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Promoting the social and emotional wellbeing of vulnerable pre-school children (0-5 yrs): Systematic review level evidence.

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Aims and objectives

This systematic review aimed to examine international review level evidence of home visiting and family based interventions; and early education and childcare interventions. It was undertaken to support the development of guidance on two related NICE intervention topics promoting the social and emotional wellbeing of vulnerable pre-school children aged 0-5. The intervention guidance will focus on the effectiveness of specific progressive interventions: home visiting and family based interventions; and early education and child care interventions. In addition to this review of reviews two systematic reviews of UK level primary data were undertaken and are reported separately.

METHODS

Search methods and data extraction for systematic reviews

A single, full systematic search of key health and medical databases was undertaken for the systematic reviews. Articles relating to effectiveness and process evaluation studies of early years programmes and interventions designed to promote social and emotional development, and cognitive development among vulnerable children and families were selected. There was consideration of the study quality of each type of study design as per recommended NICE CPHE methods (NICE, 2009).

RESULTS

We identified 20 review papers which met the inclusion criteria for this review of reviews. The review papers focused on interventions delivered to pregnant or recently pregnant women, interventions delivered at home to wider populations, and interventions delivered in educational or day care settings. A key feature of this review of reviews was the large number of potentially eligible studies that were identified and retrieved as full papers, yet subsequently excluded. This resulted from the nature of the population and intervention types under consideration which required detailed reading of full papers (in particular appendices and summary tables) in order to ascertain whether or not a study met the inclusion criteria. As outlined below there was limited use of the terminology “at risk” or “vulnerable”

populations in the available literature, requiring examination of surrogate terms such as low socio-economic status and broad definitions of individuals that could be considered to be at risk.

The 20 included reviews encompassed over 400 unique primary papers, with some of the reviews including large numbers of papers considering the same primary studies or programmes. Seven review papers reported interventions with post-partum women, of these two were particularly concerned with adolescent mothers. Seven reviews reported data from home interventions with wider family populations. Four reviews concerned interventions provided in an educational or day care setting and two papers focussed specifically on longer term outcomes following interventions. The content of the interventions, and the length and duration of the contact varied considerably between reported primary studies. The papers also reported a wide range of outcomes including standardised assessments, reported perceptions and checklists, and encompassed maternal health, wellbeing and educational outcomes, home environment outcomes and child health, development and wellbeing outcomes.

DISCUSSION

This review of review level evidence considered evaluation studies which reported on the effectiveness of progressive interventions to promote wellbeing in under 5 year old children. Although some of the reviews identified a volume of evidence (up to 70 papers in a single review), some of them provided only limited data on the effectiveness of the interventions. Many of the primary papers considered a vast range of outcome measures, resulting in the potential for reviews to be selective in the data that they reported. This was the case for some included reviews which presented detailed findings in regard to only some primary papers, with a tendency to report only positive primary study outcomes. This may be inevitable due to the large number of assessments used within primary studies and also large number of programmes that many reviews considered. Concerns over the validity and consistency of outcome measures suggest that these should be interpreted with caution when considering the drawing of conclusions or development of recommendations.

A large proportion of the primary studies that were examined in the review papers were carried out in the USA. This has implications for applicability in a UK setting. One of the included papers (Burgher, 2010) describes the comparison of North American and European interventions as needing to be treated with caution as children in the American programmes "typically suffer from greater economic disadvantage that those in Europe". The delivery of the programmes in terms of location, content and staff delivering the intervention also requires consideration when applying to the UK context. The included reviews also included primary studies across a wide time period, with some studies dating from the late 70's. Changes since these early studies were conducted may also require consideration. A further consideration is that there were only four review papers that were rated as high quality, with an overall lack of reporting of methods to minimise reviewer bias or error in study selection, extraction and quality appraisal across the set.

Inconsistency in the use of key terms relevant to this review may be problematic. There are varying definitions of both vulnerability and wellbeing and authors use a variety of measures to define both. Vulnerability in particular is a problematic term and is defined inconsistently by a variety of measures including areas of residence and parent related socioeconomic factors such as employment status, education level and relationships status.

Very few of the papers used the term vulnerability, therefore proxy terms such as at risk of educational failure, low socioeconomic status, women at risk of postnatal depression were used to determine inclusion and exclusion. The review included papers which were answering different research questions to the target of this work, requiring selective extraction of data. A lack of information in some of the papers made this challenging with the potential for error in omission or inclusion.

Many authors highlighted the multi-faceted nature of the interventions considered here. While endeavouring to divide the evidence into home-based versus centre-based provision it should be recognised that in many programmes there are elements of both. The programmes included in the reviews encompassed diverse content ranging from supportive visits to parent education, contraceptive advice, child development promotion, health education and drug programmes. Interventions also varied considerably in regard to the number of sessions provided, the age at which

sessions began, the length of sessions and the period of time of the contact. This diversity and complex nature of the interventions precludes identification of elements which may lead to more successful programmes. There is some disparity in the evidence regarding who should deliver the programme, programme length and intensity. The included papers also varied considerably in the degree of reporting of the intervention. As a result, these limitations should be considered when making recommendations based on these studies.

Evidence Statements

Review Evidence Statement 1:
Home visits during pregnancy and the post-partum period (0-1yrs)

There is moderate evidence from six review papers suggesting that post-partum home visits interventions may be effective for improving parental outcomes in at risk families, with one suggesting that nurse-delivered interventions may be more effective than those delivered by para-professionals or lay visitors. One additional review paper suggests that there is insufficient evidence regarding the effectiveness of post-partum visits to women with an alcohol or drug problem.

These studies were carried out in populations described as families at risk of dysfunction or child abuse, mothers at risk for postnatal depression, mothers identified as having additional needs, families living in a deprived area and teenage mothers African-American women, drug users, economically deprived women and socially at risk women, preterm infants and mothers with maternal risk.

In regard to specific outcomes: one of these reviews (rated as weak in this review) provides evidence for the effectiveness of programmes delivered by nurses on intimate partner violence and reducing child abuse potential in low income families, ethnic minority families, substance abusing mothers, and families at risk for child abuse.

Three reviews (rated as good) provide evidence that interventions may impact on maternal outcomes (such as psychological status, postnatal depression, maternal self-esteem, quality of life and contraceptive knowledge and use, interaction with the child and parenting). One study suggests that child development outcomes may be improved in pre-term infants.

Two further reviews provide evidence that post-partum interventions may be

effective for parental outcomes in adolescent mothers. One review describes positive outcomes such as improved self-confidence and self-esteem following support-education interventions for post-partum adolescent mothers. A second suggests that interventions may have a positive impact on parent outcomes such as improving maternal-child interaction and maternal identity.

Coren & Barlow 2009 [SR++] reviewed four studies which targeted adolescent mothers.
Doggett et al. 2005 [SR++] reviewed six randomised or quasi randomised studies of home visits for pregnant or postpartum women with a drug or alcohol problem.
Kearney et al. 2000 [SR-] reviewed 20 studies of pregnancy and post-partum home interventions in vulnerable families including preterm infants and mothers with maternal risk.
Letourneau et al. 2004 [SR-] reviewed 19 support-education interventions for post-partum adolescent mothers.
McNaughton 2004 [SR-] reviewed 13 studies of which 10 were in at risk populations.
Sharps et al. 2008 [SR-] reviewed eight primary studies on interventions for intimate partner violence.
Shaw et al. 2006 [SR+] reported 22 RCT primary studies of post-partum support.

Review Evidence Statement 2:
Home interventions for wider populations (in addition to or not including pregnancy/post partum)

Seven reviews provide evidence that is considered to be good regarding the effectiveness of home visitingon interventions for at risk families. Small to medium effects are reported on maternal sensitivity and the home environment, a moderate effect size on parent-child interaction and measures of family wellness, and a small effect size on: attachment security; cognitive development; socio-emotional development; potential abuse; parenting behaviour; parenting attitudes; and maternal life course education. One review provides mixed evidence regarding the impact of parenting interventions on childhood behaviour problems.

The study populations in the primary papers were described as including ethnic minority teenage mothers, pregnant and post-partum women who were socially disadvantaged or substance abusers, low birth weight newborns, children with failure to thrive, low SES families, low income families, families at risk of abuse or neglect and families considered to be at risk. One review concluded that interventions delivered in the home for participants with low SES had lower effect sizes than those with mixed SES levels. A second review similarly concluded that

interventions with low SES or adolescent populations had lower effect sizes than middle class non-adolescent parents. One review noted that lower effects were found for studies using HOME or NCATS as outcome measures compared with other rating scales or measures.

It is unclear how the timing, intensity and other characteristics of inventions influence effectiveness, particularly with respect to levels of risk and needs. One meta analysis reported that characteristics of more successful interventions across all the studies were: that video feedback was included; interventions had less than 16 sessions; interventions did not include personal contact (but provided equipment); and started after the age of 6 months. Another concluded that interventions were more successful when of a moderate number of sessions (5-16 versus more than 16) in a limited time period, and were carried out at home either prenatally or after the age of 6 months. Another review in contrast concluded that effect sizes were higher for interventions of 13-32 visits and lower for interventions of 1-12 visits and 33-50 visits. Also, that effect sizes were lower for interventions without a component of social support than for those that included social support. One review suggested that there may be some reduction in intervention effect over time, and highlighted that the multifaceted nature of interventions provides challenges in ascertaining which element or elements of an intervention are most effective.

Bayer et al. 2009 [SR+] a review of 58 primary study interventions for emotional and behavioural problems.
Kendrick et al. 2000 [SR++] a review of 34 primary study papers with 12 included in a meta-analysis.
Bernazzani et al. (2001 SR+) a review of seven RCT interventions targeting behaviour problems
Sweet & Appelbaum 2004 [SR+] a review of 60 programmes.
Bakermans-Kraneburg et al. 2005 [SR+] a meta-analysis of 48 studies (39 in low SES/pre-term populations) of interventions aiming to optimise parenting or parent-child interaction using the HOME outcome measure.
Bakermans-Kraneburg et al. 2003 [SR-] a meta-analysis of 70 studies (58 in at risk populations) of interventions relating to sensitivity or attachment.
MacLeod & Nelson 2000 [SR++] a review of 56 programmes designed to promote family wellness and prevent child maltreatment.

