in nine different countries, eight of which were classified as middle-income (one study each in Brazil, Chile, China, Iran, Jamaica, Pakistan and Turkey, and three in South Africa) and one classified as low-income (two studies in Ethiopia).¹⁵

Participants

(Table 2 lists the characteristics of participants of each study in this review.)

Participants in six of the 12 studies were mothers 60,81-85], while three included only pregnant women in their third trimester [89,59,61] and one involved only new mothers a few days after giving birth [86]. The two studies from Ethiopia were aimed primarily at mothers, but some fathers and other family members also received the intervention [87-88].

Parental age ranged widely and was not always reported, but was part of the inclusion criteria for one study, which involved only adolescent mothers [89]. Six of the 12 studies [59-61,85,87-88,90] determined eligibility of parents and families based on residence, such as a neighbourhood, shantytown or settlement. The study from Turkey [82] determined eligibility based on the type of day care provided to children (educational, custodial or at-home). The study by Magwaza and Edwards [83] in South Africa focused on parents with children in pre-school, while two studies [84,86] derived their samples from parents who attended urban health care centres. One study [81] derived its sample from members of a parenting group which was part of a women's organisation in South Africa.

Parents' level of education ranged from a largely illiterate sample in the study from China [60] to mothers with advanced education or professional qualifications in South Africa [81]. Most study participants were literate and had received at least some primary schooling. Their socio-economic status was generally characterised as poor, low-income or 'disadvantaged'. This was based largely on income levels or housing conditions (e.g., shacks, settlements, squatter housing, congested urban slums, lack of sanitation). Two exceptions were Wendland-Carro, Piccinini et al. [86], which included some participants whose housing status was described as 'median' rather than 'low', and Van Wyk, Eloff et al. [81], which involved women described as 'advantaged' and of high socio-economic status.

Children of the parents and families in the included studies ranged in age from newborn to 12 years old, with the majority of studies focusing on children less than three years old [59-61,82,85-90]. Only one study involved parents of children older than six years [81].

¹⁵Income status based on country classifications of the World Bank [11].

Table 2. Characteristics of participants in included studies

Study	Country	Participants			Sample size (n)
		Parent/Carer	Child age	Socioeconomic status	
Aracena, Krause et al. 2009 [89]	Chile	Pregnant women (3 rd trimester)	0–12 months	Extremely poor neighbourhoods	104
Cooper, Tomlinson et al. 2009 [59]	South Africa	Pregnant women (3 rd trimester)	0–6 months	Live in shacks, in settlements characterised by very high unemployment and poverty	449
Jin, Sun et al. 2007 [60]	China	Mothers	0–2 years	Most live below poverty line	100
Kagiticbasi, Sunar et al. 2001 [82]	Turkey	Mothers	3–5 years	Squatter housing in urban shantytown; low income	280
Klein and Rye 2004 [87]	Ethiopia	Families	1–3 years	Congested urban slums, overcrowded households and poor sanitation; some live at subsistence levels	96
Magwaza and Edwards 1991 [83]	South Africa	Mothers	mean = 4.5 years	Disadvantaged	90
Oveisi, Ardabili et al. 2010 [84]	Iran	Mothers	2–6 years	Most fathers were employed	272
Powell and Grantham-McGregor 1989 [85]	Jamaica	Mothers	16–30 months	Below-average housing conditions (e.g., poor sanitation and overcrowding)	58
Rahman, Iqbal et al. 2009 [61]	Pakistan	Pregnant women (3 rd trimester)	0–3 months	Many live on income from subsistence farming	334
Teferra and Tekle 1996 [88]	Ethiopia	Families	6 months – 3 years	Congested urban slums, overcrowded households and poor sanitation; some live at subsistence levels	30
Van Wyk, Eloff et al. 1983 [81]	South Africa	Mothers	8–12 years	Advantaged	26
Wendland-Carro, Piccinini et al. 1999 [86]	Brazil	New mothers	2–3 days	'Low' or 'median' housing conditions	38

Interventions

(Table 3 lists the characteristics of interventions in each study in this review.)

Six of the studies involved interventions delivered to individuals through home visiting [89,59,61]; two [81–82] were delivered to groups of parents, either in community settings or at workplaces; and two combined home visits with group-based delivery [87–88,90]. Three of the home-visiting interventions [61,85,89] were added to existing or routine health services, while two studies [84,86] were delivered through health clinics and were added to existing services. The remaining seven studies involved stand-alone interventions that were not part of any existing service.

While general psychosocial parenting skills-building or other components were common to all of the studies, the primary goal of nine of the studies was child physiological, cognitive or educational development. Improving parent–child interaction or relations was among the primary stated goals of four studies [81,86–88,90], and only two studies [89,84] identified reduction of parent–child conflict or abuse as primary goals. Other primary goals were improving maternal physical or mental health [89,59,61] and assessing cost-effectiveness of a home-visiting intervention [89].

The majority of studies were delivered by either paraprofessionals – who generally had completed secondary school and, in some cases, had additional training – or professionals, such as physicians, health educators, researchers or graduate students. Only one study [59] relied on lay persons to deliver the intervention. Most interventions were delivered for a period of three to six months, with one lasting only one day [86] and the longest lasting two years [82]. The number of sessions delivered to participants ranged from one to 60, with the majority between five and 15.

Control groups in most of the studies received services 'as usual' or no services, while three studies [83,86,87] provided alternative services.

Components or activities common to many of the included studies were: individual counselling or group discussion; role play; videotape modelling of positive parenting behaviours; educational communications materials which model or guide positive behaviours; structured or guided play between mothers and their children; and provision or creation and use of toys or play objects made from readily available objects or materials (e.g., pots, kitchen utensils, scrap fabric).

One study from South Africa and the studies from China, Ethiopia, Iran and Pakistan involved interventions adapted from other countries [59-60,87,84,61,88]. Studies from Brazil, Chile and South Africa implemented interventions partially or loosely based on previously tested interventions from other countries [83,86,89]. The origin of the parenting component of the study from Turkey [82] is unclear, and the study from Jamaica [85] was indigenous (see Table 4).

Table 3. Characteristics of interventions by intervention delivery mode

3a. Home-visiting interventions						
Study	Country	Goals of intervention	Components of intervention	Duration	Qualifications of staff	Control conditions ¹⁶
Aracena, Krause et al. 2009 [89]	Chile	Improve maternal and child physical and mental health, assess cost-effectiveness of home visiting	Health counselling; discussion and feedback on parenting skills	12 sessions 1 hour 15 months	Paraprofessional	TAU
Cooper, Tomlinson et al. 2009 [59]	South Africa	Improve infant development and reduce maternal distress	Activities based on neonatal behavioural assessment schedule which sensitise mother to infant capacities and needs	16 sessions 60 minutes 5 months	Lay persons	TAU
Jin, Sun et al. 2007 [60]	China	Improve child development	Counselling, role play and practice with Mother's Card, which depicts age-specific messages for caregivers related to play and communication with children; some parent support (e.g., in finding child care)	2 sessions 30–60 minutes 6 months	Professional	TAU
Magwaza and Edwards 1991 [83]	South Africa	Improve child cognitive and socio-emotional function through improved mother–child interaction	Role-play; observation; positive reinforcement and feedback; materials such as pictures and toys	10 sessions 2 hours 2.5 months	Professional	2 groups: No-treat and Alt
Powell and Grantham-McGregor 1989 [85]	Jamaica	Improve child development	Demonstrating play and communication techniques; encouraging mothers to use positive feedback, language activities, games, songs and toys	12 sessions 1 hour 12 months	Paraprofessional	TAU
Rahman, Iqbal et al. 2009 [61]	Pakistan	Improve child development and maternal mental health	Pictorial calendar depicting stages of child development, with illustrations of parent–child play and other activities	7 sessions 15–20 minutes (+1 half-day workshop) 3 months	Paraprofessional	TAU

¹⁶ TAU: Treatment or services as usual; No-treat: No-treatment control; Alt: Alternative treatment/service

3b. Group-based parenting interventions						
Study	Country	Goals of intervention	Components of intervention	Duration	Qualifications of staff	Control conditions¹⁷
Kagıtcıbası, Sunar et al. 2001 [82]	Turkey	Improve child educational and cognitive development	Group discussions on nutrition, child health, children's developmental needs. Play activities for preschool children, child discipline and parent-child communication	60 sessions 1 hour 24 months	Paraprofessional	No-treat
Van Wyk, Eloff et al. 1983 [81]	South Africa	Improve parent-child interaction	Group discussion; assigned reading; written exercises related to parent-child communication; modelling of communication skills by group leader; role play	6 sessions 2 hours 1.5 months (6 weeks)	Professional	No-treat

3c. Combined group and home-visiting parenting interventions						
Study	Country	Goals of intervention	Components of intervention	Duration	Qualifications of staff	Control conditions
Klein and Rye 2004 [87]	Ethiopia	Improve parent-child interactions and child educational learning potential	Role playing; videotape modelling; presentation of pictures depicting positive childrearing	10 sessions 1.5-3 hours 3 months	Paraprofessional	Alt
Teferra and Tekle 1996 [88]	Ethiopia	Improve parent-child interactions and child educational learning potential	Role playing; videotape modelling; presentation of pictures depicting positive childrearing	6 sessions 1.5-3 hours 3 months	Professional	No-treat

3d. Clinic-based parenting interventions						
Study	Country	Goals of intervention	Components of intervention	Duration	Qualifications of staff	Control conditions¹⁸
Oveisi, Ardabili et al. 2010 [84]	Iran	Prevent parent-child conflict and abuse	Video clips and role-playing	2 sessions 2 hours 0.5 months	Professional	TAU
Wendland-Carro, Piccinini et al. 1999 [86]	Brazil	Improve parent-child interaction	Video and discussion about sensitive mother-infant interaction	1 session 50 minutes 1 day	Professional	Alt

^{17,18}TAU: Treatment or services as usual; No-treat: No-treatment control; Alt: Alternative treatment/service

Table 4. Transportability and adaptation of interventions

Study	Country	Geographic or theoretical origin of intervention	How intervention was adapted
Aracena, Krause et al. 2009 [89]	Chile	Unclear, but similar to structured nurse home-visiting programmes in the United States (e.g., [91-92])	Unclear
Cooper, Tomlinson et al. 2009 [59]	South Africa	Based on programme originally used in UK, which followed principles of The Social Baby [93].	Incorporated key principles of the World Health Organization's document Improving the Psychosocial Development of Children [94]
Jin, Sun et al. 2007 [60]	China	WHO/UNICEF Care for Development (CFD) Mother's Card, part of the Integrated Management of Childhood Illness (IMCI) package	Materials used were available in the home and natural environment, such as pots, wooden kitchen utensils, clothing, pegs, bottles and stones
Kagitcibasi, Sunar et al. 2001 [82]	Turkey	The non-parenting component was based on Home Instruction Programme for Preschool and Year One Youngsters (HIPPOY), which originated in Israel; but the origin of the parent component is unclear.	Unclear
Klein and Rye 2004 [87]	Ethiopia	Based on the Mediation Intervention for Sensitizing Caregivers (MISC) model, which focuses on increasing parents' sensitivity and awareness of childrearing practices; has been used in a number of countries.	MISC is an approach rather than a programme with specific components.
Magwaza and Edwards 1991 [83]	South Africa	Loosely based on Levenstein's [95] studies of verbal interaction stimulus interventions	Unclear
Oveisi, Ardabili et al. 2010 [84]	Iran	SOS! Help for Parents (http://www.sosprograms.com/), a parent education programme to improve child behaviour and emotional adjustment; originated in US	Modified to be delivered to families at a reduced cost; adapted programme required about 5 hours of staff time to serve 20 mothers and cost approximately \$20/ family
Powell and Grantham-McGregor 1989 [85]	Jamaica	Indigenous	Not adapted
Rahman, Iqbal et al. 2009 [61]	Pakistan	'Learning Through Play' programme, developed in Canada for use by lay home visitors working with at-risk multi-ethnic parents and children; adapted for use in many developing countries [96]	Training and other materials translated into Urdu; previously adapted for use in same country and similar contexts
Teferra and Tekle 1996 [88]	Ethiopia	Same as Klein and Rye (above)	MISC is an approach rather than a programme with specific components
Van Wyk, Eloff et al. 1983 [81]	South Africa	Unclear	Unclear
Wendland-Carro, Piccinini et al. 1999 [86]	Brazil	Video based on the Neonatal Behaviour Assessment Scale (NBAS), presenting information about newborn competence to interact and affectionate handling of infants, and encouragement to mothers to interact with their infants [97]	Unclear

Table 5. Description of outcome measures**Outcomes**

The included studies measured a total of 19 different outcomes, of which 10 were relevant to this review. These can be classified under three broad headings (Table 5).

Outcome measures	Descriptive examples from included studies
Parent–child interaction	
Parent sensitivity	Parents' reactions to typical parent–child situations or interactions
Maternal intrusiveness	Appropriateness of maternal physical and verbal involvement, positive statements and control of child's activities, and measures of intrusive–coercive control
Parent–child communication	Parents' motivation and interest in communication with child; children's active participation in mother-child interactions
Parent–child interaction/orientation	Frequency of giving full attention to the child other than mealtimes; reading with the child and helping with homework; frequency of the child playing alone; frequency of vocal exchanges, eye contact and physical contact between mothers and children; mothers' responsiveness to infant crying; responsiveness to infant's needs and initiations; parents' expressions of excitement about objects, actions, animals and people in the environment, and expansion of ideas, explanations and story telling, primarily during feeding and play
Negative, harsh or abusive parenting	
Official reports of child abuse	Based on standard assessments of health centres
Dysfunctional parenting practices	Laxness, overreactivity and verbosity in parents
Level of abusive child training	Frequency with which mothers trained their children using physically or emotionally abusive behaviour
Parents' perceptions of child behaviour and use of harsh discipline	Parents' reported use of physical punishment (e.g., spanking, beating), verbal punishment reasoning/induction, and/or giving advice to children as a form of discipline or response to child behaviour
Parent attitude or knowledge	
Family function	Family function, structure, processes of interaction, stressful events and potentially risky behaviors for adolescents' health
Family/parent knowledge, attitudes or practice regarding child development	Mothers' knowledge and attitudes about the second birth month stage of development

Three relevant outcomes were measured in more than one study (maternal sensitivity, parent–child interaction and parent knowledge or attitudes of child development). However, these outcomes were conceptualised differently in each study and measured using different instruments which had varying or unclear levels of reliability and validity. Overall, 17 different scales or instruments were used to measure outcomes, 13 of which were based on instruments that have been documented in published literature and used in other studies.