Review Evidence Statement 3:
Programmes delivered in educational or centre settings

Four reviews provide moderate evidence regarding the effectiveness of interventions delivered in an educational or day care settings. The detail of interventions and distinctions between day care and child care were not well defined.

Most evidence related to cognitive outcomes. Other outcomes included social competence and child mental health. One review found that more than 70% of positive effects reported were regarding cognitive outcomes. Most of the programmes were described as being conducted with economically disadvantaged populations however some reviews included both universal and progressive interventions with little detail provided regarding the precise content of the programmes or the population.

Most of the programmes had multiple strands –and varied in intensity. Few reviews examined day care/ preschool education without the addition of centre or home based parenting support. Most of the programmes were for children 3 years and above.

Positive cognitive effects were reported for some programmes in regard to vocabulary, letter-word identification, letter knowledge book knowledge, and colour naming, vocabulary, reduced number of children who were kept back a year, increased IQ score, verbal and "fluid intelligence" gains, school readiness, improved classroom and personal behaviour as rated by teachers, reduced need for special needs education, less delinquent behaviour, and fewer arrests at aged 27. Reported effectiveness however varied across programmes with one review reporting that 53% of the studies demonstrated no effect of the intervention.

Beneficial effects reported on child mental health included reduced anxiety and externalising behaviour problems. However one review highlighted the potential for an adverse effect on externalising behaviour problems. Improvements in social competencies were reported across a number of programmes, including improvements in mother-child interaction and communications. One study of the Effective Provision of Preschool Education project found improved self regulation and prosocial behaviour if children attended a centre rated as high quality. One review of eight day care interventions in the US concluded that out of home day care can have beneficial effects in relation to enhancing cognitive development, preventing school failure, children's behaviour, and maternal education and employment. The authors suggested that the chance of success is higher for interventions if the intervention starts at three rather than four years of age.

Burgher 2010 [SR-] a review of 32 primary studies across a variety of educational and day care settings examining cognitive outcomes.
D'Onise et al. 2010 [SR+] a review examining physical, mental health and social

outcomes in 37 primary studies.
Zoritch et al. 2009 [SR+] a review of day centre provision including seven studies of relevance (out of the eight reviewed).
Anderson et al. 2003 [SR+] a review of 16 studies of centre-based interventions.

Review Evidence Statement 4:
Longer term outcomes of early interventions in adolescence

Two good quality meta-analyses of outcomes following early developmental prevention programmes provide good evidence of lasting impact in adolescence, particularly as measured by cognitive outcomes. Overall, effect sizes are small to medium. Study populations were described as at risk or disadvantaged with many including a high proportion of participants from African-American backgrounds. Interventions included structured preschool programmes, centre based developmental day care, home visitation, family support services and parental education.

One review reported that the largest effects were seen for educational success during adolescence, reduced social deviance, increased social participation, and cognitive development, with smaller effects for family wellbeing and social-emotional development. It was highlighted that programmes with more than 500 sessions per participant were significantly more effective than those with fewer. The second review reported a similar pattern of outcomes. It was noted that programmes with direct teaching components in preschool and those that followed through from preschool to school tended to have the greatest cognitive impacts. Longer programmes tended to produce greater impacts on preschool cognitive outcomes and on social and emotional outcomes at school age. More intense programmes tended to produce greater impact on preschool cognitive outcomes and grade 8 parent-family outcomes.

Nelson and Westhues 2003 [SR+] a meta-analysis of the effectiveness of 34 preschool prevention programmes.
Manning et al. 2010 [SR+] a meta-analysis of 17 primary studies (11 programmes) including structured preschool programmes, centre based developmental day care, home visitation, family support services and parental education.

ABBREVIATIONS

BAS	British Ability Scale
BMI	Body Mass Index
CARE index	Infant attachment and parent sensitivity measure
CBA	Controlled Before and After study
CI	Confidence Interval
CPHE	Centre for Public Health Excellence
CGS	Community Group Support
EPDS	Edinburgh Postnatal Depression Scale
EPPE	Effective Provision of Pre-school Education
GHQ12	General Health Questionnaire 12
HOME inventory	Home Observation and Measurement of the Environment
LEA	Local Education Authority
MCS	Millennium Cohort Study
NFP	Nurse Family Partnership
OR	Odds Ratio
PND	Post Natal Depression
RCT	Randomised Controlled Trail
RR	Relative Risk
SEN	Special Educational Needs
SHV	Support Health Visitor
SS	Sure Start
SSLP	Sure Start Local Programmes

GLOSSARY OF TERMS

Outcome measures:

Child wellbeing (parent reported).	Includes one validated tool to measure child temperament as reported by parents (Brief Infant and Toddler social and emotional assessment), others measures were not previously validated. Child injury also self reported by the parent.
Child development	Validated scales measuring child development assessed by a professional such as the British Ability Scale.
Child behaviour	Validated scales for measuring child behaviour assessed by a professional such as the Foundation Stage Profile.
ChiMat	Child and Maternal Health Observatory: provides information and intelligence to improve decision-making for high quality, cost effective services
Parent wellbeing (self reported)	Validated scales to measure self reported parental wellbeing such as the Parent Stress Index

Maternal depression /mental health	Validated scale to measure postal natal depression: Edinburgh Postnatal Depression Scale, plus other non validated tools.
Parenting	Both validated and non validated scales assessed by a professional to measure aspects of positive and negative parenting such as the Parenting Risk Index. Also tools allowing parents to self report parenting behaviours.
PREview	Work on the PREview is project being carried out jointly by MIRU and Chimat at the Yorkshire and Humber Public Health Observatory. It is investigating the evidence base and feasibility of a tool which will help health professionals target the Healthy Child Programme effectively so as to optimise child outcomes.
Social support (self reported)	Self reported measures of social support, some validated such as Duke's Functional Support Scale.
Family relationships (self reported)	Validated scales to measure self reported aspects of family relationships such as mother child relationship and father involvement in the family.
Home environment	Validated scales to measure the home environment in terms of its suitability to promote learning and development, such as the HOME Inventory
Parent behaviours (self reported)	Self reported rates of cigarette and alcohol consumption.
Breastfeeding/feeding practices (self reported)	Self reported rate/duration of breast feeding and other infant feeding practices.
Health	Validated tools to measure general health, such as the General Health Questionnaire.
Service use (self reported)	Self reported use of health and/or support services.

Research Terminology:

Effect size	A unit-free effect measure, indicating the size of observed effects. Effect sizes (e.g. Cohen's d) may be interpreted according to the following suggestions provided by Cohen, 1988): 0.2 = small effect, 0.5 = moderate effect, 0.8 = large effect size
Heterogeneity	The degree to which studies under review are different.

Meta-analysis	A statistical method by which the results of a number of studies are pooled to give a combined summary statistic.
Millennium Cohort Study	The Millennium Cohort Study (MCS) is a multi-disciplinary research project following the lives of around 19,000 children born in the UK in 2000/1. It is the most recent of Britain's national longitudinal birth cohort studies. The study has been tracking the Millennium children through their early childhood years and plans to follow them into adulthood.
Odds ratio	The ratio of the odds of an outcome in an exposed (or experimental) group to the odds of an outcome in an unexposed (or control) group. (An odds ratio of 1 would mean that the outcome under study is equally likely in both groups; an odds ratio greater than 1 would indicate that the outcome is more likely in the exposed group).
Relative risk	Ratio of the probability of an outcome occurring in an exposed (or experimental) group relative to a non-exposed or control group. (A relative risk value greater than 1 would indicate that the outcome is more likely in the experimental group).

1. INTRODUCTION

1.1 Aims and objectives

This systematic review aimed to examine international review level evidence of home visiting and family based interventions; and early education and childcare interventions. It was undertaken to support the development of guidance on two related NICE intervention topics regarding the promotion of social and emotional wellbeing amongst vulnerable pre-school children aged 0-5. The intervention guidance will focus on the effectiveness of two types of specific progressive interventions: home visiting and family based interventions; and early education and child care interventions. In addition to this review of international review level evidence, two systematic reviews of UK level primary data were undertaken which are reported separately.

1.2 Research questions

The reviews of the evidence aimed to address the following key questions:

- What are the most effective and cost effective home based/early education and childcare interventions for helping improve and maintain the social and emotional health of vulnerable young children (0-5)?
- What progressive home based/early education and child care are effective and cost effective at the different early life stages: 0-3 months, 3 months to 1 year, 1-2 years etc) for promoting the social and emotional health of vulnerable young children and their families?
- How can those vulnerable children and their families who might benefit from home based/early education and childcare interventions be indentified? What factors increase the risk of children experiencing social and emotional difficulties? What is the absolute risk of children experiencing difficulties relating to these different factors and their combinations?
- How can interventions reduce vulnerability and build resilience to help achieve positive outcomes? In particular, how can interventions help develop strong and positive child-parent attachment?
- What characteristics of an intervention are critical to achieving positive outcomes for vulnerable children and families?

- What lessons can be learned from current UK-based programmes aimed at promoting the social and emotional wellbeing of children under 5?

The following sub-questions were also considered:

- What is the best way to ensure progressive interventions are sensitive to the specific cultural, ethnic or religious needs of children and their families?
- To what extent does effectiveness vary according to the child's gender and the family's ethnic, cultural and religious background?
- How can vulnerable children and families be reached? This includes those living in a range of different family environments (such as with a single parent or with an extended, disrupted, reconstituted or transient family).
- What conditions are necessary to ensure progressive home-based interventions aimed at vulnerable children and parents are implemented effectively? What factors help or hinder implementation?
- What is the relationship between progressive home-based interventions and other interventions and mainstream services – and with more specialist services which provide support for more complex cases (including child and adolescent mental health services [CAMHS] and safeguarding services)?
- What knowledge and skills do practitioners need to deliver interventions effectively? What skills mix is needed for an integrated approach involving different practitioners and services?
- What is involved in joint commissioning of progressive interventions?
- How do the various sectors involved benefit in terms of costs and improved outcomes – and over what timescale? (This includes health, education, social care, the criminal justice and welfare and employment systems.)
- Are there any trade-offs between efficiency and equity that influence the cost effectiveness of progressive home-based interventions?
- What are the unintended (positive or negative) consequences of progressive interventions?

2. BACKGROUND

2.1 Logic model

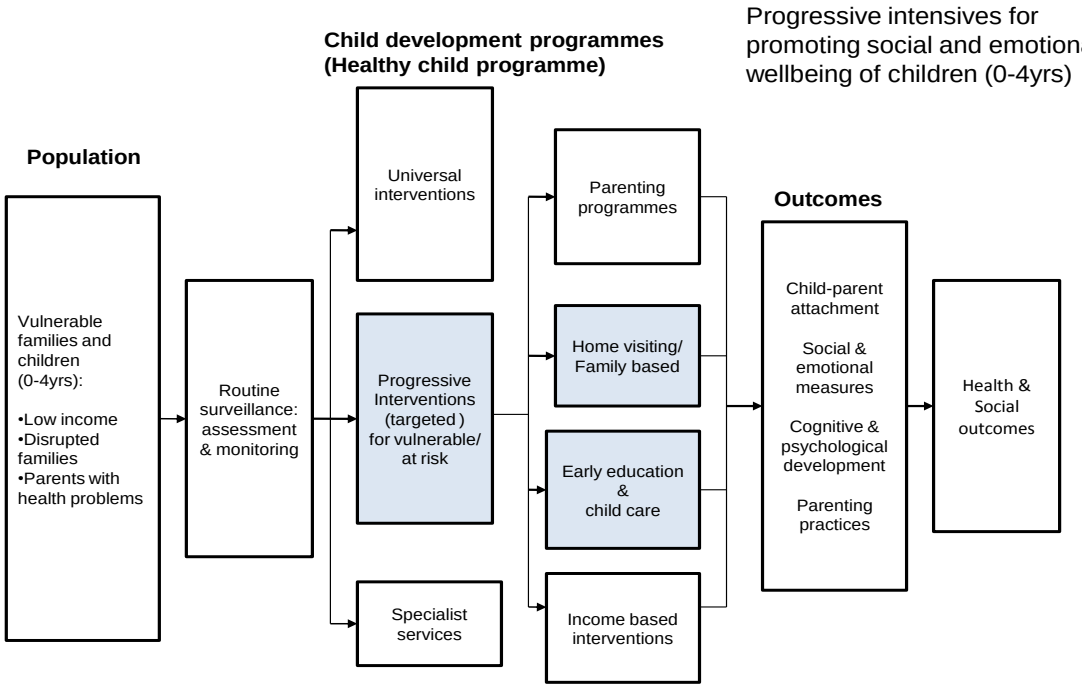
Social and emotional wellbeing and cognitive ability are about having the resilience, positive emotions, self awareness, social skills and empathy required to form relationships and deal constructively with adversity in daily life as well as develop one's full potential (Killoran et al. 2010). Social and emotional wellbeing and cognitive development are inter dependent. Also cognitive ability (including educational attainment) is an outcome of social and emotional wellbeing (Killoran et al. 2010). Together with environmental conditions, such individual attributes can act as protective factors (assets) that prevent behavioural problems and mental ill health, as well as optimise longer term health and social outcomes (Killoran et al. 2010).

The diagram below (figure 2.1) shows the conceptual links between the needs of vulnerable children and families, intervention options and improved outcomes (Killoran et al. 2010). This model was correct as of September 2010 when work on this review commenced, but was subject to development and refinement during the time that the work was undertaken.

'Progressive' interventions are those which provide additional support designed to improve the social and emotional health and cognitive ability of vulnerable children and families. These intervention options include home visiting and family-based activities (such as those carried out as part of the family nurse partnership programme), and early education and child care (Killoran et al. 2010).

The diagram shows how these interventions fit within the Healthy Child Programme (0–5 years) (Killoran et al. 2010). The Healthy Child Programme is described as 'a progressive universal programme' which aims 'to promote and protect the health and wellbeing of children from pregnancy through to adulthood'. It is based on the principle of 'progressive (or proportionate) universalism', whereby: 'the scale and intensity of provision of universal services is proportionate to the level of disadvantage' (The Marmot review 2010). The Healthy Child Programme is delivered by a multidisciplinary team based in Sure Start Children's Centres.

Figure 2.1 The conceptual links between the needs of vulnerable children and families, intervention options and improved outcomes (September 2010).



Universal assessment and monitoring identifies those children and families at risk of poor social and emotional wellbeing (or those already showing early signs of delay and difficulties including cognitive delay). Then a range of 'progressive interventions' are used to identify and address the causes of developmental problems and delay (such as lack of child-parent attachment). They also aim to help develop the conditions (protective factors) that can build resilience and improve outcomes for the child and family (Killoran et al. 2010). This set of reviews of the evidence tests this model and underlying assumptions.

2.2 The need for guidance

Social and emotional health is about having the resilience, self-awareness, social skills and empathy that are required to form relationships and deal constructively with adversity as part of daily life. Around 7% of children aged 3 years can be expected to show moderate to severe behaviour problems. A further 15% will have mild difficulties (Richman et al. 1982). Emotional and behavioural problems in early life are predictors of poor outcomes, such as delinquency and substance abuse, in later

years. About two-thirds of children aged 3 years who show significant emotional and behavioural problems continue to have difficulties at 8 or 12 years (Campbell, 1995).

A positive child-parent relationship is particularly important for social and emotional development (for example, Fonagy et al. 2005). The degree of parental and family interaction – and how positive or negative it is – accounts for as much as 30–40% of the variation in antisocial behaviour among children (Patterson et al.1989). A range of preventive strategies can help improve the mental wellbeing of children and their families, by taking into account both the factors that increase the risk of poor mental health and those that help protect mental wellbeing. This includes activities to raise self-esteem and to improve the child-parent relationship (Barlow and Parsons 2009).

Intellectual development and social and emotional health are strongly influenced by a child's experiences during their preschool years. Those who experience poverty or neglect are likely to be at increased risk of learning, behavioural and health problems throughout their lives (Tierney and Nelson, 2009). Participation in high quality early education and childcare can enhance the social and emotional health and cognitive development of children from low income families (Centre on the Developing Child 2007). The UK Effective Provision of Pre-school Education (EPPE) project showed that education between 3 and 5 years leads to better intellectual development and improved independence, concentration and sociability (Department for Education and Skills, 2005).

The costs of not intervening to ensure or improve the social and emotional wellbeing of children and families are significant for both them and wider society (Action for Children and the New Economics Foundation, 2009). Some evidence shows that the health savings gained by intervening tend to be small compared to the benefits for the criminal justice system, education and welfare services (Scott et al. 2001). Social and emotional development is being assessed as part of the evaluation of Sure Start Children's Centres nationally. In 2008, these centres were benefiting a range of different groups on a more consistent basis. This compares to the situation in 2005, when the most vulnerable were not being reached effectively (Melhuish et al. 2008a). However, recent research suggests that vulnerable groups still face barriers when it comes to uptake of the services (particularly health support). Vulnerable groups

include people from minority ethnic communities and lone and young parents (Audit Commission, 2010).

3. METHODS

3.1 Search methods for systematic reviews

This section details the single search undertaken to identify papers for the systematic reviews. A single, full systematic search of key health and medical databases was undertaken for this review and two reviews of UK primary studies which is reported separately. International review level evidence was selected. The search strategy was developed by the ScHARR information specialist and was agreed with the NICE information specialist. An outline of the search strategy can be found in Appendix 4, the list of databases searched is given in Appendix 5.

The systematic review search strategy included a broad set of terms relating to child age, intervention and vulnerable population. Restrictions were applied to the search in terms of date (limited to 2000-2010 to manage the volume of literature). No restrictions were placed in terms of study type or country of origin. Only articles published in English were included. In addition, references were suggested by an expert reference group. The search results were downloaded into Reference Manager for sifting by the systematic reviewers.

Additional methods to identify evidence were undertaken as follows:

- Searching the reference list of included papers
- Cited reference searches on all of the included studies in the Web of Knowledge, Scopus and Google Scholar

3.2 Inclusion and exclusion criteria

All of the retrieved literature was screened at title and abstract level for relevance, and those that were relevant were taken through to full paper appraisal.

The population groups that are covered in this work are children (aged 0-5) and their families who are deemed to be at risk – or showing early signs of having social and emotional, and cognitive difficulties based on a child development assessment and monitoring system (carried out as part of the Healthy Child Programme).

Risk factors may include having parents who: are on a low income, have low educational attainment, are unemployed, have experienced domestic violence, are bringing up a child (or children) on their own, are teenagers, have limited social support and social networks, have poor mental health, have long-term health conditions, misuse substances, have poor parenting skills, are illegal immigrants or their immigration status is uncertain. Children at risk may include those who: had a low birth weight, have been abused or neglected, have poor child-parent attachment, have poor cognitive skills, lack social and emotional wellbeing, have behavioural difficulties.

Two types of interventions are covered by the scope of this report:

- 'Progressive' interventions which provide additional support at home and are designed to improve the social and emotional health and cognitive ability of vulnerable children and families. This will include home visiting and family-based activities (such as those carried out as part of the family partnership programme).

- 'Progressive' early education and childcare interventions which are designed to improve the social and emotional health and cognitive ability of vulnerable children and families. This will include communication and language development and activities to prepare children for school.

The review excludes: papers reporting on the tools and methods used to assess the risk of social and emotional problems or a mental health disorder and to diagnose such problems, interventions promoting the social and emotional wellbeing of all children, clinical treatment including pharmacological interventions, support provided by specialist child mental health services and children in care services. The guidance may be relevant to these groups but will not cover their additional specific needs.