One study [85] measured no parent-related outcomes, while a number of other studies measured some outcomes which were not specific to parenting and, therefore, not directly relevant to this review. These included:

Parent measures:

- mother's physical health
- mother's mental health
- mothers' opinions about ease of implementing intervention
- parents' perceptions of their children (in relation to intelligence, educational aspirations, personalities and abilities)
- parent self-actualisation.

Child measures:

- child development (including physical health, psychomotor skills, intelligence, social adjustment, hearing and speech, hand and eye coordination)
- infant attachment
- child's perceptions of and relations with parents
- child's level of psychological needs.

The most common non-parenting outcome was child development, followed by maternal mental health. Outcomes were measured at time points ranging from one month to six years post-intervention. Most individual outcomes were measured at between one and six months post-intervention, and fewer were measured at later time points, with only one study measuring outcomes four and six years post-intervention [82].

Excluded studies

Most of the 65 records retrieved through electronic database searching which merited closer inspection of abstracts or full text were excluded because they were not randomised intervention trials or took place in a high-income country. The 11 remaining studies (listed in Appendix 4) were excluded for one of three reasons:

1. The intervention aimed to improve or prevent a specific medical or developmental condition (e.g., breastfeeding/feeding, HIV, malaria, pesticide exposure).
2. The sample population was chosen based on a specific medical or physiological condition affecting the child (e.g., underweight or stunting, preterm birth, malnourishment, retardation) or the parent (e.g., alcoholism, mental illness, HIV/AIDS).
3. The general parenting or parent-child interaction components were only a small part of the intervention and/or could not be sufficiently isolated from non-parenting components in terms of effects or outcomes.

Ongoing studies

A report of an impact evaluation of an intervention promoting positive parenting and reduction of physical and psychological punishment of children in Rio de Janeiro, Brazil, is currently underway [98]. Results of the evaluation were not yet available in English at the time of this review, so the study was excluded.

Risk of bias in included studies

Ten of the included studies were randomised controlled trials, one was cluster-randomised [61] and one used minimisation [59,76]. Most studies had methodological or reporting weaknesses. Potential sources of bias are described below by study and summarised in Table 6.

Sequence generation

Four of the 12 studies in this review could be judged as having adequate methods of sequence generation: Cooper, Tomlinson et al. [59] used a minimisation programme, which is a “non-random but generally acceptable method” [75, Item 8a]; through personal communication, Kagitcibasi, Sunar et al. [82] indicated the use of “odd and even numbers from alphabetised lists of names”; Rahman, Iqbal et al. [61] used a random numbers table; and Wendland-Carro, Piccinini et al. [86] used a computer-generated sequence.

The remaining eight studies did not provide enough information to determine whether the method used was adequate, thus it is unclear if selection bias could have influenced results and in which (if any) direction. There was no clear difference in adequacy of sequence generation method based on type of intervention (e.g., home-visiting compared to group- or clinic-based) or outcomes measured.

Allocation concealment

Three studies provided sufficient information to judge allocation concealment as adequate: Cooper, Tomlinson et al. [59] indicated that “relevant information from initial assessments were communicated by telephone to the trial manager, who ran the minimisation programme and communicated group assignment”; in the study by Rahman, Iqbal et al. [61], allocation was performed by a researcher not involved in the trial, at an independent trial centre; and personal contact with Wendland-Carro, Piccinini et al. [86] revealed that allocation was concealed from maternity nurses, who were responsible for allocation.

The remaining nine studies did not provide enough information to determine the adequacy of allocation concealment, which could suggest a risk of overinflated effect sizes [99]. There were no apparent differences in intervention type or outcomes measured between studies which provided enough information about allocation concealment compared to those which did not. However, among the studies which did not provide enough information, all but one involved subjective outcome measures, which also suggests a risk of exaggerated effect estimate [100]. One study [89] involved the use of one objective outcome measure (official reports of child abuse), and some studies suggest this poses a lower risk of bias even if allocation is not concealed [100].

Table 6. Risk of bias in included studies

Study	Country	Adequate sequence generation?	Allocation concealment?	Blinding?	Free of other bias?
Aracena et al. 2009 [89]	Chile	?	?	?	-
Cooper, Thomlinson 2009 [59]	South Africa	+	+	+	+
Jin et al. 2007 [60]	China	?	?	-	-
Kagiticbasi et al. 2001 [82]	Turkey	+	?	+	-
Klein and Rye 2004 [87]	Ethiopia	?	?	+	-
Magwaza 1991 [83]	South Africa	?	?	+	-
Oveisi et al. 2010 [84]	Iran	?	?	?	-
Powell et al. 1989 [85]	Jamaica	?	?	+	+
Rahman, Iqbal. et al. 2009 [61]	Pakistan	+	+	+	+
Teferra et al. 1996 [88]	Ethiopia	?	?	?	-
Van Wyck 1983 [81]	South Africa	?	?	?	-
Wendland-Carro 1999 [86]	Brazil	+	+	+	-

Key: Yes Unclear No
 + ? -

Blinding

There was no indication of blinding of subjects or staff delivering the interventions in the included studies. This poses a risk of bias but is not uncommon in behavioural interventions. Blinding of assessors was adequate in seven studies [59,61,82-83,85-87], unclear in four [81,84,88-89] and inadequate in one study [60]. While the lack of blinding of subjects poses a risk of bias in any study, it could be argued that a greater risk exists when self-report by subjects is used to measure outcomes. This was the case in six studies [60-61,81-82,84,89].

Lack of blinding of assessors is also problematic in any study, but arguably more so when outcomes are measured based on assessor observations. This was the case in six studies, five of which [59,83,85-87] adequately blinded assessors, indicating a relatively low level of risk of bias. The remaining study [88] did not provide enough information to determine if assessors were blinded.

The study by Aracena, Krause et al. [89] included one objective outcome measure (official reports of child abuse), and though blinding of assessors was unclear, some research suggests this poses a very low risk of bias [75].

Incomplete outcome data

Two studies [84-85] analysed outcomes based on intention-to-treat (ITT), thus dealing adequately with drop-outs and attrition and suggesting a low level of risk of overestimating the effects of the interventions. Two studies which did not analyse results based on ITT [5,12] provided comprehensive attrition analysis, and one [59] anticipated the level of attrition, thus ensuring its sample size was sufficient to adequately power the study. Also, although Kagitcibasi, Sunar et al. [82] did not base their results on ITT, they did provide some analysis of attrition, suggesting a low level of risk of overestimating effects due to incomplete outcome data.

The remaining seven studies [2,6,8-9,13,24,28] did not provide information about how drop-outs were dealt with, which could suggest a risk of overestimating the interventions' effects. This is most problematic in assessing the effects of the studies, but particularly of two studies, which indicated a relatively high rate of attrition (between 13 per cent [6] and 16.7 per cent [90]).

Selective reporting

Selective reporting of outcome data was difficult to assess for 11 studies in this review, as trial protocols could not be located to verify intended outcome measures. The exception was the study by Cooper, Tomlinson et al. [59]; cross-referencing this study against the trial protocol indicated no selective outcome reporting.

The study by Kagitcibasi, Sunar et al. [82] states that “only statistically significant results pertaining to the theoretically important segments from parent interviews are reported; among non-significant results, none were in a direction contrary to expectation”, which could suggest some selective outcome reporting. In addition, three studies [60,87-88] reported limited outcome data or no data about some outcomes.

Other potential sources of bias

Seven of the 12 studies in this review had a number of other potential sources of bias.

Only two studies [59,61] reported a power calculation to determine sample size; thus it is unclear if sample sizes were sufficient to power the majority of studies. Three studies had small sample sizes ($n < 50$) [81,86,88]. Three studies [81,87-88] did not provide adequate baseline demographic data or analysis of baseline differences between groups. Instead, they provided information about general characteristics of the population in the area where the study took place (e.g., the shantytown or settlement). This inability to assess the existence of baseline differences brings into question the internal validity of the studies.

Six studies measured outcomes based solely on self-report of subjects [60-61,81-82,84], and one used both self-report and official reports [89]. Self-report could suggest a risk of recall or acceptability bias. A total of 17 different instruments or scales were used to measure outcomes in this review, and 13 are supported by at least some published information and have been used in other studies (see Table 6). This may suggest a modest measure of reliability. It was unclear whether nine of the instruments were validated for the study population or country, which could compromise internal validity and lead to over- or under-estimates of results. Notably, the South Africa study by Cooper et al. [59] and the study from Brazil by Wendland-Carro et al [86] used validated, reliable observational measures, which are the gold standard in the field of parenting interventions.

Kagitcibasi, Sunar et al. [82] reported a significantly smaller intervention group ($n=90$) than the control group ($n=165$), which could lead to an overestimation of effects in favour of the intervention [99-100]. The study by Magwaza and Edwards [83] had a large number of research assistants delivering the intervention ($n=120$), which could have compromised fidelity, though there is no direct evidence of this nor specific implementation fidelity measures. This study also reported that the research assistants who delivered services to one of the two control groups received the same training as assistants who delivered the intervention, which could present risk of the control group receiving some aspect of the intervention (i.e., lack of differentiation among groups). Both of these factors could suggest a threat to internal validity of the study. Van Wyk, Eloff et al. [81] reported that post-intervention assessments took place at different intervals for the intervention group (one month) and control group (two months), which could influence results. And two studies [83,85] indicate a small risk of contamination between groups.

Intervention effects

The studies included in this review varied greatly in intervention design, outcome measures, time points and methodological quality, thus statistical synthesis (i.e. meta-analysis) was not feasible or possible. Effect sizes (Cohen's *d*) were provided by study authors or could be calculated for eight of the 17 relevant outcome measures reported in the included studies; confidence intervals were reported in only two studies[59,61], for three outcome measures.

Due to the inherent limitations of comparing effect sizes across a heterogeneous group of studies [80], this section will provide a narrative overview of the effects, grouped by outcome category and comparator. There were no studies recording measures of harm. Detailed information about effects, including effect sizes where available or calculable, are listed in Table 7.

Table 7. Outcomes and effects of parenting interventions
Effects of parenting interventions on parent-child interaction compared to no treatment or treatment-as-usual

Study	Sample size (n)	Outcome measures	Name of instrument/scale (Reliable/valid? Y/N) ¹⁹	Assessed at	Significant? ²⁰	Magnitude of effect (effect size ^{21 22 23}) [95% CI (where available)]	Summary of effects
Cooper, Tomlinson et al 2009 [59]	449	Maternal sensitivity	Parent/Caregiver Involvement scale (Y) Observational	6 months	Y (p=.037)	Small (d = .24)* [.048 to 1.492]	Data indicate small but significant effect of intervention compared to control at 6- and 12-month follow-up
				12 months	Y (p=.043)	Small (d = .26) ²⁴ [.058 to 1.278]	
		Maternal intrusiveness	Parent/Caregiver Involvement scale (Y) Observational	6 months	Y (p=.024)	Small (d = .26)* [.093 to 1.278]	Data indicate small but significant effect of intervention compared to control at 6- and 12-month follow-up
				12 months	Y (p=.023)	Small (d = .24)* [-3.466 to -.058]	
Kagitcibasi, Sunar et al. 2001 [82]	280	Maternal orientation to/ interaction with child	Structured interviews (N) Self-report	4 years	Y (p<.05 or .01)	--	Authors suggest significant increases in mother involvement with and attention to child, and less punitive discipline, among intervention group compared to control
		Parent-child communication	Not specified (U) Self-report	6 years	Y (p=.001)	Small (d=.44)***	Data indicate small but significant effect of intervention compared to control at 6-year follow-up
Teferra and Tekle 1996 [88]	30	Frequency of 'mediational' mother-child interaction	Observing Mediation Intervention method (U) Observational	3 months	--	--	Authors suggest significant improvement in frequency of mother-child interaction compared to no-treatment control
Van Wyk, Eloff et al. 1983 [81]	26	Parent interpersonal sensitivity	Group Assessment of Interpersonal Traits (GAIT) (Y); Stollak Sensitivity to Children Questionnaires (STC) (Y) Self-report	1 month	Y (p<.001)	Large (d = 1.59**)	Authors suggest significant improvement in parental sensitivity and parent-child communication in intervention group compared to no-treatment control

¹⁹ Assesses whether there is any published information about the instrument and if it has been used in other studies; Yes/No/Unclear (Y/N/U).

²⁰ Yes/No (Y/N)

²¹ Cohen's d

²² Effect sizes were calculated where sufficient data were available; where authors reported effect size, these were verified where possible. '-' indicates data were not available or were insufficient to calculate effect size.

²³ *Calculated by study authors; **Calculated by review author using F values; ***Calculated by review author using means and standard deviations.

Effects of parenting interventions on negative, harsh or abusive parenting compared to no treatment or TAU

Study	Sample size (n)	Outcome measures	Name of instrument/scale (Reliable/valid? Y/N) ²⁵ Observational/self-report/other	Assessed at	Significant at 95% CI? ²⁶	Magnitude of effect (effect size ^{27, 28, 29}) [95% CI (where available)]	Summary of effects
Aracena, Krause et al. 2009 [89]	104	Indicators of child abuse	Social service records (Y) Other	15 months	--	--	This could suggest a positive effect, although official reports of child abuse may be unreliable due to underreporting.
Oveisi, Ardabili et al. 2010 [84]	272	Dysfunctional parenting practices	Parenting Scales (Y) Self-report	2 months	Y (p = .001)	Large (d = 1.2)*	Data indicate large and significant effect
Kagitcibasi, Sunar et al. 2001 [82]	280	Level of abusive child training Parents' perceptions of child behaviour and use of harsh discipline (spanking, beating)	Parent-child Conflict Tactics Scale (Y) Self-report Unclear (N) Self-report	2 months 6 years	Y (p = .002) Y (p = .026)	Moderate (d = .50)* Small (d = -.28)**	Data indicate moderate and significant effect Data indicated small and significant effect

²⁵ Assesses whether there is any published information about the instrument and if it has been used in other studies; Yes/No/Unclear (Y/N/U).