3.3 Data extraction strategy

Data relating to study design, outcomes, and quality (where applicable) were extracted by one reviewer and each extraction was independently checked for accuracy by a second reviewer. Disagreements were resolved by consensus and consulting a third reviewer where necessary. The data extraction tables for each section of the review are presented in Appendix 1.

3.4 Quality assessment criteria

In addition to extracting key information from included papers, for the sections of this report which used systematic review methods there was consideration of the study quality of each type of study design as per recommended NICE CPHE methods (NICE, 2009). All studies were graded by one reviewer and checked for accuracy by a second reviewer as follows:

The NICE CPHE Methods Manual (NICE, 2009) outlines a series of screening questions to be considered when examining review-level material (table 3.1).

Papers identified via the searches were screened using the screening form (table 3.1). Papers that did not meet four or more of these screening criteria were excluded from the analysis, although retained for background information. These papers tended to be general literature reviews or discussion papers rather than systematic reviews. Papers excluded for this reason are listed in Appendix 3. The searches identified a number of other reviews of reviews which were checked to ensure that the relevant studies included in those articles were in the database.

The CPHE Methods Manual (NICE, 2009) recommends that papers that pass the initial screening process outlined in Table 3.1. should also be further quality assessed using a form developed by the review team. The proforma below (Table 3.2) was developed by combining elements of the Critical Appraisal Skills Programme (Milton Keynes Primary Care Trust, 2002) review appraisal tool, together with evaluation methods used for the Database of Abstracts of Reviews of Effect (DARE) by the Centre for Reviews and Dissemination (University of York). The quality assessment provides a grading of high quality (++), good quality (+) or poor quality (-) in line with the other NICE CPHE quality assessment tools (table 3.3).

When designing the rating tool, the number of criteria required to meet the top standard was set deliberately high in order to sufficiently differentiate between screened studies. In interpreting these grades however it should be borne in mind that reviews of poorer quality which did not use systematic methods were excluded at the screening stage.

Table 3.1. Review screening form

Review screening form

Study identification Include author, title, reference, year of publication				
Programme/intervention topic		**Key question no:**		
Checklist completed by:				
SCREENING QUESTIONS				
In a well-conducted systematic review:		**In this review this criterion is met:** **(Circle one option for each question)**		
1	Does the review address an appropriate and clearly-focused question that is relevant to one or more of the guidance topic's key research question/s?	Yes	No	Unclear
2	Does the review include the types of study/s relevant to the key research question/s?	Yes	No	Unclear
3	Is the literature search sufficiently rigorous to identify all the relevant studies?	Yes	No	Unclear
4	Is the study quality of included studies appropriately assessed and reported?	Yes	No	Unclear
5	Is an adequate description of the analytical methodology used included, and are the methods used appropriate to the question?	Yes	No	Unclear

Table 3.2. Review assessment check list

Assessment checklist

1. The study has a clear research question and defined inclusion/exclusion criteria
2. There is evidence of a substantial effort to identify all relevant research across several sources
3. Appropriate methods were used to minimise reviewer error or bias in study selection, extraction and quality appraisal
4. Validity of included studies was adequately assessed
5. Sufficient detail for individual studies is provided
6. The study findings are summarised using an appropriate method
7. The authors' conclusion is an accurate reflection of the evidence presented.

++ (High quality) All 7 of the criteria are met
+ (Good quality) 5 or 6 of the criteria are met
- (Poor quality) Less than 5 of the criteria are met

3.5 Criteria for study grading.

After quality appraisal by study type, all the studies were placed in one of three grades based on the methodology checklists for each study design as described in Table 3.2. Finally, for reporting evidence statements the evidence was categorised as no evidence, or weak, moderate or strong evidence for or against the intervention in question following the CPHE methods guidelines (NICE 2009).

Table 3.3. Criteria used for study grading

Code	Quality criteria
++	All or most of the criteria have been fulfilled. Where they have not been fulfilled the conclusions of the study or review are thought very unlikely to alter
+	Some of the criteria have been fulfilled. Those criteria that have not been fulfilled or not adequately described are through unlikely to affect conclusions
-	Few or no criteria fulfilled. The conclusions of the study are thought likely or very likely to alter

3.6 Classification/grouping of the content of studies

The systematic review papers focused on interventions delivered to pregnant or recently pregnant women, other interventions delivered at home for wider populations, and interventions delivered in educational or day care settings.

3.7 Summary of study identification

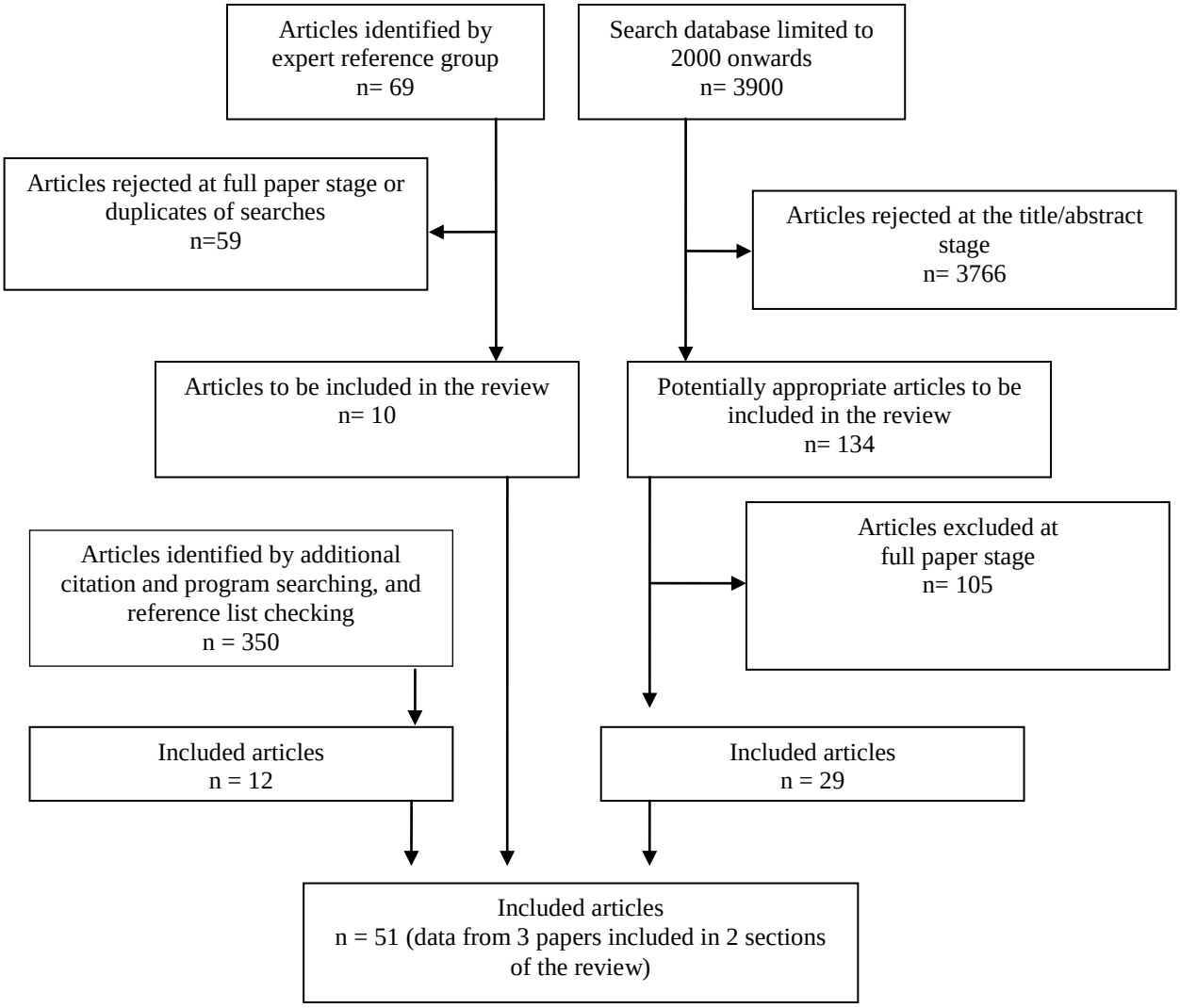
All search results were downloaded to Reference Manager. Potentially relevant papers were identified through searches and initial sifting, and full papers were obtained. Citation searching of key papers as well as scrutinising reference lists and searching on key programmes was also carried out. Papers were also suggested by an expert reference group. We excluded 105 articles from the searches which were obtained as full papers but subsequently found to be outside of the scope of any of the review questions (see Appendix 3). Table 3.4 details the process of identification of the included studies.

Table 3.4. Summary of study identification

Source	Number of hits (all 4 reviews)	Papers included in UK evaluation review	Papers included in review of reviews	Papers included in implementation and process review
Searches				
Initial searches	3900	9	14	9
UK programme searches	158	0	0	3
Citation searches of included papers	162	0	0	2
Other sources				
Reference list of included papers	30	2	3	2
Expert reference group*	66	4	3	3
Total	4316	15	20	19 (3 also in UK evaluations review)

* Some of the papers identified by the expert reference group were also identified in the searches.

Figure 3.1. QUOROM Diagram.



4. RESULTS

4.1 Quantity of the evidence available

We identified 20 review papers which met the inclusion criteria. The review papers focused on interventions delivered to pregnant or recently pregnant women, interventions delivered at home to a wider population, and interventions delivered in educational or day care settings. A key feature of this review of reviews was the large number of potentially eligible studies that were identified and retrieved as full papers, yet subsequently excluded. This resulted from specific nature of the population and intervention types under consideration which required detailed reading of full papers, (in particular appendices and summary tables) in order to ascertain whether or not a study met the inclusion criteria. As outlined below there was limited use of the terminology “at risk” or “vulnerable” populations in the available literature, requiring examination of surrogate terms such as low socio-economic status and broad definitions of individuals that could be considered to be at risk. Table 4.1 provides a brief overview of the included papers, see the extraction table (Appendix 1) for further information.