²⁶ Yes/No (Y/N)

²⁷ Cohen's *d*

²⁸ Effect sizes were calculated where sufficient data were available; where authors reported effect size, these were verified where possible. '- ' indicates data were not available or were insufficient to calculate effect size.

²⁹ *Calculated by study authors; **Calculated by review author using F values; ***Calculated by review author using means and standard deviations.

Effects of parenting interventions on parent attitude or knowledge compared to no treatment or TAU

Study	Sample size (n)	Outcome measures	Name of instrument/scale (Reliable/valid? Y/N) ³⁰ <i>Observational/self-report/other</i>	Assessed at	Significant at 95% CI? ³¹	Magnitude of effect (effect size ^{32, 33, 34}) [95% CI (where available)]	Summary of effects
Aracena, Krause et al. 2009 [89]	104	Family function	'What's your family like?' (Y) Self-report	15 months	N (p=.76)	--	Authors suggest there was no significant effect of the intervention on family function
Jin, Sun et al. 2007 [60]	100	Family knowledge, attitudes or practice regarding child development	Bespoke questionnaire (N) Self-report	6 months	--	--	No data reported
Rahman, Iqbal et al. 2009 [61]	334	Mothers' understanding and attitudes to child development messages Mothers' knowledge and attitudes about child development	Bespoke questionnaire (N) Self-report Infant Development Questionnaire (N) Self-report	6 months 6 months	Y (p<.01) Y (p<.0001)	-- --[3.68 to 4.89]	Authors suggest significant effect of intervention compared to control Authors suggest significant effect of intervention compared to control

³⁰ Assesses whether there is any published information about the instrument and if it has been used in other studies; Yes/No/Unclear (Y/N/U).

³¹ Yes/No (Y/N)

³² Cohen's *d*

³³ Effect sizes were calculated where sufficient data were available; where authors reported effect size, these were verified where possible; '-', ' ' indicates data were not available or were insufficient to calculate effect size.

³⁴ *Calculated by study authors; **Calculated by review author using F values; ***Calculated by review author using means and standard deviations.

Effects of parenting interventions on parent–child interaction compared to alternative treatment

Study	Sample size (n)	Outcome measures	Name of instrument/scale (Reliable/valid? Y/N) ³⁵ <i>Observational/self-report/other</i>	Control conditions	Assessed at	Significant at 95% CI? ³⁶	Magnitude of effect (Effect size ^{37, 38, 39} [95% CI (where available)])	Summary of effects
Klein and Rye 2004 [87]	96	Parent–child interaction	Observing Mediation Interaction method (Y); semi-structured questionnaire (U); MacArthur Communicative Development Inventory (Y) Observational	Home visits focused on basic child health, nutrition and child development	3 months	Seven of nine measures were significant in favour of intervention (p = .0001 – .07)	Medium (d = .66) ⁴⁰ **	Authors suggest significant increases in positive parent–child interactions in the intervention group compared to baseline measures and alternative treatment.
Magwaza and Edwards 1991 [83]	90	Mother–child interaction ⁴¹	Response Class Matrix (Y) Observational	2 control groups: A1 received weekly two-hour home visits (without training); A2 received no services	2.5 months 12 months	U	U	No data provided; attempts to contact author to obtain data were unsuccessful
Wendland-Carro, Piccinini et al. 1999 [86]	38	Mother–infant <i>synchronous</i> responsiveness	Coding system derived from Isabella et al [115] (Y) Observational	Video on basic care-giving skills and infant health	1 month	Y (p < .01)	--	Authors suggest more positive mother–infant interaction, and less asynchronous mother–infant interaction, among control group compared to alternative (control)

³⁵Assesses whether there is any published information about the instrument and if it has been used in other studies; Yes/No/Unclear (Y/N/U).

³⁶Yes/No (Y/N)

³⁷Cohen's *d*

³⁸Effect sizes were calculated where sufficient data were available; where authors reported effect size, these were verified where possible. '-', ' ' indicates data were not available or were insufficient to calculate effect size

³⁹*Calculated by study authors; **Calculated by review author using F values; ***Calculated by review author using means and standard deviations

⁴⁰This is an average of effect sizes of the intervention on nine different parental behaviours

⁴¹Outcome data were not provided for this measure, which was used as a monitoring instrument during the intervention

Intervention compared to no-treatment control or treatment-as-usual

- ***Outcome category: increase or improvement in parent–child interaction***

Five studies evaluated the effects of intervention, compared to a no-treatment or treatment-as-usual control group, on measures of parent–child interaction, including: maternal sensitivity and intrusiveness [59]; maternal orientation to or interaction with a child and parent–child communication [82]; mother–child interaction [83]; frequency of 'mediational'⁴² mother–child interaction [88]; and parent interpersonal sensitivity [81]. Each outcome was measured using a different scale or instrument, half of which were self-report measures and half of which were direct, observational measures.

One study [83] did not report any data or results on parent–child interaction. All the other studies reported statistically significant ($p < .05$), positive effects of the intervention on parent–child interaction, compared to no treatment or treatment-as-usual, at all time points, which ranged from one month [$p < .001$, 81] to six years [$p = .001$, 82].

Effect sizes (Cohen's d) were provided or could be calculated for four of the seven parent–child interaction outcomes, and ranged from .24 (small) to 1.59 (large) (based on benchmarks recommended by Cohen [79]). The only potential pattern with regard to effect sizes was that studies with relatively large sample sizes ($n > 200$) produced effect sizes that were small or moderate, while the study with the smallest sample [$n = 26$, 81] produced the largest effect size ($d = 1.59$).

- ***Outcome category: reduction in negative, harsh or abusive parenting***

Three studies evaluated the effects of intervention, compared to a no-treatment or treatment-as-usual control group, on measures of negative, harsh or abusive parenting, including: indicators of child abuse based on official reports [89]; dysfunctional parenting and level of abusive child training [84]; and parents' perceptions of child behaviour/use of harsh discipline such as spanking or beating [82]. Each outcome was measured using a different scale or instrument.

All studies reported statistically significant ($p < .03$), positive effects of the intervention in reducing negative, harsh or abusive parenting, compared to control, at all time points, which ranged from two months [84] to six years [82].

Effect sizes were provided or could be calculated for three of the four outcomes in this category, and ranged from .28 (small) to 1.2 (large). The only potential pattern with regard to effect sizes was that the study with the longest time point [six years, 82] produced the smallest effect size ($d = .28$).

- ***Outcome category: increase or improvement in parent attitude or knowledge***

Three studies evaluated the effects of intervention, compared to a no-treatment or treatment-as-usual control group, on measures of parent attitude or knowledge, including: family function [89]; family knowledge, attitudes or practices; mother's understanding of and attitudes to child development messages [60]; and mother's knowledge of and attitudes to child development [61]. Each outcome was measured using a different scale or instrument, all of which were self-report measures rather than observational.

The study by Jin, Sun et al. [60] measured 'family knowledge, attitudes or practice', and correlated the results with child development measures. However, the actual raw data were not reported, which could suggest reporting bias. No effect data or conclusions were reported for 'family knowledge, attitudes or practice' in the study, which could suggest reporting bias. Of the remaining three outcomes in this category, one [89] reported a non-significant effect on parent attitude or knowledge compared to control ($p = .76$); and the other two reported a significant, positive effect ($p < .01$).

Effect sizes were not provided or could not be calculated for any of the outcomes in this category.

⁴²Mediated learning involves the help of a human mediator, who helps a child interpret or give meaning to situations and experiences. This can be contrasted with direct learning, which does not involve a human mediator [102].

Intervention compared to alternative treatment

- **Outcome category: increase or improvement in parent–child interaction**

Three studies evaluated the effects of intervention, compared to a control group which received alternative treatment or services, on measures of parent–child interaction. These included: parent–child interaction [83,87]; and mother–infant synchronous responsiveness [86]. Each outcome was measured using a different scale or instrument, all of which were direct, observational measures.

One study [83] reported measuring parent–child interaction for use as an 'assessment tool' during the study, but did not report any results on parent–child interaction, which might suggest a risk of reporting bias. Klein and Rye [87] reported outcome data, measured at three months post-intervention, for nine different measures of parent–child interaction. Seven of these were statistically significant in favour of intervention ($p < .02$) and two were non-significant ($p > .05$). Wendland-Carro, Piccinini et al. [86] reported significant ($p < .01$), positive effects of intervention in improving mother–infant synchronous responsiveness one month after intervention.

An effect size was not provided and could not be calculated for 'mother–infant synchronous responsiveness'. For the remaining outcome, parent–child interaction, an average effect size was calculated, which indicated a medium magnitude of effect ($d = .66$) of the intervention (home visits with parent training) compared to control (home visits with basic child care).

IV. Discussion

Summary of main results

All of the studies in this review reported results favouring the intervention group on a range of parenting measures, including parent–child relationships and parent attitudes and knowledge, and reductions in negative, harsh or abusive parenting. This suggests parenting interventions hold some promise for improving parenting practices and reducing risk factors for child maltreatment in lower-resource settings. However, only three studies [59,61,86] had a low risk of bias based on available information, and only two of these reported sample sizes based on a power calculation (Cooper, Tomlinson et al. in South Africa [59] and Rahman, Iqbal et al. in Pakistan [61]). The reliability and validity of the other studies' results are unclear. There was a notable shortcoming in study quality in that few of the trials employed reliable and validated direct observational instruments for assessing parenting behaviour, which are considered the gold standard for outcomes assessment in this field.

Nevertheless, the relatively large, high-quality trials by Cooper [59] ($n=449$) and Rahman [61] ($n=334$) strongly indicate that parenting interventions can be both feasible and effective in improving parent–child interaction and parental knowledge and attitudes in relation to child development among mothers of young children in LMICs. The two studies differ from each other (and from others in this review) in terms of design (Cooper's study used minimisation and Rahman's used cluster-randomisation). However, both studies involved pregnant women (without complications) in their third trimester, living in high poverty areas; and both studies tested interventions which were:

- population-based (i.e., primary prevention rather than targeted to at-risk groups);
- aimed primarily at improving child development and maternal mental health;
- delivered by local lay persons or paraprofessionals (rather than professional or highly trained staff);
- structured and manualised; and
- delivered in the home, as an additional service alongside routine post-natal home visits.

Cooper's study [59] used a validated, highly reliable observational measure of parent–child interaction. While Rahman's study [61] did not report published information about scale reliability, the scale was developed through lengthy interviews and pilot testing. The samples, components, outcomes and instruments of both studies were informed by previous, high-quality pilot tests with the same or similar populations.

Overall completeness and applicability of evidence

The wide range of settings and contexts represented by the studies in this review suggests some level of generalisability, but this is limited by the paucity of studies with parents of children over the age of six and in low-income countries. Ten of the 12 studies were directed at mothers and two were directed more broadly at families [87-88]; only one [82] measured outcomes for both mothers and fathers. Therefore, findings from this review should not be generalised to both parents or to extended families or alternative carers such as foster parents.

Only one study [59] employed lay persons for intervention delivery, thus generalisability may be limited in terms of staffing. Home-visiting, group-based, clinic-based and combination interventions were all represented in this review, suggesting a level of generalisability to other settings where one or more of these modes of delivery may be appropriate or feasible.

Outcomes were measured at a wide range of time points – from one month to six years post-intervention. This provides some information on both short- and long-term effects.

Overall, most studies in this review were with populations considered to have a low socioeconomic status. However, socioeconomic status is considered 'advantaged' in the study by Van Wyk, Eloff et al. [81] and unclear in the study by Oveisi, Ardabili et al. [84]. In addition, participants in these studies have a higher average level of education (≥ 12 years) than in other studies in this review. This may suggest limited comparability of results with the other studies, and limited generalisability to populations of lower socioeconomic status or educational level.

Quality of the evidence

The body of evidence in this review comes from 12 randomised (or equivalent) controlled trials, involving 1580 parents in nine countries. There was a lack of reporting about:

- power calculation in most studies;
- methods of sequence generation and allocation concealment in three-quarters of the studies;
- incomplete outcome data in more than half of the studies;
- baseline demographic data in one-quarter of the studies; and
- reliability and validity of instruments used to measure more than half of the relevant outcomes in the review.

Therefore, internal validity of the totality of studies is unclear. However, the studies by Cooper [59] and Rahman [61], which include more than 780 mothers in two countries, are notable exceptions, [59] with extremely low levels of risk of bias and, therefore, relatively reliable and valid results. (Table 8 outlines the GRADE quality of evidence and strength of recommendations [103]).

Table 8. GRADE profile of evidence quality

No. of studies	Design	Quality assessment			Other Considerations	Quality of evidence	No. of participants/sample size	Summary of findings	
		Limitations	Inconsistency	Indirectness				Imprecision	Reported effects/outcomes
4	RCT ⊕⊕⊕⊕	serious ^a important inconsistency ^b	some uncertainty ^c	no treatment or treatment-as-usual	serious ^e Low	⊕⊕○○ Low	785	Increase in frequency of parent-child interaction; effect sizes (for 6 of 8 outcomes) (Cohen's) d=0.24-1.59	Cooper, Tomlinson et al 2009 [59]; Kagitcibasi, Sunar et al. 2001 [82]; Teferra and Tekle 1996 [88]; Van Wyk, Eloff et al. 1983 [81]
3	RCT ⊕⊕⊕⊕	serious ^f important inconsistency ^g	some uncertainty ^h	no treatment or treatment-as-usual	serious ⁱ Low	⊕⊕○○ Low	656	No increase in reported child abuse; decrease in harsh/dysfunctional parenting; effect sizes for 4 of 5 outcomes d=0.28-1.2	Aracena, Krause et al. 2009 [89]; Kagitcibasi, Sunar et al. 2001 [82]; Oveysi, Arabilli et al. 2010 [84]
3	RCT ⊕⊕⊕⊕	serious ^k some inconsistency ^l	none	no treatment or treatment-as-usual	serious ^m Low	⊕⊕○○ Low	538	Minimal increase in knowledge or improvement in attitudes; lack of data for one outcome.	Aracena, Krause et al. 2009 [89]; Jin, Sun et al. 2007 [60]; Rahman, Iqbal et al. 2009 [61]
3	RCT ⊕⊕⊕⊕	Serious ^o important inconsistency ^p	none	alternative treatment	serious ^q Low	⊕⊕○○ Low	224	Increase in positive parent-child interaction; effect sizes (or 1 of 3 outcomes) (Cohen's) d=.66	Klein and Rye 2004 [87]; Magwaza and Edwards 1991 [83]; Wendland-Carro, Piccinini et al. 1999 [86]

a. Unclear allocation concealment in 3 studies; unclear sequence generation and blinding in 2 studies.
 b. Different populations, age groups, socioeconomic status and setting, different outcomes of interest.
 c. 1 study employed lay workers rather than professional/paraprofessional staff. One study with families of high rather than very low socioeconomic status and education.
 d. Confidence intervals provided for only 1 study; very small sample sizes for 2 studies (≤ 30).
 e. 2 studies did not address attrition; 2 did not include adequate baseline data.
 f. 2 studies had unclear sequence generation, allocation concealment and blinding.
 g. All studies with different populations, age ranges, socioeconomic status, education level and setting.
 h. 1 study with a population of unknown educational level; different outcomes of interest.
 i. No confidence intervals.
 j. Incomplete data reported in 1 study but not analysed, and not reported in 1 study.
 k. 2 studies had unclear sequence generation and allocation concealment; blinding unclear in 1 study, and insufficient in 1 study.
 l. Slight differences in population.
 m. Confidence intervals not reported for 2 studies.
 n. Incomplete outcome data not addressed.
 o. Unclear sequence generation and concealment in 2 studies.
 p. All studies with different populations, age ranges, socioeconomic status, education level and setting.
 q. No confidence intervals reported; small sample sizes (<100).
 r. Baseline data and differences not reported for one study; incomplete outcome data not adequately addressed.

Potential biases in the review process

In the literature search, the lack of a common naming or description of studies of parenting interventions in LMICs⁴³ posed particular challenges. Moreover, parenting components of interventions are not always clear in titles, abstracts or indexing of studies in databases, which means that some relevant studies may have been missed. Searches for studies in LMICs in general also raise particular challenges. These countries are described or indexed using country or region names or terms such as 'developing country', 'low-income country', 'low-resource setting', 'middle-income country' and other terms, but without a widely agreed upon nor reliable indexing terminology nor an identifiable, validated filter for use in prominent databases. As a result, the search strategy was highly sensitive but minimally specific, and identifying all relevant studies in LMICs was a challenge.

While efforts were made to identify unpublished studies relevant to this review, limited time and resources may have meant some studies were missed. Therefore, there is a risk of publication bias, which has a tendency to overestimate the effects of interventions [75,104]. However, the grey literature search was extensive. Authors of most of the included studies which had missing or unclear information were contacted, but only three responded within the time frame of this review. Authors of two studies published in 1983 [81] and 1991 [83] could not be contacted. As a result, the methodological quality of many of the included studies and, therefore, the reliability and validity of the results is unclear.

One potentially relevant unpublished [105] study was not available in English at the time of this review and thus excluded. Also, time restrictions meant that non-English-language databases, such as LILACS, could not be searched. This could suggest a risk of language bias.

The high degree of heterogeneity of the studies made narrative synthesis a major challenge and seriously compromised comparability.

It is also worth noting that, while many factors affect/influence parenting, and thus many different types of interventions could potentially help to improve parenting, this review focused exclusively on parenting interventions where the effects of the parenting component could be sufficiently isolated from other components. This choice of focus does not ignore the fact that parenting takes place within highly complex environments, and factors such as poverty, mental and physical health, lack of educational opportunities, conflict and inequality all have a bearing on the ability to parent effectively, particularly in LMICs. Instead, this review assessed whether parenting interventions – where the primary focus was to implement parenting components – have been effective within the complex environments that exist in LMICs. Nevertheless, this could be considered a limitation of this review, there is clearly a need for further research on the relative effectiveness of more complex interventions which combine parenting components (to improve parent–child relationships and reduce harsh parenting) with, for example, components related to nutrition, HIV prevention or AIDS care, social support, microcredit, education and gender. This should be guided by existing reviews of complex interventions[e.g., 72].

Agreements and disagreements with other studies or reviews

This was the first systematic review to bring together studies of general parenting interventions for reducing harsh parenting and parent risk factors for child maltreatment in LMICs. However, it supports some of the conclusions of the 2009 systematic review of reviews by Mikton and Butchart [65], which focused on child maltreatment interventions, while extending that review by including a new study from Iran [84] published in 2010.

This review differs from many reviews of parenting interventions and child maltreatment prevention in HICs in that it did not identify any studies focused on child conduct disorder.

⁴³For example, 'child development' was a common phrase in titles of a large number of studies that were not directly relevant to this review, as well as a very small number of studies which were relevant.

V. Cross-cultural transportability of parenting interventions

There is increasing interest in and research on the feasibility, acceptability and effectiveness of transporting interventions from one culture or country to another, and the factors which influence successful transportability. There is good evidence of effectiveness of adapting parenting interventions with established efficacy from one cultural group to another within HICs [106-107]. And there is a growing body of evidence on transporting interventions with an established evidence base from one HIC to another. Some trials have reported successful 'transportation' of well-tested parenting interventions such as Incredible Years and Triple P, across countries and cultures [21,108-111], while others have had more disappointing results, for example Sundell [112] with multisystemic therapy (MST) in Sweden and Canada. However, given the current rapid dissemination of parenting interventions across both the developed and developing worlds, it is important for researchers and practitioners to find models for effective adaptation.

Many of the studies included in this review implemented interventions which were transported from one country to another. However, in general, these interventions did not have a high-quality evidence base (i.e., proven efficacy in RCTs) in the countries in which they were originally developed. Without a strong evidence base in the country where the intervention originated, the level of efficacy in the origin country is unclear, therefore these trials provide limited information about the potential for transporting efficacious interventions between countries.

Nevertheless, it is worth noting some of the ways that the interventions were adapted to suit the low-resource settings in which they were implemented (Table 4). The study by Rahman, Iqbal et al. in Pakistan [61] adapted the 'Learning Through Play' programme originally developed in Canada and implemented in at least 10 countries [96]. The central component is a pictorial calendar featuring information about child development, which is described as "a relatively inexpensive and simple tool that relies minimally on the literacy of parents. These attributes make it suitable for use in developing countries" [61, p 57]. The calendar and a training manual were adapted (e.g., the manual was translated into Urdu) for use in Pakistan. The study from Iran by Oveisi, Eloff et al. [84] tested an intervention which originated in the USA,⁴⁴ but the authors do not report how or if the intervention components were adapted. The two studies from Ethiopia [87-88] trialled the 'More Intelligent and Sensitive Child' (MISC) intervention, which has been implemented in many countries [118]. Published literature describes how the intervention was tailored to local contexts [8,13,103,132] but the intervention's originator explains that MISC "is focused on the quality of the child-caregiver interaction, and not on the content or the material used ... [thus] it is not a 'program' in the traditional sense" [87].⁴⁵ Jin, Sun et al. [60] tested the 'Care for Development' (CFD) package developed by WHO and UNICEF, with Chinese parents. It has been implemented in a number of countries [56,122-125] and features the 'Mother's Card', a pictorial counselling aid with line drawings and simple language "particularly suitable for mothers in rural areas who may have a relatively low educational level" [60, p 214]. In addition, the CFD intervention involves encouraging parents to play with their children using inexpensive, readily available materials in the home and natural environment (e.g., wooden kitchen utensils, stones), which is well suited to low-resource environments.

The studies from China, Ethiopia and Iran all have an unclear or high risk of bias (see Table 5), which limits the conclusions that can be drawn about the effectiveness of their adaptation. Conversely, the positive results and low risk of bias in the study from Pakistan suggest this could be a model for transportability. Ultimately, cross-cultural adaptation must be rigorous, based on evidence and theories of change [126], and considerate of political, religious and economic contexts, cultural norms and family practices [127]. A number of studies included in this review provide limited but highly relevant information about the transportability of evidence-based interventions, which could contribute to future research. The lack of reporting of any analysis of potential harms in the included studies could suggest the possible need for this in future studies. While it is important to always consider potential harms of an intervention, it is also true that transparent and thorough reporting of trial results would indicate any evidence of harms caused by interventions.

⁴⁴ The intervention, SOS! Help for Parents (www.sosprograms.com) [113], has been implemented in a number of HICs, including the USA [114-115] and Iceland [116], and has recently been trialled in Romania [117].

⁴⁵ While this may facilitate the adaptation of MISC to different contexts, the lack of specific intervention components may complicate evaluation of intervention effects across settings, because it may be unclear if the same components are being implemented in the same ways across settings. The importance of and dynamic tension between intervention adaptation and implementation fidelity is described, for example, by Dane and Schneider [119-120] and Fraser, Richman et al. [121].

Moreover, the hundreds of trials of parenting interventions in HICs have largely shown benefits without any reported harms.

Principles of adaptation

The decision to adapt an existing, evidence-based intervention to a culture, context or setting for which it was not originally designed should be based on whether adaptation will increase the efficacy and effectiveness of the intervention in the new context or culture *compared to the original, non-adapted version*. Research on parenting interventions is similar to other areas of social research, in that existing interventions have been adapted to other settings (as shown in this review), but have not necessarily been tested against the non-adapted version of the intervention in the same setting. Nevertheless, this is an evolving area of study [e.g., 128].

The decision to invest resources in adapting a parenting intervention must pay close attention to the fidelity–adaptation balance: maintaining the 'active ingredients' of the original intervention while adapting it to improve acceptability, feasibility and effectiveness [e.g., 129]. This can be achieved in part by conducting pilot tests as adapted components are integrated to suit the target community. In addition, well-designed measurement and evaluation processes enable accurate assessment of the effects of adaptation, while additional measures of fidelity or a 're-certification' process may help to ensure adherence to existing principles of the intervention as it is adapted [129-130].

Case Study: Cultural adaptation of the Triple P– Positive Parenting Program

Triple P – Positive Parenting Program originated at the University of Queensland Parenting and Family Support Centre, Australia. It was designed to help parents of children (ages 0 – 12 years) to address behavioural problems in children by improving parenting skills, parents' sense of competence and couples' communication about parenting [69].

Triple P is one of the most rigorously evaluated parenting intervention programmes. A 2009 Campbell Collaboration systematic review and meta-analysis of early-years parenting programmes, that have been evaluated using a randomised controlled trial design, found that Triple P was among the three most commonly used and tested interventions worldwide (alongside the Incredible Years and Parent Child Interaction Therapy (PCIT)) [131].

To date, Triple P is the only known parenting intervention to be implemented widely across a whole geographical area, and evaluated using a cluster-randomised controlled trial design, with child abuse outcomes measured at the population level. The trial took place in 18 counties in South Carolina (United States).

Description: Triple P is described as a 'multilevel' intervention, which means it is not a single programme, but a system which can be applied at different levels and with different populations, depending on the needs of the target family or community (see Table 9).

Triple P utilises a wide range of components, depending on the level at which it is applied. This includes: print media, such as brochures, flyers and posters; sign-up sheets at schools or child care or community centres; press releases for radio, television and newspapers; feature stories by journalists; radio interviews; and television or radio advertisements. Parents have become involved with a Triple P programme through awareness-raising activities or referral from practitioners and agencies. Engagement in the programme may be through telephone support or information lines; or through face-to-face consultations or training, either with individuals or groups, which may be basic (e.g., Standard level) or intensive (e.g., Enhanced level) [69]. (More information about Triple P is available at <http://www1.triplep.net/>)

Staffing

Triple P has been delivered by a range of practitioners, including:

- Home Visitors
- Supportive Housing/Shelter Staff
- Foster Care Providers
- Child Welfare Workers
- Nurses/Physicians/Health Providers
- Mental Health Providers (e.g., Social Workers, Therapists)
- Inpatient Staff/Providers
- Residential Treatment Staff
- Juvenile Justice/Correctional Line Staff
- School Staff & Educators (e.g., Teachers)
- Community Providers (e.g., mentors)
- Parent/Caregiver(s)/Family
- Foster Family

Training programmes and supervision are required to deliver any level of the Triple P programme. The population-level trial in South Carolina involved training more than 600 service providers, and involved all levels of Triple P, including the universal media and communication (Level 1) components.

Triple P and child maltreatment

Reducing harsh parenting and child maltreatment is one of the primary aims of Triple P, and also one of the primary outcome measures in some trials of Triple P. The population-level randomised trial which took place in the United States reported significant reductions in substantiated child maltreatment, child maltreatment injuries, and out-of-home placements for those in the counties which received the intervention, compared to counties receiving services as usual (analyses controlled for baseline rates of maltreatment) [21].

The researchers chose to measure effects on child maltreatment using indicators appropriate to a population-level intervention: they were standardized across the counties; substantiated; associated with significant human and financial costs; and compiled by agencies or staff not involved in the intervention trial. As the indicators were derived from three separate systems – Child Protective Services, the Foster Care System and hospital records – they could be corroborated [21].

Adaptation

Triple P has been evaluated in randomised trials in a number of countries, including: Australia, the United States, the United Kingdom, many European countries, and Hong Kong. It has been implemented, but not yet fully trialled, in Iran, Singapore, Curacao and Japan. Within Australia there have been evaluations of Triple P for both white and indigenous Australian populations.

Triple P is a manualised intervention that includes a standardised training programme for each of the different levels, which may contribute to implementation fidelity across settings. Its multi-level structure suggests a high level of flexibility of programme components and modules.

The 2003 study by Leung, Sanders et. al [109] in Hong Kong was the first controlled evaluation of Triple P in a non-'Western' cultural context. It tested level 4 (Standard/Group/Self-help) with a group of 91 Chinese parents of children with early onset conduct-related problems. The evaluation found significantly lower levels of child behaviour problems and dysfunctional parenting styles, and higher parent sense of competence among the intervention group compared to a wait-list control group. The published study provides limited information about how the programme was adapted for use with the Chinese population.