Table 4.1. Summary of included papers

Study design	**Paper (author, date)**	**Target population**	**Included interventions** (as described by the reviews)	**Studies included**	**Quality**
Meta-analysis	Bakermans-Kraneburg et al. 2003	Child age less than 54 months, including 58 papers in at risk populations	Interventions relating to sensitivity or attachment	70 primary studies, 88 outcome measures	-
	Bakermans-Kraneburg et al. 2005	Children aged less than 54 months, any population including clinical and at-risk. 39 papers low SES including adolescent mothers and pre-term low SES, 4 preterm not low SES, 4 not at risk, 1 clinically depressed mothers	Interventions aiming to optimise parenting or parent-child interaction, excluding those concentrating on cognitive development. Interventions used the HOME subscales as outcome measure.	48 studies, 56 intervention effects	+
	Kendrick et al. 2000	Any families including 26 studies described as in populations at risk of adverse maternal or	Post natal programmes with at least one home visit	34 primary study papers, 12 included in meta-analysis.	++

		child health outcomes		RCTs or NRCTs	
	Manning et al. 2010	Children aged 0-5 mostly from at risk populations	Structured pre-school programmes, centre-based developmental day care, home visitation, family support services, parental education.	17 primary study papers	+
	MacLeod & Nelson, 2000	Children up to age 12 years, 75% low SES	Programmes designed to promote family wellness and prevent child maltreatment, around half were selective and 40% indicated	56 programmes, all RCTs	++
	Nelson & Westhues, 2003	Pre-school disadvantaged children and their families	Universal or selective prevention or promotion interventions focusing on the promotion of child, parent or family well-being	34 programmes	+
	Sweet & Applebaum, 2004	Families with young children. The majority of programmes (75%) targeted families "at some type of environmental risk"	Home visiting programmes "excluding programmes where home visits were a supplement to another intervention"	60 programmes	+
Systematic review	Anderson et al. 2009	Children aged 3 to 5 years at risk because of family poverty	Centre based programmes	16 studies reported in 23 primary papers	+
	Bayer et al. 2009	Children aged 0-8 years described as mostly at risk.	Interventions for emotional and behavioural problems described as "most programmes targeted to at-risk children"	58 primary study papers (RCT studies only)	+
	Bernazzani et al. 2001	Families with a child aged under 3, any population. Five in high risk groups	Interventions with parent training or parental support as a major component	7 RCT studies (graded 4/5 stars)	+
	Burgher, 2010	Pre-school children (age not specified) majority of families described as economically disadvantaged	Pre-school programmes targeting cognitive development	32 primary study papers	-
	Coren & Barlow, 2009	Adolescent mothers	Parenting programmes (group and individual)	3 primary study papers	++
	Doggen et al. 2009	Pregnant or post-partum women with a drug or alcohol problem	Home visits provided by teams or individuals	6 primary study experimental or quasi experimental design only papers	++
	D'Onise et al. 2010	Healthy 4 year old children described as	Centre-based pre-school interventions	37 primary study papers	+

		from mostly disadvantaged populations in the USA and at risk of school failure			
	Kearney et al. 2000	Families of newborn infants described as vulnerable because of poverty, social risks or prematurity	Nurse home visits	26 papers/20 primary studies experimental or quasi experimental design only	-
	Letourneau et al. 2004	Adolescent mothers	Social support –education interventions	21 primary papers /19 interventions	-
	McNaughton, 2004	Pregnant women or women with young children described as "majority pregnant or postpartum with multiple risk factors"	Nurse home visits	13 primary studies	-
	Sharps et al. 2008	Women during pregnancy and within one year of birth described as impoverished and high risk	Pre-natal or post partum home visit intervention by nurses, paraprofessionals or lay health workers aimed at improving health outcomes and including an assessment of intimate partner violence	8 primary study papers	-
	Shaw et al. 2006	Women within one year of giving birth, including general and at risk population	Post partum support programmes	22 primary study papers (RCTs only)	+
	Zoritch et al. 2009	Children under 5 most from families of low SES, all but one study African-American population	Out of home day care, 5 had element of home visiting in addition	8 primary study papers	+

In the table below (Table 4.2) the primary study papers that have been included by more than one review have been highlighted in bold. Eighty four primary study papers were reported in more than one review, with 421 unique papers across the reviews (although some were not relevant to this review of reviews).

Table 4.2. Primary studies considered in the included review papers

Authors	Programmes	Primary study papers
Anderson et al. 2003	Carolina Abecedarian Project, Head Start, High/Scope preschool, Philadelphia Head Start and Get Set, Perry Preschool, South Carolina Preschool	**Barnett et al. 1987**, Bee 1981, **Berrueta-Clement et al. 1984**, Bryant et al. 1987, Campbell et al. 1994, Campbell et al. 1995, Copple et al. 1987, Eisenberg et al. 1966, Hale et al. 1990, Handler 1972, Hebbeler 1985, Howard et al. 1967, Lazer et al. 1982, **Lee et al. 1988**, **Lee et al. 1990,** Malakoff

		et al. 1998, Oyemade et al. 1989, Ramey et al. 1991, **Schweinhart et al. 1993**, Schweinhart et al. 1986, Sklerov 1974, Sontag et al. 1969, Ziegler et al. 1982
Bakermans-Kraneburg et al. 2005	Not detailed	Armstrong et al. 2000, Barkauskas 1983, **Barnard et al. 1988**, **Barrera et al. 1986,** Bradley et al. 1994, Egeland & Erikson 1993, Egeland et al. 2000, **Gelfland et al. 1986, Hamilton 1972**, Haney & Klein 1993, Harrison & Twardosz 1986, **Heinicke et al. 1999,** Huzley & Warner 1993, **Infante-Rivard et al. 1989**, **Jacobson & Frye 1991,** Johnson et al. 1984, **Kitzman et al. 1997**, **Koniak-Griffen et al. 1995, Larson 1980, Luster et al. 1996, Metzl 1980**, **Olds et al. 1986**, **Palti et al. 1984**, **Parks 1983**, **Ross 1984**, Slater 1986, **St Pierre & Layzer 1999**, Vedder et al. 1995, **Wagner & Clayton 1999, Wasik et al. 1990**, **Zahr 2000**, **Zaslow & Eldred 1998**
Bakermans-Kraneburg et al. 2003	Not detailed	Anisfeld et al. 1990, Armstrong et al. 2000, Bakermans-Kraneburg et al. 1998, Bakermans-Kraneburg et al. 1998, **Barnard et al. 1988**, **Barnett et al. 1987**, 1987, 1986, **Barrera et al. 1986**, **Beckwith 1988**, Benoit et al. 2001, Black & Teti 1997, Brinker et al. 1994, Brophy 1997, Bustan & Sagi 1984, Cicchetti et al. 1999, Cohen et al. 1999, Constantino et al. 2001, Cooper & Murray 1997, 1997, 1997, Dickie & Gerber 1980, Egeland & Erickson 1993, England et al. 2000, **Field et al. 1980**, Fleming et al. 1992, Gelfland et al. 1986, Gowen & Nebrig 1997, **Hamilton 1972, Heinincke et al. 1999, Huxley & Warner 1993**, **Jacobson & Frye 1991**, Juffer et al. 1997, Juffer et al. 19997, Kiang et al. 1995, 1995, **Kitzman et al. 1997**, Koniak_Griffin et al. 1995, Krupa 1995, Lafreniere & Capuano 1997, Lambermon 1991, Lambermon & Van IJzendoorn 1989, 1989, 1989, **Larson 1980**, 1980, Leitch 1999, Letourneau 2000, **Lieberman et al. 1991, Luster et al. 1996, Lyons-Ruth et al. 1990**, **Madden et al. 1984,** Mahoney & Powell 1988, Meij 1992, 1992, **Metzl 1980,** 1980, Meyer et al. 1994, **Olds et al. 1986**, Onozawa et al. 2001, **Palti et al. 1984**, **Parks 1983,** 1984, Irksen-Walraven 1978, 1996, Robert-Tissot et al. 1996, 1996, Rosenboom 1994, **Ross 1984**, Sajaniemi et al. 2001, Scholz & Samuels 1992, Schuler et al. 2000, Seifer 1991, **Spiker et at. 1993**, **St Pierre & Layzer 1999**, Tessier et al. 1998, Van den Boom 1988, 1994, **Wagner & Clayton 1999**, 1999, 1999, 1999, **Wasik et al. 1990**, Weiner et al. 1994, Whitt & Casey 1982, Wijnroks 1994, **Zahr 2000**, 2000, **Zaslow & Eldred 1998**, Ziegenhain et al. 1999, Zeigenhain et al. 1990