Triple P has been rigorously evaluated among indigenous Australian communities with positive effects of intervention. Training materials have been adapted for use with these communities and by indigenous health providers, including changes to language and images. Group sessions were also modified to provide more time for discussions about the socio-political context of parenting, to further develop trust among the providers and participants, and to allow for the sharing of personal stories.

Table 9. Levels and targets of the Triple P programme

Level	Description	Target population	Intervention methods
Universal	Media-based parenting information campaign	All parents	Print and e-media to promote awareness of parenting issues and normalise parenting programmes; may include contact with professionals (e.g., phone information line)
Selected	Information and advice for a specific parenting concern	Parents with specific concerns about child's behaviour/development	Specific advice on solving common child developmental (e.g., toilet training) and behaviour problems (e.g., bedtime problems); may involve face-to-face or phone contact with a practitioner or seminars.
Primary Care	Narrow focus parenting skills training	Parents with specific concerns regarding child behaviour which requires consultations or skills training	Brief programme combining advice with rehearsal and self-evaluation to teach parents to manage discrete problem behaviour (e.g., tantrums, fighting with siblings); may involve face-to-face/phone contact with practitioner
Standard/Group/Self-help	Broad focus parenting skills training	Parents wanting intensive training in positive parenting, or whose children have more severe conduct problems	Up to 12 sessions of intensive training; can be individual, group or self-directed
Enhanced	Behavioural family intervention	Parents of children with recurrent child behaviour problems and family dysfunction (e.g., partner conflict, depression)	Intensive individually tailored programme for families with child behaviour problems/dysfunction; includes home visits to enhance parenting skills, mood management strategies, stress coping skills, partner support skills.

Adaptation of parenting interventions from high- to low-resource settings

Variations in parenting across cultures and contexts [3,132-134] make the process of adaptation particularly challenging. Ethnographic and other forms of qualitative research on family dynamics, behaviour and psychology can help to illuminate the risk and protective factors related to child maltreatment or parenting more generally in a culture or context, as a basis for adaptation. However, a diverse range of issues across many subject areas must be considered in this process. For example, HIV and AIDS (in some contexts), prevalence of orphan-hood, gender inequity, gender-based violence, migration as well as differences in family structures and dynamics (e.g., extended families and living with non-biological carers) are some of the phenomena more relevant to low-resource settings. At the same time, there is a need for careful consideration of the weight given to such cultural and contextual variations, in light of studies showing that, in some situations and with certain activities, parenting across cultures can be more similar than different [41,106,133,135-136].

In addition to the importance of understanding ethnic and cultural differences related to parenting, the following topic areas should also be amongst the considerations when adapting parenting interventions for use in LMICs.

Literacy and languages

Language translation of written materials and visual elements which resonate with a target population are common adaptations in many areas of social research, both within and between countries and contexts [130,137-138]. However, the existence of multiple languages and dialects in a country or region, which is particularly relevant in LMICs, makes translation even more complex and resource-intensive. In addition, differing levels of literacy among populations means that some components, such as written materials, may be inappropriate in many settings, and therefore must be adapted. Examples of low-literacy intervention components include the pictorial calendar used in the study from Pakistan [61] and the pictorial cards used in the study from China [60].

Diverse family structures

Interventions developed for use in HICs are generally developed for and tested with nuclear families or, in some cases, single-parent families, but less often with non-nuclear/extended families, grandparents who are primary carers, or foster parents. The existence of diverse family and caring structures in LMICs requires careful consideration.

In addition, attention should be paid to local values related to individualism versus collectivism, and how interventions may support or undermine such values. Though it is difficult (and can be misleading) to make generalisations about such concepts, dominant or majority cultures in North America and parts of Europe could be categorised as largely individualistic, while majority cultures in some LMICs may be more community, group or family oriented. This distinction has implications for how interventions are developed. While few examples exist from the parenting literature, informative examples of some of the implications of this distinction can be found in other areas, such as the literature on conditional cash transfer programmes (CCTs) [139].

This clash of values can also occur within countries, as exemplified in the concept of *familism* among Latino communities in the United States, which positions family interests over individual interests [121]. Research into adaptations of interventions for diverse cultures within HICs, therefore, may be useful for informing adaptation across countries as well.

HIV and AIDS

With high population levels of HIV and AIDS in sub-Saharan Africa, and growing levels in China and India, it is vital to consider the effects of HIV and AIDS on parents, families and children, and how this interacts with the implementation and effectiveness of parenting interventions.

In terms of recruitment and retention of parents in parenting programmes, HIV and AIDS pose practical problems, such as lack of time and resources to attend parenting group sessions among those (especially mothers) caring for AIDS-affected family members. There is also strong evidence of high rates of depression among HIV-positive pregnant women and mothers [e.g., 140,141], which may further complicate recruitment, and may have implications for intervention effectiveness as parenting itself is known to be strongly influenced by parental mental health. On the more optimistic side, it is worth noting that parenting interventions in HICs have been shown to improve parental depression [142]. Moreover, moderator analyses of randomised trials have found that parenting interventions benefit the children of depressed parents more than those of non- or less-depressed parents, and suggest that parenting intervention is at least as successful at helping the most disadvantaged parents [143-145].

Parenting an HIV-positive child may also be more challenging than parenting a healthy child, as it is often accompanied by the stress of frequent opportunistic infections, the demands of treatment regimes, and fears of child morbidity and mortality. There is evidence of particular challenges for HIV-positive parents and carers with regard to disclosing parental HIV status to their children, and/or disclosing the child's HIV-positive status to the child. In addition, recent evidence from the United States suggests that maternal disclosure of HIV status is linked with child problem behaviour [146].

Thus, HIV and AIDS pose problems not only in terms of recruitment and maintenance of parents in interventions, but also with regard to parent stressors. Existing parenting interventions which are adapted for use in areas with high HIV/AIDS prevalence are likely to need additional or specialised components or modifications. Moreover, organisations or agencies wishing to implement parenting interventions, and researchers who develop interventions, should carefully consider if existing interventions can successfully be adapted for use among HIV/AIDS-affected populations, or if new interventions tailored to local needs would be a better use of resources.

Finally, in HIV/AIDS-affected areas, implementation of parenting interventions may be compromised by the lack or loss of staff due to illness or death. The loss of trained medical providers in sub-Saharan Africa continues to reduce the capacity to deliver medical care in some countries [147-148]. For example, studies from South Africa report an HIV prevalence of around 15 per cent among health workers, with estimates thought to be even higher in younger cohorts [147]. While estimates of HIV prevalence among teachers are slightly lower than among medical providers in South Africa, they are still relatively high at around 12 per cent [149].

One study in this review [59] employed local lay people to deliver the intervention, a practice that is worth exploring in future studies. However, most interventions were delivered by paraprofessionals (with at least some secondary schooling and often further education) or professionals who were physicians or health educators. Morbidity and mortality of staff may affect the ability to deliver an intervention over time and the cost-effectiveness of investments in training.

Poverty and other family pressures

Many families in LMICs are already under extreme pressure due to HIV/AIDS, poverty, violence/conflict or other factors, and this complicates efforts to attract parents to interventions or services, and to maintain their involvement long enough to make a positive impact or to measure change. Incentives such as child care or food may be beneficial and should be implemented based on an understanding of the needs of the population. It can also be useful to consider various avenues for delivering interventions to families. For example, intervention research on drug abuse prevention with families suggests that 'natural meetings' – those which happen regularly in a community, such as faith-based meetings, parent-teacher meetings or employment-related meetings – may be effective entry points [128]. For instance, the parenting intervention in Turkey [82] is an example of delivering a group intervention in a work-related setting.

Recruitment and retention could also be enhanced by rolling out an intervention during 'transition points' in family life, such as during pregnancy or soon after the birth of a baby, or when children start school. Literature from drug abuse prevention with families suggests that families may be more prepared for or open to change during these times [128]. Likewise, however, families may feel more pressure during these times, especially in terms of added expense related to a larger family or school fees. Thus, transition times may or may not be appropriate periods for intervention, and such decisions should be based on qualitative research or pilot testing during the initial phases of intervention development.

Staffing

As discussed previously in this review, an intervention can be delivered by a range of different levels of staff, from highly trained professionals (as in the study from Iran [84], which employed physicians) to lay people (as in one of the studies from South Africa [59]). The availability and cost of employing highly trained or professional staff should be factored into intervention design and budgeting, as should the relative benefits of training local people or service providers to deliver interventions, which can be more acceptable to local populations. The studies in South Africa by Cooper et al. [59] and in Pakistan by Rahman et al. [61] are models for employing non-professionals to good effect.

There is evidence from HICs of reduced effectiveness when replacing professionals with paraprofessionals in parenting trials, specifically with regard to the Nurse-Family Partnership intervention, which has been implemented through large-scale trials in the United States [150]. It is unclear if the findings from the study of the Nurse-Family Partnership are directly relevant to LMIC settings or to other interventions, however they do suggest a need to carefully evaluate the implications of changes to staffing when an intervention is adapted to a different setting. It is equally important, however, to consider the resources available, particularly whether there are enough professionals available to deliver an intervention to large populations and whether there is sufficient funding to employ professional staff for the longer term, if the intervention is found to be efficacious and is rolled out to the larger population.

The educational level of lay workers is another factor for consideration. For example, training materials developed for home and community-based caregivers in South Africa were rendered useless as these lay workers were unable to read. Adapting an intervention from a high-resource setting may require not only translating training materials into the local language(s) or dialect(s), but also translation into pictorial formats or so that materials can be delivered orally.

Community buy-in

In most settings, particularly rural areas, interventions will not succeed without community buy-in, whether by local tribal authorities (e.g., in South Africa), local service providers, faith-based institutions or other entities. Representative community members and leaders can be recruited to inform adaptation and implementation of an intervention, a process which shares many aspects with community-based participatory research [151]. Getting buy-in from the community early on can help to ensure social validity of any intervention, whether related to parenting or other issues. The studies from Ethiopia which are included in this review [87-88,90,118] provide substantial information about the researchers' process for gaining community acceptance of a parenting intervention in a very low-resource setting.

Practical considerations in low-resource settings

Practical issues related to implementing interventions in low-resource settings include lack of water or electricity, lack of a formal meeting place or space (e.g., in some settings, meetings can be held outside, under a tree or in another informal setting). Modifications may be necessary to ensure accessibility, for example, to ensure that target groups have adequate transport links to get to the intervention site. Of particular importance is the need for safety measures in areas of high crime or violence. This was a major consideration in adaptation and pilot testing of the parenting intervention *The Incredible Years* from North America to Jamaica [152]. The prevalence of crime and violence in the research areas suggested that parent group meetings would be problematic or even harmful, as parents did not feel (or were not) safe travelling to and from meeting places. Thus the researchers adapted the school-based, teacher-training component of *The Incredible Years*, rather than the parenting component. The teacher component aimed to help teachers address child conduct problems in schools, rather than targeting parents, and therefore it differs from the interventions in this review. However, it provides important lessons for adapting interventions to an area where violence is a major factor in implementation and retention of subjects.

VI. Parenting interventions, gender and future violent behaviour among boys

More than ninety per cent of violent deaths in the world occur in LMICs, and the level of morbidity associated with violence is extremely high, although it is difficult to estimate prevalence due to underreporting [153]. In South Africa, the second leading cause of death and loss of disability-adjusted life years is injuries or violence, and the injury death rate is nearly twice the global average [4]. Seedat, Jewkes et al [4] also report that the injury death rate is partly associated with interpersonal and gender-based violence, and half of all women homicide victims are murdered by their intimate male partners. This and other forms of violence and abuse are often supported by embedded notions of gender hierarchy which privilege men and legitimise disciplinary actions against women [154]. This highlights the urgent need to address the causes of violence at the socio-cultural, political and structural levels (e.g., challenging gender norms, improving women's status, addressing sexual and reproductive rights, reducing political conflict etc.) (e.g., [155]). At the same time, individual and family levels are relevant entry points for intervention when it comes to preventing the early risk factors that can lead to violent behaviour among men [156].

Evidence on parenting, gender socialisation and violence

There is a large body of evidence associating child maltreatment and harsh parenting – even mild forms of abuse – with later violent behaviour and perpetration of violent crimes, including interpersonal and intimate partner violence [157-158]. Correlational studies have shown that males convicted of violence are more likely to have had parents with authoritarian attitudes about child-rearing and who used harsh discipline [158]. The prospective study of partner violence by Capaldi and Clark [47] shows that childhood conduct disorder and poor parenting were the strongest early predictors of boys' partner violence when they reached young adulthood. And there is strong, direct evidence of the general association between conduct disorder, such as aggression, and the risk of abusive, violent or criminal behaviour later in life [147,159-160]. However, most of this research has been done in the United States and other HICs, and much more is needed in LMICs.

In addition to the negative effects of poor parenting on children's later behaviour, there is also evidence that positive parenting can buffer the effects of community violence or other negative influences. For example, a study of the effects of community violence on children in South Africa suggests the important role parents could play in counteracting the effects of exposure to violence by introducing effective coping mechanisms before children experience violence [31].

While the developmental pathways linking parenting and future behaviour of children are clear, there is a paucity of data or evidence on the role of parental gender socialisation in this process. More specifically, the role of gender socialisation in parenting and child/adult aggression remains relatively unclear and studies are characterised by conflicting data (e.g., [161-162]). For example, there is limited and equivocal evidence on the differences in the ways boys and girls are disciplined,

and in the ways mothers and fathers parent differently according to a child's gender (Webster-Stratton 1996, Chaplin, Cole and Zahn-Waxler 2005, Trautmann-Villalba, Laucht and Schmidt 2006, Blatt-Eisengart et al. 2009)[163]. A 2008 review of the literature by Huynh-Nhu et al [164] found that, in research from HICs, mothers and fathers were likely to treat boys and girls more similarly than differently.

Some studies have begun to untangle the complex relationships between gender and antisocial behaviour or violence [162,165]. For example, one detailed study examining gender differences among children with conduct problems found that girls had similar levels of externalizing behaviours, verbal deviance (yelling, swearing, arguing, whining, crying) and noncompliance to parents as boys, and showed similar levels of affection; however, boys with conduct problems were more physically destructive than girls [162]. Notably, Webster-Stratton also found variations in mothers' and fathers' reports of child behaviour based on child gender. For example, fathers were more tolerant of boys' physical aggression, and fathers were less tolerant of girls' internalizing behaviours which mothers and teachers did not see as problematic. One of the strengths of this study was the use of home observation combined with corroboration or comparison with parent and teacher reports, as it helped to reveal gendered variations in parent-report as an instrument of research.

To date, the majority of research on child conduct problems and later behaviour has focused on boys, while research on parenting has focused primarily on mothers [162]. The findings highlighted here suggest the need for much more comprehensive research on these issues with a gender perspective.

Gender in parenting intervention research

There have been no rigorous parenting intervention studies identified in the literature which include gender socialization as a major component or theoretical construct, and which measure effects on child behaviour. There are, however, examples of interventions which include gender socialization, but which have not been rigorously evaluated. For example, UNICEF in Namibia has included gender socialization and conduct disorder components in its Total Child Programme, which involves parenting skills training. While this intervention has been evaluated using a design which includes control groups, the identified studies focus on assessing the training of family visitors to deliver the programme [166] rather than on the effects of the intervention on boys' behaviour.

In light of this evidence, and considering the linkages between negative or harsh parenting and conduct disorder, it is clear how parenting interventions may potentially make a substantial contribution to the evidence base on adult violence prevention. Moreover, many of the parenting interventions which aim to improve parent-child relationships and responsive parenting are also designed to address behaviour problems in children, making them an important strategy for addressing risk factors for future violent behaviour. Many interventions have been aimed mainly at boys, while others have been aimed at all children. While some trials have been found to be more effective for boys than for girls [143] the evidence overall is mixed [167-169]. Moreover, the implications of gender socialisation in such interventions are largely unexplored in the literature.

Cultural adaptation and gender components in parenting interventions

In terms of cultural adaptation of interventions, gendered components add an additional layer of complexity. For example, a publication by the Consultative Group on Early Childhood Care and Development identified a number of areas relevant to gender and parenting based on a study in six low-income countries. These include the implications of valuing the birth and worth of boys more than girls; the use of culture as a justification for differential or preferential treatment of children according to gender; and differences between urban and rural residence as a predictor of adherence to traditional gender socialisation practices [170].

These are only a few of the crucial areas for investigation when considering how to integrate gender components into parenting interventions in LMICs, and how (or if) to adapt existing interventions from one context to another in light of differing gender norms between and across cultures. Overall, there is a conspicuous lack of research on gender socialisation and parenting interventions in any setting (including HICs). More rigorous studies are needed, as are more systematic integration of gender socialisation components or outcome measures into existing parenting programmes.

VII. Conclusions

Implications for practice

The studies in this review, particularly those by Cooper, Tomlinson et al. [59] and Rahman, Iqbal et al. [61], suggest that parenting interventions in some LMICs can improve parent–child relationships and reduce negative parenting practices – both of which are protective factors for child maltreatment. The two highest quality studies suggest the feasibility of using non-professional local staff, service delivery through home visits and adding interventions to routine health services for pregnant women and new mothers. All of these factors are of particular relevance in low-resource settings, where professional staffing is unlikely to be feasible or affordable at scale; health facilities may be inaccessible for many people, particularly in rural areas or in countries with weak health systems; and use of existing service delivery mechanisms (e.g., home visits) is more cost-effective and may be more familiar or acceptable to local populations.

However, cost-effectiveness is also a key issue in terms of choosing which intervention to implement, and whether to adapt an existing intervention or create an original or indigenous programme. Some of the most rigorously tested, manualised parenting interventions (e.g., Triple P and the Incredible Years) are not freely available and require implementers to pay fees for training, materials and/or support. This could be a barrier to adoption of evidence-based parenting interventions by LMIC governments and non-governmental organisations. As such, developers of parenting interventions, international development donors and other stakeholders may wish to investigate whether waivers could be made available to promote the adoption and adaptation of evidence-based parenting interventions in low-resource settings. Alternatively, versions of evidence-based interventions which have been adapted for low-resource settings could be made available free or at reduced fees.

Cost is only one of the potential barriers to the adoption and adaptation of evidence-based interventions in low-resource settings. Interventions which rely on the use of video may be inappropriate for settings without electricity, or may need to incorporate other, lower-tech methods. For example, videotape modelling of parenting behaviours is a key component of The Incredible Years parenting programme [171], but when the teacher component of the programme was implemented in Jamaica, the use of puppets replaced video vignettes in some cases [172]. These and the other issues discussed in the Cultural Adaptation section must be taken into account if researchers and others wish to promote the use of evidence-based interventions in LMICs and to encourage rigorous testing for effectiveness. Even so, in many ways the evidence is quite promising for cross-cultural acceptability of well-established programmes developed in HICs. For example, the effectiveness of the Incredible Years Program with low-income parents was found to be equally strong among different ethnic groups within the United States based on multiple measures of child and parent outcome, engagement and acceptability [111].

Implications for research

The results of this review suggest a need for more and more rigorously evaluated interventions in LMICs, but especially in low-income countries. In particular, there is a need for better and more complete reporting of baseline and outcome data, as well as study design and implementation factors which may help to prevent bias. In particular, studies should report: method of randomisation, allocation concealment, blinding and treatment of missing outcome data. The results suggest the need for trials which utilise simple, but valid and reliable, direct observational measures of parenting behaviour and parent–child interactions; and standardised outcome measures – which can be better compared across trials and settings. Moreover, they highlight the need for more studies of parents with children older than six years, and studies which employ lay persons to deliver interventions.

While limited conclusions can be drawn from this review as a whole, the studies by Cooper, Tomlinson et al. [59] and Rahman, Iqbal et al. [61] are models for intervention research design and evaluation in low-resource settings. Particularly notable is their reporting of substantial pilot testing of intervention components and measurement instruments.

VIII. Recommendations

- Policymakers and international development donors should encourage and fund more rigorously evaluated parenting interventions in LMICs, especially in low-income countries.
- Policymakers, donors and researchers should take into account the promising and growing body of work on adaptability and effectiveness of parenting interventions across cultures and countries in high-income settings. They should also support further research into how to effectively adapt interventions between settings, including between developed and developing countries and among developing countries, where relevant.
- Researchers should ensure that trials of adapted parenting interventions include qualitative research and/or pilot testing focused on the following:
 - language translation of written materials and visual elements, and use of low-literacy intervention components;
 - testing with single-parent families, non-nuclear/extended families, grandparents or foster parents;
 - safety measures in areas of high crime or violence;
 - effectiveness of intervention components among HIV/AIDS-affected populations (this may also be assessed through moderator analyses within randomised trials).
- Developers of parenting interventions, donors and other stakeholders should consider making fee waivers or reduced fees available to governmental and non-governmental organisations in LMICs.
- Parenting intervention research should emphasise: good evaluation design and thorough reporting of randomisation, allocation concealment, blinding and treatment of missing outcome data; use of standardised, comparable outcome measures, where possible using direct observational assessment of parenting; instruments validated for use with the study population. (These should be prioritised by researchers or implementers, and encouraged by funding organisations or donors.)
- Researchers should consider integrating gender socialisation components or outcome measures into parenting interventions and trials, with particular focus on boys' socialisation and behaviour over time.

Appendices

Appendix 1. Electronic database search strategy

EMBASE (13 May 2010) ⁴⁶	
Search term	Hits
1. exp random sample/ or random\$.mp.	482884
2. controlled study/	3158419
3. intervention.mp. or exp intervention study/	203984
4. allocat\$.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]	44177
5. clinical trial.mp.	618660
6. 1 or 2 or 3 or 4 or 5	3741475
7. exp parent/ or parent.mp. or exp child parent relation/ or exp parent counseling/	105437
8. exp mother child relation/ or mother.mp. or exp mother/	63898
9. father.mp. or exp father child relation/ or exp father/	13257
10. exp family centered care/ or family.mp. or exp family/ or exp family conflict/ or exp family counseling/ or exp extended family/ or exp nuclear family/ or exp family violence/	444581
11. exp foster care/	1151
12. 7 or 8 or 9 or 10 or 11	519550
13. developing countries.mp. or exp developing country/	33416
14. exp South America/ or exp Central America/	40775
15. exp "Africa south of the Sahara"/ or exp South Africa/ or exp Africa/ or exp North Africa/ or exp Central Africa/	76998
16. exp South Asia/ or exp Asia/ or exp Southeast Asia/	215189
17. Pacific islands/	974
18. exp lowest income group/ or (middle\$ adj income).mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]	8830
19. (countr\$ or nation\$).mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]	336238
20. 18 and 19	3048
21. third world.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]	1615
22. 13 or 14 or 15 or 16 or 17 or 20 or 21	348289
23. 6 and 12 and 22	12720
Duplicates	1343

⁴⁶Randomised controlled trial (RCT) filter based on recommendations from Wong, Wilczynski et al. [113]

CINAHL (14 May 2010)	
	countries") OR ("middle-income countries") OR ("middle income countries") OR (<i>Africa* NOT America*</i>) OR (<i>Asia* NOT America*</i>) OR ("Latin America") OR ("Latin American") OR (pacific*)) and (("parent") OR (MH "Foster Parents") OR (MH "Parents ") OR (MH "Parental Behavior") OR (MH "Caretaking-Parenting (Omaha)") OR (MH "Parent-child Relations ") OR (MH "Parent-Infant Bonding") OR (MH "Parent-Infant Relations ") OR (MH "Parenting") OR (MH "Parenting Education") OR parent* OR mother* OR father* OR foster* OR famil*)
	NOT (MW United States)
Hits	2999
Duplicates	435

ERIC via CSA Illumina (14 May 2010)	
Search terms	KW=("developing nations") and ("family problems" or "family programs" or "family violence" or "foster care" or "grandparents" or "parent attitudes" or "parent caregiver relationship" or "parent child relationship" or "parent counseling" or "parent education" or "parent influence" or "parent role" or "parent student relationship" or "parenthood education" or "parenting skills" or "parents")
Hits	410
Duplicates	5

Cochrane Central Register of Controlled Trials (28 Apr 2010)	
Search term	Hits
(parent* or mother* or father* or foster care* or family*) and (developing countr* or low-income countr* or middle-income countr*) in	251

Global Health via OVID (14 May 2010)	
Search term	Hits
1. exp parents/ or exp mothers/ or exp fathers/ or exp families/ or exp extended families/ or exp nuclear families/ or exp foster family/	14196
2. (father\$ or mother\$ or family\$ or parent\$).mp. [mp=abstract, title, original title, broad terms, heading words]	99783
3. parents/ or exp parent child relationships/ or exp parent participation/ or exp parenthood education/	2809
4. 1 and 2 and 3	2635
5. exp developing countries/ or exp africa/ or exp asia/ or exp caribbean/ or exp central america/ or exp latin america/ or exp oceania/ or exp south america/	397309
6. 4 and 5	756
Duplicates	38

Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations (14 May 2010)	
Search term	Hits
1. exp Parents/	0
2. exp Mothers/	0
3. exp Fathers/	0
4. exp Nuclear Family/	0
5. exp Foster Home Care/	0
6. family relations/ or exp family conflict/ or exp intergenerational relations/ or exp maternal behavior/ or exp maternal deprivation/ or exp parent-child relations/ or exp parenting/ or paternal behavior/ or paternal deprivation/	1
7. (parent\$ or mother\$ or father\$ or family\$).mp. [mp=title, original title, abstract, name of substance word, subject heading word, unique identifier]	21076
8. 1 or 2 or 3 or 4 or 5 or 6 or 7	21076

9. exp africa/ or exp africa, northern/ or exp "africa south of the sahara"/ or exp africa, central/ or exp africa, eastern/ or exp africa, southern/ or exp africa, western/ or exp caribbean region/ or exp central america/ or exp latin america/ or exp south america/ or exp asia, central/ or exp asia, southeastern/ or exp asia, western/ or exp far east/ or exp mongolia/ or exp oceania/ or exp melanesia/ or exp micronesia/ or exp polynesia/	8
10. exp Developing Countries/	4
11. Third World.mp.	37
12. ((Low\$ or Middle\$) and income).mp. [mp=title, original title, abstract, name of substance word, subject heading word, unique identifier]	1011
13. (countr\$ or nation\$).mp. [mp=title, original title, abstract, name of substance word, subject heading word, unique identifier]	15345
14. 12 and 13	160
15. 9 or 10 or 11 or 14	508
16. 8 and 15	77
Duplicates	8

MEDLINE via OVID (12 May 2010)⁴⁷	
Search term	Hits
1. exp Parents/	55056
2. exp Mothers/	19307
3. exp Fathers/	4875
4. exp Nuclear Family/	66731
5. exp Foster Home Care/	2575
6. family relations/ or exp family conflict/ or exp intergenerational relations/ or exp maternal behavior/ or exp maternal deprivation/ or exp parent-child relations/ or exp parenting/ or paternal behavior/ or paternal deprivation/	56691
7. (parent\$ or mother\$ or father\$ or family\$).mp. [mp=title, original title, abstract, name of substance word, subject heading word, unique identifier]	872877
8. 1 or 2 or 3 or 4 or 5 or 6 or 7	883563
9. randomized controlled trial.pt.	290189
10. controlled clinical trial.pt.	81509
11. randomized.ab.	197790
12. placebo.ab.	118731
13. randomly.ab.	143672
14. trial.ab.	204591
15. groups.ab.	965803
16. 9 or 10 or 11 or 12 or 13 or 14 or 15	1417236
17. exp humans/ not animals.sh.	10026172
18. 16 and 17	1018195
19. exp africa/ or exp africa, northern/ or exp "africa south of the sahara"/ or exp africa, central/ or exp africa, eastern/ or exp africa, southern/ or exp africa, western/ or exp caribbean region/ or exp central america/ or exp latin america/ or exp south america/ or exp asia, central/ or exp asia, southeastern/ or exp asia, western/ or exp far east/ or exp mongolia/ or exp oceania/ or exp melanesia/ or exp micronesia/ or exp polynesia/	672673
20. exp Developing Countries/	53569
21. Third World.mp.	2465
22. ((Low\$ or Middle\$) and income).mp. [mp=title, original title, abstract, name of substance word, subject heading word, unique identifier]	28696
23. (countr\$ or nation\$).mp. [mp=title, original title, abstract, name of substance word, subject heading word, unique identifier]	433515
24. 22 and 23	9582
25. 19 or 20 or 21 or 24	699430
26. 8 and 18 and 25	10480
Duplicates	208

⁴⁷RCT filter based on the 'Cochrane Highly Sensitive Search Strategy for identifying randomized trials in MEDLINE: sensitivity-maximizing version (2008 version); Ovid format' [76].