Bayer et al. 2009	ABC Sequence, Brief Psychoeducational group based programme, Community Based Parenting Programme, Comprehensive Child Development Programme, Early Start Programme, Eastern Health Board Parent Training Programme, Family Check Up, Family Nurse Partnership, First Step to Success Programme, Group Cognitive Behaviour Therapy, Head Start, High/Scope Perry Preschool Programme, Home Based Nurse Intervention, Home Visiting Programme, Houston Parent-Child Development Programme, Incredible Years, Incredible Years, Infant Health and Development Programme, Mother Child Home Programme Nurse-home visitation programme, Parent Education Programme, Pathways to Prevention Programme, Positive Parenting and Sensitivity Discipline, Schools and Homes in Partnership, The Scott Programme, Toddlers Without Tears, Triple P Parenting Programme, Turkish Early Enrichment Programme	August et al. 2004, Barlow et al. 2007, Benal et al. 1980, Bradley et al. 2003, Butz et al. 2001, Conduct Problems Prevention Research Group 2002, Conduct Problems Prevention Group 1999, Cunningham et al. 1995, Daly et al. 1985, DeGarmo et al. 2004, Dishion et al. 2008, Fergusson et al. 2005, Fraser et al. 2000, , Gardner et al. 2007, Gardner et al. 2006, **Goodson et al. 2000**, Hawkins et al. 1991, Hendricks Brown et al. 2007, Hiscock et al. 2008, Homel et al. 2006, Ialongo et al. 2001, Ialongo et al. 1999, **Johnson & Walker 1987, Kagitcibasi et al. 2001**, Kennedy et al. 2009, Kent et al. 1976, van Lier et al. 2004, Markie-Dodds & Sanders 2006, Martin 1977, Martinez & Forgatch 2001, Mullin et al. 1994, **Olds et al. 1998**, Olds et al. 1999, Olds et al. 1999, Patterson et al. 2002, Rapeee et al. 2005, Reid & Borkowski 1987, Reid et al. 1999, Reid et al. 2001, Roberts et al. 2006**,** Sanders et al. 2007, Scarr 1988, **Schweinhart et al. 1993**, Scott 2005, Scott 1987, Smolkowski et al. 2005, Stewart-Brown et al. 2004, **Sutton 1992,** Turner & Sanders 2006, Tremblay et al. 1991, Turner et al. 2007, Verduyn et al. 2003, Webster-Stratton 1992, Walker et al. 2002, Webster-Straton 1998, Yu et al. 2006, van Zeiji et al. 2006.
Bernazzani et al. 2001	Elmira Project, Houston Parent-Child Development Center Program, Brusselton study, others not detailed	**Cullen 1976**, Johnson & Breckenridge 1982/**Johnson & Walker 1987, Kitzman et al. 1997,** McCarlton et al. 1997, **Olds et al. 1996, 1998**, **Scarr & McCartney 1988, St-Pierre & Layzer 1999**
Burgher, 2010	Albuquerque Child Development Centers, Arkansas Better Chance Pre-Kindergarten Program, Chicago longitudinal study, Delaware Early Childhood Longitudinal Study, Dutch Cohort Study of Primary Education (PRIMA), Early Childhood Development in Rural Vietnam Early Childhood Longitudinal Study, Early Years Transition and Special Education Needs (EYTSEN), Effective Preschool Provision in Northern Ireland, Effective Provision of Pre-School Education (EPPE), Georgia Early Childhood Development Study, Head Start, Miami School Readiness,	Boyle 2007, Boyle et al. 2003, Caille 2001, Driessen 2004, EPPE 2004, EPPE 2008, EPPE 2008, EPPNI 2004, Eytsen 2003, Faces 2006, Feinstein et al. 1999, Gamel-Cormick & Anderson 2002, Goodman & Sianesi 2005, Gormley et al. 2008, Henry et al. 2003, Hustedt et al. 2008, Landvoigt et al. 2007, Lanfranchi 2002, Lips & Yiptong-Avila 1999, Magnuson et al. 2004, **Osborn & Millbank 1987**, Peisner-Feinberg & Schaaf 2008, Reynolds et al. 2007, Reynolds et al. 2002, Spiess et al. 2003, US Department of Health and Human Services 2005, van Tuijl & Leseman 2007, Watanabe et al. 2005, Winsler et al. 2008, Zill et al. 2006.

	North Carolina More at Four Pre-Kindergarten Program, School Success of Immigrant Children, Panel, Socio-Economic Panel (SOEP), Universal Pre-Kindergarten	
Coren & Barow 2009	Not detailed	Black 1997, **Koniak-Griffin 1992**, Lagges 1999, Truss 1977
Doggett et al. 2005	Elements of Carolina preschool curriculum and Hawaii Early Learning Programme, Engaging Mums Program, Seattle Birth to 3 years program, Infant Health and Development Program	**Black 1994,** Butz 1998, Dakof 2003, Grant 1996, Quinlaven 2000, Schuler 2000
D'Onise et al. 2010	Better Beginnings Better Futures, Chicago Centers, Child Health and Education Study, Comprehensive Child Development Program, Day Care, Early Child Care Research Network, Early Childhood Longitudinal Study, Early Childhood Longitudinal Study, Early Training Project, Educational Day Care – Learning Games, Effective Provision of Preschool Education Project, Four Pre-school comparison study, Georgia Early Childhood Study, Head Start, Maritius Study Milwaukee project, North Carolina Smart Start, North Carolina, Perry Pre-school, Philadelphia study, Swedish Day Care Study, Syracuse Family Development Program, Turkish Early Enrichment Project	Andersson 1992, Aughinbaugh 2001, Bates et al. 1994, Belsky et al. 2007, **Beller 1983**, Bryant et al. 1993, Caputo 2004, Curirie & Thomas 1995, Frisvold 2007, **Garber 1988**, **Goodson et al. 2000**, Gietzen & Vermeesch 1980, **Gray et al. 1983**, Haskins 1985, Henry et al. 2004, Hickman 2006, **Kagitcibasi et al. 2001,** Kaminski et al. 2002, , Kropp et al. 2001, **Lally et al. 1987**, **Lally et al. 1988, Lee et al. 1990,** Loeb et al. 2005, Ludwig & Miller 2006, Magnuson et al. 2007, Miller & Bizzell 1984, **Osborn & Millbank 1987**, Peters et al. 2003, Roy 2003, Sammons et al. 2007, Raine et al. 2003. **Reynolds 1994**, **Reynolds et al. 1998**, **Reynolds et al. 2001**, **Schweinhart et al. 1997**, Weikart 1980, Weikart et al. 1978, Zhai 2008.
Kearney et al. 2000	Not detailed	**Barkauskas 1983**, **Barnard et al. 1988,** Barnard & Magyary 1988, **Beckwith 1988**, **Black 1994**, **Brooten 1986,** Erkel 1993, Furino 1985, **Gray 1979**, Greenberg 1994, **Gutelius 1977**, **Infante-Rivard 1989**, **Kang 1995**, **Kitzman 1997**, **Marcenko 1994**, Margolis 1996, **Olds 1986, 1988**, **1993**, **1994**, **1997**, **1998**, **Ross 1984**, Starn 1992, Stretcher 1989, **Thompson 1982**
Kendrick et al. 2000	Not detailed	Barker et al. 1988, **Barnard et al. 1988, Barrera et al. 1986**, **Beckwith 1988**, **Black et al. 1995**, **Black et al. 1994**, **Booth et al. 1989, Casey et al. 1994**, Davis and Spurr 1998, **Field et al. 1980, Field et al. 1982**, Gatuelius et al. 1977, Grantham-McGregor and Desiai 1975, **Hall 1980**, **Huxley & Warner 1993**, **Infante-Rivard et al. 1989**, Johnson et al. 1993, **Kitzman et al. 1997**, **Larson 1980**, Law-Harrion and Twardosz 1986, **Madden et al. 1984**, **Marcenko and Spence**, 1994, McNeil and Holland 1972,

		Olds 1994, **Olds et al 1986**,Osofsky et al 1988, **Resnick et al. 1988**, **Scarr & McCartney 1988**, Seeley et al. 1996,**Seitz et al. 1985**, Shapiro 1995, **Siegel et al. 1980**, **Stanwick et al. 1982**, **Sutton 1992, Thompson et al. 1992**, Wasik et al. 1989
Letourneau et al. 2004	Adolescent Parenting Program , Adolescent Mothering Behaviours, Adolescent Healthcare Program, Grads Program, Interaction coaching for adolescent parents and their infants, New Chance, Parent Education Program, Project SCAN, Project Redirection, SOLVE, Teen Parent Support Program, Teenage Parent Demonstration	Censullo 1994, Cooper et al. 1990, Delatte et al. 1985, Doetsch 1990, Ferguson 1987, Flynn 1999, Fulton & Murphy 1991, Griffin 1998, Kisker et al 1998, Koniak-Griffin et al. 1999, **Koniak-Griffin et al. 2000**, **Koniak-Griffin et al. 1992**, Marsh & Wirick 1991, Marshal et al. 1991, **O'Sullivan & Jacobsen 1992,** Quint, 1991, Quint et al. 1997, Roundtree et al. 1987, Reichman & McLanahan 2001, Schinke et al. 1986, Weinman et al. 1992,
Manning et al. 2010	Abecedarian Project, Direct Instruction Project Early Training Project, Elmira Prenatal/Early Infancy Project, Learning to Learn, Louisville Experiment, Mother-Child Home Program, Parent-Child Development Centers, Perry Preschool Program, Syracuse Family Research Development, Direct Instruction Project	**Berrueta-Clement et al. 1984**, Campbell & Ramey 1994, Campbell et al. 2002, **Eckenrode et al. 2000**, Gray & Klaus 1970, Iazar & Darlington 1982, Johnson 2006, Johnson & Blumenthal 2004, **Lally et al. 1988, Levenstein et al., 1998**, **Meyer 1984, Miller & Bizell 1983**, **Olds et al. 1998**, **Reynolds 1994**, **Reynolds et al. 2001**, **Sprigle & Schaefer 1985.**
MacLeod & Nelson, 2000	Not detailed	Affholter et al. 1983, Affleck et al. 1989, **Andrews et al. 1982**, **Barrera et al. 1986**, **Barth 1991,** Barth et al. 1983, **Black et al. 1995**, Boger et al. 1983, Bromwich & Parmelee 1979, Cameron et al. 1992, Cameron et al. 1997, **Caruso 1989**, Centre on Child Abuse Prevention 1996, Christopherson 1979, Feldman 1991, **Field et al. 1982**, Galano & Huntingdon 1997, Gaudin et al. 1997, Gaudin et al. 1990, **Gray et al. 1979**, **Gray et al. 1979**, Gray et al. 1980, Halper & Jones 1981, **Hardy & Strett 1989**, Jones 1985, **Kitzman et al. 1997**, **Larson 1980**, Laurendeau et al. 1991, **Lutzker et al. 1984**, Lyle et al. 1983, **Madden et al. 1984**, **Marcenko et al. 1996**, Minde et al. 1980, Mitchell et al. 1989, **Olds et al. 1986, Olds & Kormfmacher 1998,** Pearson et al. 1978, Pecora et al. 1991, Riley et al. 1996, Rodriguez et al. 1988, **Ross 1984**, Schuerman et al. 1994, **Siegel 1980, Slaughter 1983**, Szykul et al. 1985, Taylor & Beauchamp 1988, Walton 1997, Walton et al. 1993, Wesch & Lutzke 1991, Whiteman et al. 1987, Wolfe et al 1988, Wood et al. 1988, Yuan et al. 1990.
McNaughton, 2004	Not detailed	**Armstrong et al. 1999**, Barnes-Boyd 1995, **Black et al. 1994**, **Booth et al, 1989**, Braveman et al. 1996, Bryce et al. 1991, **Cappleman et al. 1982**, Chen 1993, **Hall 1980, Kitzman et al. 1997**, **Koniak-Griffin et al. 2000,** Norbeck et al. 1996, **Olds et al.**