PsycINFO 1806 to May Week 2 2010 via OVID (14 May 2010)	
Search term	Hits
1. clinical trials/ or exp experimental design/	41011
2. random\$.mp. [mp=title, abstract, heading word, table of contents, key concepts]	89401
3. (control adj group\$).mp. [mp=title, abstract, heading word, table of contents, key concepts]	42186
4. exp Intervention/	32479
5. 1 or 2 or 3 or 4	186514
6. exp Parents/ or exp Adoptive Parents/ or exp Foster Parents/	56129
7. exp Mothers/	25961
8. exp Fathers/	6767
9. (mother\$ or father\$ or family\$).mp. [mp=title, abstract, heading word, table of contents, key concepts]	264109
10. exp Family Members/ or exp Nuclear Family/ or exp Family/ or exp Extended Family/ or exp Family Relations/ or exp Family Intervention/ or exp Biological Family/ or exp Family Therapy/ or exp Family Conflict/	183274
11. 7 or 8 or 9 or 10	313323
12. exp Developing Countries/	2427
13. exp Lower Income Level/ or exp Middle Income Level/	4417
14. exp Countries/	7665
15. 13 and 14	90
16. (Asia not America).mp. [mp=title, abstract, heading word, table of contents, key concepts]	2330
17. (Africa not America).mp. [mp=title, abstract, heading word, table of contents, key concepts]	8832
18. ((South or Central or Latin) adj America\$).mp. [mp=title, abstract, heading word, table of contents, key concepts]	3748
19. (Caribbean or (Pacific adj Island\$)).mp. [mp=title, abstract, heading word, table of contents, key concepts]	2585
20. 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19	28126
21. 5 and 11 and 20	507
Duplicates	131

Appendix 2. Grey literature searching

Personal contacts

Contact	Affiliation
Christine Powell	Senior Lecturer, Epidemiology Research Unit, University of the West Indies, Jamaica
Prof Peter Cooper	Co-Director, Winnicott Research Centre; Research Director, Berkshire Child Anxiety Clinic, University of Reading, UK
Prof Jane Barlow	Professor of Public Health in the Early Years, Health Sciences Research Institute, Warwick Medical School, UK
Prof Sally Grantham-MacGregor	University College London Centre for International Health and Development, Institute of Child Health, UK
Prof Carolyn Webster-Stratton	Professor and Director, Parenting Clinic, University of Washington, US
Helen Baker-Henningham	Lecturer, University of the West Indies, Jamaica
Prof Patrice Engle	Department of Psychology and Child Development, Cal Poly State University, USA; UNICEF
Prof Neil Eshel	Department of Molecular Biology, Princeton University, US
Nancy Cardia	Director, Núcleo de Estudos da Violência (NEV), University of São Paulo in Brazil (USP); Pan American Health Organization (PAHO)
Marcos Nascimento	PROMUNDO (Brazil) (promoting gender equality and prevention of violence against women and children)
Christine Ricardo	PROMUNDO (Brazil)(promoting gender equality and prevention of violence against women and children)
Alex Butchart	Coordinator, Violence Prevention, WHO
Chris Mikton	Technical Officer, WHO
Dr David Olds	Professor of Pediatrics and Director of the Prevention Research Center for Family and Child Health, University of Colorado Department of Pediatrics
William Christeson	Research Director, 'Fight Crime: Invest in Kids', US
Carol Ann Brown	Caribbean Child Support initiative, Barbados
Daniel Wight	Programme Leader, Sexual Health and Families Programme, Medical Research Council (MRC) and Public Health Sciences Unit, Glasgow, UK
Pieter Remes	Investigator Scientist, Sexual Health and Families Programme, MRC Social and Public Health Sciences Unit Glasgow, UK
Catherine Remmelzwaal	UNICEF
ACORD	Agency for Cooperation and Research in Development , Kenya
Prof Pnina S. Klein	Director, The Baker Center for the Study of Development Disorders in Infants and Young Children, Israel
Renee Bruck	Administrative Director, The Baker Center for the Study of Development Disorders in Infants and Young Children, Israel
Prof Cigdem Kagitcibasi	Koc University, Turkey
Marcela Aracena	School of Psychology, Pontificia Universidad Catolica de Chile
Prof Hassan Eftekhare Ardabili	Tehran University of Medical Science, School of Public Health, Iran
Prof Jaqueline Wendland-Carro	Director of Studies, Clinic of Psychology and Psychopathology, University of Paris Descartes; Institute of Psychology Laboratory of Psychopathologie and Health Processes

Clinical trials registries

WHO registry of clinical trials (20 May 2010)	
Search term	Hits
(parent OR parents OR parenting OR mothers OR fathers OR foster OR family OR postnatal) AND "developing countries" Interventional Studies	49
developing countries: developing nation emerging nation less developed countries less developed nations third world countries third world nations under developed countries under developed nations	180
Parenting	145
Postnatal	116
Mothers: Maternal Mother Woman with children	1185
Parents: parent parental	1304
fathers: father fr.	48
family: familial families	3604
foster	150

Website searches (26 May 2010)
International Society for Prevention of Child Abuse and Neglect (ISPCAN)
Bernard van Leer Foundation
UNICEF and the UNICEF Innocenti Research Centre
United Nations Development Programme (UNDP)
Save the Children
Strengthening Families Program
Consultative Group on Early Childhood Care and Development (ECCD)
World Health Organization
African Network for the Prevention and Protection against Child Abuse and Neglect (ANPPCAN)
March of Dimes

Dissertations and theses

Dissertations and Theses database via ProQuest (26 May 2010)	
Search terms	(parent* OR mother* OR father*) AND ("developing countries" OR "low income countries" OR "middle income countries" OR "low-income countries" OR "middle-income countries") AND (trial or experimental or control* or random* or evaluation or intervention)
Hits	140
Duplicates	0

Index to Theses via OVID (26 May 2010)	
Search terms	parent* and ("developing countries" OR "low income countries" OR "middle income countries" OR "low-income countries" OR "middle-income countries")
Hits	63
Duplicates	0

Hand searches of reference lists

The reference lists of all included studies were searched, along with reference lists, and in some cases contents, for the following publications.

Baker-Henningham, H., et al., The effect of early stimulation on maternal depression: a cluster randomised controlled trial. *Archives of Disease in Childhood*, 2005. 90(12): p. 1230–1234. [174]

Barlow, J., et al., Systematic review of the effectiveness of parenting programmes in treating abusive parenting. *Cochrane Database of Systematic Reviews*, 2006. 3: p. 1–20. [175]

Chandan, U. and L. Richter, Strengthening families through early intervention in high HIV prevalence countries. *AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV*, 2009. 21(SUPPL. 1): p. 76–82. [176]

Engle, P., et al., Strategies to avoid the loss of developmental potential in more than 200 million children in the developing world. *Lancet*, 2007. 369(9557): p. 229–42. [74]

Eshel, N., et al., Responsive parenting: interventions and outcomes. *Bulletin of the World Health Organization*, 2006. 84(12): p. 991–998 [177]

Evans, J., Strong foundations: early childhood care and education, *Education for All Global Monitoring Report 2007 2006*, UNESCO: Paris. [178]

Health and Learning. Coordinators' Notebook: An International Resource for Early Childhood Development. *Coordinators' Notebook*, 1993(13). [179]

ISPCAN, *World Perspectives on Child Abuse*. 2008, International Society for Prevention of Child Abuse and Neglect: Aurora, Colorado. p. 250. [180]

Kendrick, D.e.a., Parenting Interventions and the Prevention of Unintentional Injuries in Childhood: Systematic Review and Meta-Analysis. *Child Care Health and Development*, 2008. 34(5): p. 682–695. [53]

Kumpfer, K.L., et al., Cultural adaptation process for international dissemination of the Strengthening Families Program. *Evaluation & the Health Professions*, 2008. 31(2): p. 226–239. [127]

MacMillan, H., et al., Primary prevention of child physical abuse and neglect: a critical review. Part I. *J Child Psychol Psychiatry*, 1994. 35(5): p. 835–56. [181]

Maulik, P.K. and G.L. Darmstadt, Community-based interventions to optimize early childhood development in low resource settings. *Journal of Perinatology*, 2009. 29(8): p. 531–42. [182]

Mercy, J.A., et al., Preventing violence in developing countries: a framework for action. *International Journal of Injury Control and Safety Promotion*, 2008. 15(4): p. 197–208. [34]

Mikton, C. and A. Butchart, Child maltreatment prevention: a systematic review of reviews. [Review] [50 refs]. *Bulletin of the World Health Organization*, 2009. 87(5): p. 353–61. [51]

Oates, J., Supporting Parenting, in *Early Childhood in Focus*, M. Woodhead and J. Oates, Editors. 2010, Open University: The Hague. [183]

Pinheiro, S., Report of the independent expert for the United Nations study on violence against children. 2006, United Nations: New York. [184]

Reynolds, A., L. Mathieson, and J. Topitzes, Do Early Childhood Interventions Prevent Child Maltreatment?: A Review of Research. *Child Maltreatment*, 2009. 14: p. 182–206. [185]

Scott, K., Violence prevention in low- and middle-income countries: Finding a place on the global agenda, workshop summary. 2008, Institute of Medicine of the National Academies: Washington, D.C. [186]

Walker, S.P., et al., Child development: Risk factors for adverse outcomes in developing countries. *The Lancet Vol*, 2007. 369(9556): p. 145–157. [73]

WHO, Preventing violence by developing life skills in children and adolescents, in *Series of briefings on violence prevention: the evidence*. 2009, WHO: Geneva. [187]

Appendix 3. Data extraction sheet

Article:

Is there more than one publication for this study?

Country:

- Low income
- Lower middle income
- Upper middle income
- High income (exclude)

Are the participants parents or primary carers (e.g., foster parents, grandparents or relatives) of children aged from birth to 18 years old?

Yes:

Mothers Fathers Both/either Mother-child Father-Child

No (describe)

Can't tell

Does the intervention include general parenting components?

Yes No (exclude) Can't tell

Brief description:

Is it randomized?

Yes No (exclude) Can't tell

Randomization:

- Simple/Systematic (individuals/families)
- Stratified/blocked
- Yoked pairs
- Matched pairs
- Cluster
- Other
- Can't tell

Notes on randomization: No information

Who performed group assignment?

Research staff Program staff Can't tell Other

How was random assignment performed?

- Computer generated
- Random numbers table
- Coins or dice
- Other
- Can't tell

How many separate sites were included in the study?

One Two Three Four Five or more Unclear

Was random assignment performed in the same way in all sites?

Yes No Can't tell

How many different control/comparison groups were there?

One Two or more

How many control/comparison groups are relevant for this review?

One More than one

Sample size

Number of cases	Intervention	Control	Total	Notes
Referred to study				
Consented				
Randomly assigned				
Started treatment				
Completed treatment				
Completed post-intervention data				
Completed follow-up				

Notes:

Sample characteristics (N (%))**Gender**

	Total		Notes
	Male	Female	
Parent			
Child			

Age

	Total		Range
	Mean	SD	
Mother			
Father			
Child			

More than one child in the family/household?

Primiparous Multiparous Both Can't tell

Socioeconomic status (Describe)**Parent level of education** N(%)

Mother Father

Illiterate

Primary / <12 years

≥ 12 years

Other sample characteristics**Were there any differences between program and control groups at baseline?**

Yes (describe)

No (how do we know?):

Can't tell

Was there an analysis of differences between completers and dropouts *in the total sample?*

Yes (describe differences between completers and dropouts)

No

Was there an analysis of completers and dropouts *in the intervention group*?

Yes (describe differences between completers and dropouts)

No

Was there an analysis of differences between completers and dropouts *in the control group*?

Yes (describe differences between completers and dropouts)

No

Intervention characteristics:**Is the intervention:**

- targeted (e.g., at high-risk families or children)
- non-targeted/population-based
- unclear
- other

Delivery site (e.g., school, home, health centre)

- Home
- School
- Clinic (health setting)
- Other (describe)
- Unclear/don't know: Group-based

Duration of treatment (e.g., number/length of sessions)**Staffing (trained/paraprofessional/etc)****Curriculum/components/characteristics of intervention**

- **What is the evidence base for the intervention? (describe)**
- **Has it been transported from another culture/context?**
- **Is there information about how the programme was adapted? (if yes, describe)**

Describe methods used to insure quality of services (supervision, training, consultation)**Is there any information on program adherence?**

Yes No Can't tell

Is there any information on implementation?

Yes No Can't tell

Services provided to control cases**Describe services to control group****Characteristics of staff that provided services to control cases**

Outcome measures (entered in the order described in the report)

Outcome	Scale	Reliability/ validity of scale w/study population	Format	Direction	Source	Mode of administration	Blind?
		Info from: • Other samples • This sample • Unclear Info provided:	• Dichotomous • Continuous	High score or event is: • Positive • Negative • Can't tell			
		Info from: • Other samples • This sample • Unclear Info provided:	• Dichotomous • Continuous	High score or event is: • Positive • Negative • Can't tell			
		Info from: • Other samples • This sample • Unclear Info provided:	• Dichotomous • Continuous	High score or event is: • Positive • Negative • Can't tell			

Outcome data (relevant to this review)

Outcome	Timing	Source	Valid Ns		No. (%)		Statistics (F, P etc)	Other data
			Int	Control	Int	Control		

Summary:

When were the data collected?

- Baseline
- Post-intervention (6 months)
- 1st follow-up
- 2nd follow-up
- Other

Who conducted the screening?

Were data collected in the same manner for treatment and control groups?

Yes No Can't tell

Study Quality Standards

Domain	Description	Review authors' judgement
Sequence generation.		
Allocation concealment.		
Blinding of participants, personnel and outcome assessors	Assessments should be made for each main outcome (or class of outcomes).	
Incomplete outcome data	Assessments should be made for each main outcome (or class of outcomes).	
Selective outcome reporting.		
Other sources of bias.		

Notes:

Appendix 4. Excluded studies

These are studies that are randomised and involve parenting components, but were excluded for the reasons stated below.

Study	Reasons for exclusion
Bashour, H. N., M. H. Kharouf, et al. 2008 [188]	Parenting/parent–child interaction components/outcomes could not be isolated from other components
Engle 2009 [189]	Focused on specific health issue (nutrition) Full report unavailable within timeframe of review
Farahat, T. M., F. M. Farahat, et al. 2009 [202]	No general parenting or parent–child interaction components Focused on specific health issue (pesticide exposure)
Jha, Kumar et al. 2006 [190]	No general parenting or parent–child interaction components
Kidane, G. and R. H. Morrow 2000 [191]	Focused on specific health issue (malaria)
Mujibur Rahman, M., M. Aminul Islam, et al. 1994 [192]	Focused on specific health issue (nutrition and feeding) No general parenting or parent–child interaction components
Sun, Chen et al. 2009 [193]	Not available in English
Swart, L., A. v. Niekerk, et al. 2008 [194]	No general parenting or parent–child interaction components Focused on specific forms of unintentional injury (burns, falls and poisoning)
Taneja, V., S. Sriram, et al. 2002 [195]	Setting is institution (orphanage) rather than home
Villarruel, A. M., C. L. Cherry, et al. 2008 [209]	Focused on specific health issue (sexual behaviour/sexually transmitted infection)
Watanabe, K., R. Flores, et al. 2005 [196]	Focused on specific health issue (nutrition and child physical growth) Parenting/parent–child interaction components/outcomes could not be isolated other components

The following studies could not be accessed for inclusion in this review.

Study	Reasons for exclusion
Sun, J., Chen, H., Li, Y. and Tan, C. 2009, The evaluation of the effectiveness of comprehensive intervention for pre-school children's accidents [193]	Not available through accessible English-language libraries; also, not available in English.
Dos Santos, I., et al., 1999. Pilot test of the child development of the IMCI "counsel of the mother" module: Study results and recommendations [56]	Unable to access through libraries or contacts with named authors.
Powell, C., 2004. An evaluation of the roving caregivers programme of the rural family support organization [57]	Unable to access through libraries or contacts with authors and colleagues.

Appendix 5. Characteristics of included studies

Aracena et al. 2009

Methods	Randomised controlled trial (RCT)
Participants	Adolescent mothers (young women who conceived their first child between the ages of 14 and 19 years)
Interventions	Pre- and post-natal home-visiting intervention to improve physical and mental health of mothers and family functioning (n=45); control group received antenatal and postpartum services as usual from local health clinics (n=45)
Outcomes	Mother's physical and mental health; child's physical health and psychomotor skills; family functioning; indicators for child abuse.
Notes	Duration: 12 one-hour home visits over a period of about 15 months. Staffing: paraprofessional.

Risk of bias table

Item	Judgement	Description
Adequate sequence generation?	Unclear	Not enough information to determine if assessors (both health educators and medical staff conducting physical check-ups) were blinded. Blinding not possible for participants or those delivering intervention. Incomplete outcome data was not addressed (analysis by TOT).
Allocation concealment?	Unclear	
Blinding?	Unclear	
Free of other bias?	No	

Cooper, Thomlinson 2009

Methods	Controlled trial using minimisation [95], balancing for factors known to be associated with adverse outcomes (e.g., antenatal depression, planned pregnancy) and residence (i.e. SST or Town II, the two locations of the study)
Participants	Women in late pregnancy, living in one of two adjoining areas of Khayelitsha, a peri-urban settlement on the outskirts of Cape Town, South Africa
Interventions	Home-visiting intervention promoting sensitive parenting and secure infant attachment (n=220); control group (n=229) received services 'as usual', which were also provided to intervention group, including home visits and encouragement to take their infants to local health clinics
Outcomes	Maternal sensitivity and intrusiveness; infant attachment; maternal depression
Notes	Duration: 16, 60-minute sessions over 5 months. Staffing: lay persons.

Risk of bias table

Item	Judgement	Description
Adequate sequence generation?	Yes	RCT using minimisation
Allocation concealment?	Yes	Relevant information from initial assessments was communicated by telephone to the trial manager, who ran the minimisation programme and communicated group assignment.
Blinding?	Yes	Blinding of participants and those delivering the intervention was not possible. For all mother-infant and infant attachment measures, interactions were videotaped and assessed by a trained rater or member of the research team who were blind to group status, suggesting adequate blinding of assessors.
Free of other bias?	Yes	Incomplete outcome data were not addressed in analyses; however, attrition was comprehensively reported and analysed. Also, report of the study is free of suggestions of selective outcome reporting based on cross-referencing with original trial protocol.

Jin et al. 2007

Methods	RCT
Participants	Mothers of children aged less than two years, residing in one of seven villages of An Hui province, China
Interventions	Intervention group received counselling, role play and practice using materials depicting age-specific messages for caregivers related to play and communication with children (n=50); control group (n=50) received services as usual
Outcomes	Changes in family knowledge, attitudes or practice regarding child development, and if these changes correlate with high child developmental score; mothers' understanding and attitudes to development promotion messages and opinions about ease of implementing them
Notes	Duration: Two 30–60 minute counselling sessions within six months. Staffing: professional.

Risk of bias table

Item	Judgement	Description
Adequate sequence generation?	Unclear	Assessors were not blinded to group allocation. Selective outcome reporting; incomplete outcome data not addressed (analysis by TOT).
Allocation concealment?	Unclear	
Blinding?	No	
Free of other bias?	No	

Oveisi et al. 2010

Methods	RCT (blocked) with pre and post measures
Participants	Mothers of children aged 2–6 years old attending primary care health centres in Qazvin, Iran
Interventions	Group parent training on the role of parenting skills and common parenting mistakes (n=110); control group (n=136) received services as usual/no service.
Outcomes	Dysfunctional parenting practices (Parenting Scales (PS) adapted for Iran); level of abusive child training (Parent–child Conflict Tactics scale (CTSPCm) adapted for Iran)
Notes	Duration: 2-hour weekly session for 2 weeks. Staffing: highly trained (physicians)

Risk of bias table

Item	Judgement	Description
Adequate sequence generation?	Unclear	Not enough information to determine if knowledge of the allocated intervention was adequately prevented. Parent self-report has potential for acceptability or other bias.
Allocation concealment?	Unclear	
Blinding?	Unclear	
Free of other bias?	No	

Powell et al. 1989

Methods	RCT
Participants	Mothers and primary carers of children aged 6–30 months
Interventions	Psychosocial stimulation and play during home visits, involving coaching of mothers to practice positive parenting (praise, play, communication) (n=29); control group received no services (n=29)
Outcomes	Child development (hearing and speech, hand and eye coordination and performance)
Notes	Staffing: paraprofessional. Duration: weekly 1-hour home visits for 1 year

Risk of bias table

Item	Judgement	Description
Adequate sequence generation?	Unclear	Participants and personnel could not be blinded, but adequate steps were taken to blind assessors.
Allocation concealment?	Unclear	
Blinding?	Yes	
Free of other bias?	Yes	

Rahman, Iqbal et al. 2009

Methods	Cluster-randomized controlled trial (village as unit of randomization)
Participants	Pregnant women in third trimester (n=334) from 24 villages in a rural sub-district of Rawalpindi, Pakistan
Interventions	Parent-based intervention ('Learning Through Play' Programme) using a pictorial calendar depicting stages of child development from birth to 3 years, with illustrations of parent–child play and other activities (n=177); control group received routine post-natal follow-up visits (n=157)
Outcomes	Mothers' knowledge and attitudes about the second birth month stage of development; maternal mental distress
Notes	Duration: half-day group workshop, fortnightly 15–20 minute discussions. Staffing: paraprofessionals

Risk of bias table

Item	Judgement	Description
Adequate sequence generation?	Yes	Using random numbers table
Allocation concealment?	Yes	Performed by researcher not involved in the trial, at independent trial centre
Blinding?	Yes	Of assessors: post-intervention questionnaires administered by workers blind to control-intervention status
Free of other bias?	Yes	Outcome analyses based on treatment of treated, but attrition fully addressed and analysed

Kagiticbasi et al. 2001

Methods	3x2x2 factorial design RCT
Participants	Mothers of children aged 3–5 years old attending either an educational day care centre, custodial day care centre or in home care, in a low-income area of Istanbul, Turkey
Interventions	Guided group discussions on nutrition, child health, children's developmental needs, play activities for preschool children, discipline and parent–child communication (n=90). Control group (n=165) received services as usual/no service.
Outcomes	Child cognitive and academic performance; parent–child relationships/behaviours and child conduct
Notes	Duration: 60 biweekly, 1-hour guided group discussions, for two years (excluding summers). Staffing: paraprofessionals.

Risk of bias table

Item	Judgement	Description
Adequate sequence generation?	Yes	Incomplete outcome data were reported and analysed, but not included in final outcome data analyses. Potential risk of bias related to differences in size of intervention and control groups and attrition.
Allocation concealment?	Unclear	
Blinding?	Yes	
Free of other bias?	No	

Klein and Rye 2004

Methods	RCT
Participants	Impoverished families with children aged 1–3 years and mothers with limited education, living in one of two urban slums of Addis Ababa, Ethiopia
Interventions	Combined group meeting and home visiting to improve parent–child interaction, involving videotape modelling, role playing and discussion (n=49). Control group received home visits focused on basic health and nutrition and child development (n=47).
Outcomes	Observed frequency of mediational mother–child interaction, parental perceptions of their children
Notes	Staffing: professional. Duration: 5 group meetings lasting 2–3 hours each, and 5 home visits lasting 1.5 hours each, over a period of 3 months.

Risk of bias table

Item	Judgement	Description
Adequate sequence generation?	Unclear	Lack of baseline data and analysis of baseline differences between groups, and limited reporting of outcome data, make it impossible to assess potential confounders or sources of bias.
Allocation concealment?	Unclear	
Blinding?	Yes	
Free of other bias?	No	

Magwaza 1991

Methods	RCT by mother–child dyad: one intervention group (A1 - home visits and training), two control groups (A2 - home visits only; A3 - neither home visits or training)
Participants	Mothers (n=90) and their pre-school children (<i>mean age=4.5 years</i>) from semi-urban disadvantaged community in Zululand, South Africa
Interventions	10 weekly two-hour home visits using verbal interaction stimulus material through modelling, role-play and discussion (n=30); two control groups: one (n=30) received weekly two-hour home visits (without training); the second (n=30) received neither training nor home visits
Outcomes	Child socio-emotional adjustment, child mental <i>abilities (i.e. intelligence) and mother–child interaction</i>
Notes	Duration: 10 weeks of weekly two-hour trainings. Staffing: trained (research assistants with a background in psychology).

Risk of bias table

Item	Judgement	Description
Adequate sequence generation?	Unclear	Some steps were taken to prevent knowledge of the allocated intervention among assessors; however, blinding of participants and personnel was not possible. Outcome data were not clearly reported. Attrition was not reported, thus it was unclear if analysis was of intention to treat or treatment of treated. There was a risk of contamination between groups; of non-specific therapist effects; and of one of the control groups receiving some aspects of the intervention (i.e. lack of differentiation among groups).
Allocation concealment?	Unclear	
Blinding?	Yes	
Free of other bias?	No	

Teferra et al. 1996

Methods	RCT
Participants	Impoverished families with children aged 6 months to 3 years and mothers with limited education, living in one of two urban slums of Addis Ababa, Ethiopia
Interventions	Combined group meeting and home visiting to improve parent–child interaction, involving videotape modelling, role playing and discussion (n=15). No information provided about services to control group, but assume no services (n=15).
Outcomes	Observed frequency of mediational mother–child interaction
Notes	Staffing: professional. Duration: 3 group meetings lasting 2–3 hours each, and 3 home visits lasting 1.5 hours each, which took place alternately every two weeks for a period of three months.

Risk of bias table

Item	Judgement	Description
Adequate sequence generation?	Unclear	Lack of baseline data and analysis of baseline differences between groups, and limited reporting of outcome data, make it impossible to assess potential confounders or sources of bias.
Allocation concealment?	Unclear	
Blinding?	Unclear	
Free of other bias?	No	

Van Wyck 1983

Methods	RCT
Participants	Socioeconomically above average, white, Afrikaans-speaking mothers who were members of a parent-training group of a women's organisation, with children aged 8–12 years
Interventions	Group-based parent-training intervention to increase parent sensitivity and self-actualisation, involving discussion, written exercises and role playing (n=16); control group received no services (n=10)
Outcomes	Parent interpersonal sensitivity, child sense of interpersonal sensitivity in parents, parent self-actualisation and child's level of psychological needs
Notes	Duration: Weekly two-hour group sessions for six weeks. Staffing: Professional.

Risk of bias table

Item	Judgement	Description
Adequate sequence generation?	Unclear	No information provided about blinding. No specific demographic or other data was provided about the groups, thus impossible to determine how well-matched they were at baseline. This could bias results. Post-intervention assessments took place at different intervals for intervention and control groups, which could have biased results. Attrition was not discussed.
Allocation concealment?	Unclear	
Blinding?	Unclear	
Free of other bias?	No	

Wendland-Carro 1999

Methods	RCT
Participants	New mothers (2–3 days after giving birth) in hospital maternity ward, in Porto Alegre, Brazil
Interventions	Brief video presentation and discussion about sensitive mother–infant interaction, (n=17); compared to control group, which received brief video presentation of basic infant health care (n=19)
Outcomes	Mother–infant synchronous and asynchronous co-occurrences (e.g., infant vocalises and mother responds; infant looks at mother and mother responds; infant cries and mother responds)
Notes	Duration: One 15-minute video and 35 minutes discussion. Staffing: professional.

Risk of bias table

Item	Judgement	Description
Adequate sequence generation?	Yes	Incomplete outcome data were not adequately addressed; analysis was by TOT, not ITT. Attrition was 5.2%.
Allocation concealment?	Yes	
Blinding?	Yes	
Free of other bias?	No	

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