		1986.
Nelson & Westhues, 2003	Better Beginnings Better Futures, Bright Start, Brookline Early Education Program, Brooklyn, Busselton Study, Carolina Abecedarian Project, Chicago Parent-child Centre, Comprehensive Child Development Program, Early Training Project, Five Site, HIPPY NY, HIPPY Arkansas, Houston Parent Child Development Center, Infant Health and Development, Institute for Developmental Studies, Learning to Learn, Louisville Experiment, Mother-child Home Program, New Haven, Optimum Growth Project, Parenting Intervention, Perry Preschool, Philadelphia Project, Portland and Trenton, Prenatal/Early Infancy Project (Elmira), Project CARE, Syracuse, University of Illinois, Vermont Mother-Infant Project, Washington, Ypsilati/Carnegie Infant Education Project	**Andrews et al. 1982**, **Baker et al. 1999**, Becker & Gersten, **Beller 1983**, **Caruso 1989**, **Cullen, 1976**, Deutsch et al. 1983, Gray & Claus 1970, Evans 1985, HDSO 1990, **Honig et al. 1982**, **Karnes et al. 1983, Lambie et al. 1974, Lee et al. 1988, Lee et al. 1990**, **Levenstein et al. 1998**, **Meyer 1984**, **Miller & Bizell 1983**, Miller & Dyer 1975, **Olds & Korfmacher 1998,** Peters et al. 2000, Pierson et al. 1983, **Ramey et al. 1988**, **Rau et al. 1988**, Reynolds 1994, **Schweinhart & Weikart 1997, Seitz et al. 1985**, **Sprigle & Schaefer 1985**, St Pierre et al. 1997, Tzuriel et al. 1992, Waskik et al. 1990, Webster-Stratton 1998,
Sharps et al. 2008	Colorado study, Elmira study, Families America Model Healthy Start Model, Healthy Memphis study, Training based on Hawaii Early Learning Program and Infant Health and Development Program	Cerny et al. 2001, Duggan et al. 2004, **Eckenrode et al. 2000**, Nair et al. 2003, **Olds et al. 2002, Olds et al. 2004, Olds et al. 2004,** Tandon et al. 2005.
Shaw et al. 2006	Community mother visits, Midwife visits, Nurse home visits, Postnatal workers, Support groups Telephone based support	**Armstrong et al. 1999**, Casey & Whitt 1980, Dennis 2003, Edwards 1997, Escobar et al. 2001, Gagnon et al. 2002, Gunn et al. 1998, Johnson et al. 1993, Lieu et al. 2000, MacArthur et al. 2002, Morrell et al. 2000, **O'Sullivan & Jacobsen 1992,** Priest et al. 2003, Quinlaven et al. 2003, Regan & Lydon-Rochelle 1995, Reid et al. 2002, Sewint et al. 1991, **Siegel et al. 1980**, Simons et al. 2001, Small et al. 2000, **Stanwick et al. 1982,** Steel O'Connor et al. 2003.
Sweet & Abblebaum, 2004	Carolina Early Intervention Program, Child and Family Resource Program, Comprehensive Child Development Program, Fair Start Program, Family Development Research Program, Family Orientated Home Visiting Program, Florida Parent Education and Infant Toddler Program, Gordon Parent Education Infant and Toddler Program, HIPPY, Home Instruction Program, Home Start, Infant Health and Development Program, Mother-Child Home Program, PACT, Parents as Teachers Program, Project CARE, Rural Alabama Pregnancy and Infant Health Project, Syracuse University Family Development, US West Parents as First Teachers, Vermont Program, Yale Child Welfare Research	Abt Associates 1974, Achenbach et al. 1990, Arocena et al. 1992, Baker et al. 1996, Baker et al. 1993, **Baker et al. 1999**, **Barkauskas et al. 1983**, Barnard et al. 1987, **Barrera et al. 1986,** Barrera et al. 1990, Bareera et al. 1986, Barrera et al. 1986, Barth 1989, **Barth 1991**, Barth 1988, Begg 1994, Black et al. 1996, **Black et al. 1994**, Booth et al. 1987, **Booth et al. 1989**, Bromwich 1976, Brooks-Gunn et al. 1971, Brooks-Gunn et al. 1992, Brooks-Gunn et al. 1993, Brooks-Gunn et al. 1993,**Brooks-Gunn et al. 1994, Brooten et al. 1986,** Burchinal et al. 1997, Burchinal et al. 1989, Burkett 1982, Cameto & Wagner 1995, Cameto & Wagner 1996, Campbell & Ramey 1995, **Cappleman et al. 1982**, **Casey et al. 1994**, Clarke et al. 1997,

	Program, Ypsilanti-Carnegie Infant Education Project,	Clinton 1992, Clinton et al. 1988, Clinton et al. 1988, Coleman et al. 1997, Culp et al. 1998, Currie et al. 1983, Dawson et al. 1991, Dawson et al. 1989, Deloria et al. 1974, Deloria et al. 1975, Drazen et al. 1995, Drazen et al. 1995, Drazen et al. 1996, Epstein et al. 1979, Fellenz et al. 1974, **Field et al. 1982,** Field et al.1974, Gelfand et al. 1996, Gomby et al. 1999, Gordon et al. 1977, **Gray et al. 1979**, Greenhouse & Iyenngar 1994, Gross 1990, **Gutelius et al. 1977**, Gutelius et al. 1972, Guterman 1999, **Hardy & Street 1989**, Hislop 1982, **Honig et al. 1982,** Horacek et al. 1987, Hornick & Clarke 1986, Hutcheson et al. 1997, **Huxley & Warner 1993,** Infant Health and Development Program 1990, **Jacobson & Frye 1991**, Jester & Guinagh 1983, **Kang et al. 1995, Karnes et al. 1983**, Karnes et al. 1986, Karnes et al. 1970, Karnes et al. 1970, Karnes et al. 1971, **Kitzman et al. 1997**, Lally 1977, Lally et al. 1989, Lally & Mangione (no date), **Lally et al. 1988, Lambie et al. 1974**, Layzer & Darlington 1982, Levenstein1970, Levenstein 1977, **Levenstein et al. 1998**, Levenstein et al. 1983, Levitt & Cohen 1975, Liaw et al. 1992, Liaw et al. 1992, **Lieberman et al. 1991,** Love et al. 1976, Love et al. 1976, Love et al. 1975, **Lutzker 1984,** Lutzker 1982, Lutzker & Rice 1984, Lutzker & Rice 1987, Lyons-Ruth et al. 1984, **Lyons-Ruth et al. 1990**, Lyons-Ruth et al. 1987, Madden et al. 1976, Mahoney et al., **Marcenko & Spence 1994,** Marcenko et al. 1996, Martin et al. 1990, McCarton et al. 1997, Mitchell et al. 1988, Nagy et al. 1992, Nauta et al. 1980, Nauta et al. 1988, Nauta et al. 1981, Nauta et al. 1981, Oda & Boyd 1988, Oda et al. 1985, **Olds 1990, Olds 1992, Olds 1995, Olds 1995, Olds 1998, Olds et al. 1998, Olds et al. 1997**, **Olds et al. 1986, Olds et al. 1998,** Olds et al. 1994, Olds et al. 1995, Olds et al. 1995, Olds et al. 1993, Olds et al. 1994, Olds et al. 1986, Olds et al. 1988, Olds et al. 1997, Owen & Mulvihill 1994, Pfannenstiel 1989, Pfannenstiel et al. 1991, Pfannenstiel et al. 1996, Pfannenstiel et al. 1989, Radin 1972, **Ramey et al. 1988**, Ramey et al. 1990, Ramey et al. 1985, Ramey et al. 1992, Ramey & Campbell 1984, Ramey et al. 1984, Raudenbush 1994, **Rauh et al. 1988,** Rauh 1982, Rescorla et al. 1982, Rescorla et al. 1981, **Resnick et al. 1988**, Roberts et al. 1996, **Ross 1984**, Scarr-Salapatek & Williams 1973, Scott 1974, Seitz & Apfel 1994, **Seitz et al. 1985**, Shadish & Haddock 1994, Shadish et al. 1977, **Slaughter 1983**,

		Solomon & Liefeld 1994, **Spiker 1993**, St Pierre et al. 1994**,** St Pierre et al. 1996, Stanford Research Institute 1995, **Thompson et al. 1982,** Traver et al. 1982, Trickett et al. 1982, Van Doorninck et al. 1990, Vines & Williams Burgess 1994, Wagner 1993, Wagner et al. 1996, **Wagner & Clayton 1999**, Wagner et al. 1997, Wagner & McElroy 1992, **Wasik et al. 1990**, Wheeden et al. 1997, Wheeler 1994, Winters-Smith & Larner 1992
Zoritch et al. 2009	Project CARE, Perry Pre-School, Milwaukee study, Infant Health and Development Program, Abecedarian Project	**Brooks-Gunnn 1994**, Campbell 1994, Deutsch 1966, **Garber 1988,** Gray 1970, Palmer 1972, **Schweinhart 1993**, **Wasik 1990**,

4.2 Quality of the evidence available

Details of the review paper quality assessments are shown in Table 4.3. Four papers were rated as high quality, ten review papers were rated as good quality, and six as poor quality. The main limitation across the set was regarding the use of methods to minimise reviewer bias, for example by using a second reviewer or other team members to check inclusions and exclusions and check extractions. This may have been carried out however, only some (for example Doggett et al. 2005, Kendrick et al. and MacLeod and Nelson) made reference to whether this was done or not. All but two review papers (Burgher, 2009 SR+; McNaughton, 2004 SR-) were undertaken by a research team with the potential for cross-checking to have been done (and the review process was often described as “we did”) however this was not clarified in the text. The Burgher paper and McNaughton paper were single authored with no reference to other members of a team.

The review papers varied in relation to the provision of study details. This impacted on the quality of the review papers and was a significant issue for this review of reviews, which was targeting a particular population of participants (at risk/vulnerable) and was also examining particular types of intervention (progressive and at home or education/day care). The majority of the included review papers were asking slightly different research questions to this review of reviews, with differing inclusion/exclusion criteria requiring studies to be well reported in order to ascertain which ones were of relevance.

Many of the programmes used with this population are delivered to groups of parents in a range of settings outside of the home or day care/education and were therefore outside the scope of this review of reviews. A large number of primary studies included in the reviews considered therefore related to group parenting interventions, universal interventions, or interventions for children with identified mental health or behaviour problems (for example ADHD or speech/language disorders). This required detailed reading of papers and selective extraction of data, and where papers reported only limited study details this could prove challenging. In the included review papers where possible, only data relating to interventions with at risk groups is reported and interventions delivered in home or educational settings. In addition to issues of identification of relevant data, it should be noted that some of the reviews, while being published in the last ten years include primary studies over forty years old.

Table 4.3. Quality assessment of included papers

Study	1	2	3	4	5	6	7	Rating
Anderson et al. 2004	✓	✓	Ns	✓	0	✓	✓	+
Bakermans-Kraneburg et al. 2005	✓	✓	Ns	0	✓	✓	✓	+
Bakermans-Kraneburg et al. 2003	0	✓	0	0	0	✓	✓	-
Bayer et al. 2009	✓	✓	Ns	✓	0	✓	✓	+
Bernazzani et al. 2001	✓	✓	Ns	✓	0	✓	✓	+
Burgher, 2010	✓	0	0	0	0	✓	✓	-
Coren & Barlow, 2009	✓	✓	✓	✓	✓	✓	✓	++
Doggett et al. 2005	✓	✓	✓	✓	✓	✓	✓	++
D'Onise et al. 2010	✓	✓	Ns	✓	✓	✓	✓	+
Kearney et al. 2000	✓	0	NS	✓	0	✓	✓	-
Kendrick et al. 2000	✓	✓	✓	✓	✓	✓	✓	++
Letourneau et al. 2004	✓	0	NS	✓	0	✓	0	-
MacLeod & Nelson, 2000	✓	✓	✓	✓	✓	✓	✓	++
Manning et al. 2010	✓	✓	Ns	✓	0	✓	✓	+
McNaughton, 2004	✓	0	0	0	✓	✓	0	-
Nelson & Westhues, 2003	✓	✓	✓	0	0	✓	✓	+
Sharps et al. 2008	✓	0	Ns	0	✓	✓	✓	-
Shaw et al. 2006	✓	0	Ns	✓	✓	✓	✓	+
Sweet & Appelbaum, 2004	✓	✓	✓	0	✓	✓	✓	+
Zoritch et al. 2009	✓	✓	Ns	✓	✓	✓	✓	+

√ = criterion met, Ns = not specified, 0= criterion not met

++ (High quality) All 7 of the criteria are met
+ (Good quality) 5 or 6 of the criteria are met
- (Poor quality) Less than 5 of the criteria are met

Assessment checklist

1. The study has a clear research question and defined inclusion/exclusion criteria
2. There is evidence of a substantial effort to identify all relevant research across several sources
3. Appropriate methods were used to minimise reviewer error or bias in study selection, extraction and quality appraisal
4. Validity of included studies was adequately assessed
5. Sufficient detail for individual studies is provided
6. The study findings are summarised using an appropriate method
7. The authors' conclusion is an accurate reflection of the evidence presented.

In regard to quality of the primary studies included in the review papers, only ten reviews described the use of formal critical appraisal tools. The meta-analysis carried out by Manning et al. (2010 SR+) reported sample sizes, follow up periods and study design however did not appear to perform an appraisal of quality beyond noting these characteristics. Sweet and Appelbaum (2004 SR+) and Bakermans-Kranenburg et al. (2003 SR- & 2005 SR+) similarly did not include quality appraisal in the meta-analysis. Nelson and Westhues (2003 SR+) described a methodology score of either 19 or less (low) or 20 or more (high) although provides no details regarding how this was calculated. It was reported that 38% of the included primary studies were rated as low and 62% as high. Sharps et al. (2008 SR-) described general limitations of the included primary studies regarding quality, such as the cross-sectional design of the majority, and the lack of reporting of intervention fidelity. Anderson et al. (2003) described the method of evaluation in a further paper. They classified papers in terms of design suitability and quality, using rating of greatest/moderate/least suitability and good/fair/limited quality. Ten of the 23 papers received the highest rating.

Bayer et al. (2009 SR+) divided the RCT primary papers into effective or ineffective and moderate or high risk of bias. There are no details of the criteria for making these judgements provided, although it was reported that the trials rated as having high risk of bias typically did not report correct concealed randomisation procedure and did not perform an intention to treat analysis. The authors of this review provided comments regarding quality for only the primary papers considered to report effective programmes. Burgher (2010 SR-) rated quality of study design as limited, fair or good. No details regarding how the rating was decided were provided, although it

seemed to relate to the statistical method used and whether effect sizes were calculated. For the primary studies of particular interest to this review of reviews, all but one was rated as good.

Shaw et al. (2006 SR+) used the Jadad Scale to assess methodological quality. This scale assigns a numerical score for randomisation, blinding and dropout, with 5 being the highest grade. The primary studies of particular interest to this review of reviews were all graded as 3. D'Onise et al. (2010 SR+) used the Effective Public Health Practice Project critical appraisal tool and rated eight of their primary studies as of higher quality, 15 of moderate quality and 14 of lower quality. They reported that the majority of studies with a lower quality rating were evaluations of the Head Start Program. The authors noted that intervention implementation was generally poorly reported across the primary papers. MacLeod and Nelson (2000 SR++) calculated a methodology score based on an existing framework (MacMillan et al. 1994). Studies could score up to 25 across a range of criteria. Details regarding the scores of individual primary studies, or comments regarding quality were not provided.

Kendrick et al. (2000 SR++) used the Reisch scale which scores between 0 and 1. The review reported that for just over half the included primary papers, three members of the research team independently scored the articles with a correlation co-efficient of 0.74. The primary studies were rated from 0.14 to 0.79 with 24 papers reporting studies with randomised allocation. The authors reported that many of the primary studies did not use blinded outcome assessment, and commented on the possibility of social desirability bias impacting on self-reported outcomes. Also, they highlighted the omission of subscale scores and other data in many of the papers limited their ability to perform detailed meta-analysis.

Bernazzani et al. (2001 SR+) described use of the Threats to Trial Integrity Score system, which assesses the quality of ten dimensions of a study on a 4-point scale of null or minimal risk, low risk, moderate risk, or high risk. The scores for each dimension are then combined in a 5-point Trial Quality Grade (1-5 stars). The authors of this review used the method to exclude studies achieving a grade of less than four stars.

Kearney et al. (2000 SR-) developed a quality evaluation tool which was based on the Cochrane Handbook. The authors of this review describe the study quality of primary papers as consistently weak in regard to the method of randomisation, also with substantial attrition. They report that theoretical grounding could usually be inferred and outcome measures were generally based on well-tested instruments. Letourneau et al. (2004 SR-) also used the Cochrane Collaboration criteria, dividing studies into categories of A (low risk of bias), B or C (high risk of bias). The authors described limitations of the primary papers as being: lack of control condition; lack of random assignment; unreliable measurement or inadequate assessment tools; and inconsistent dosage, duration and content of the intervention. Coren and Barlow (2009 SR++) was a Cochrane Collaboration review, using the Cochrane criteria. The authors commented on the use of self-report measures, lack of intention to treat analyses and small number of study participants. All studies were graded as "B" (uncertainty regarding whether allocation was adequately concealed). Zoritch et al. (2009 SR++) and Doggett et al. (2005 SR++) were also Cochrane Reviews and assessed trials on the extent to which bias may have affected the study results. Of the eight primary studies in the Zoritch et al. review two were graded A (adequate), five B (unclear) and one C (inadequate). The Doggett et al. review graded three of the primary studies as A and three as B.

4.3 Populations and settings

This review of reviews was focussed on interventions conducted in a home or early years setting, targeted towards vulnerable families with children aged below five. The term vulnerable was used by only one of the reviews (Kearney et al. 2000 SR+), the concept of being at-risk was referred to in all but four (Burgher et al. 2010 SR-, Letourneau et al. 2003, SR-; Nelson & Westhues 2003, SR+; MacLeod & Nelson 2003 SR++) of the included reviews.

Pregnant or recently pregnant women

Seven review papers reported interventions with post-partum women (within one year of birth). Shaw et al. (2006 SR+) identified 22 primary studies, of these 16 are described as with women who had uncomplicated pregnancies and were not identified as potentially at risk, however the other six were of potential relevance. One was delivered outside the home (O'Sullivan & Jacobsen, 1992), however the

other five are of relevance to this review with one intervention for women at risk for family dysfunction or child abuse (Armstrong et al. 1999), one with women at high risk for postnatal depression (Dennis et al. 2003), one in a deprived area of a city, (Johnson et al. 1993), one with teenage mothers aged under 18 (Quinlaven et al. 2003) and one for first time mothers considered to have additional needs (MacArthur et al. 2002). Outcomes from these particular primary studies are identifiable in the review findings. Two of the primary studies were carried out in Australia, one in Canada, one in the UK, and one in the Irish Republic.

The second review paper (Sharps et al. 2008 SR-) examined home visiting interventions for pregnant or postpartum women with the objective of identifying whether any contained specific intimate partner violence assessment or content. The review identified eight primary studies, all with “impoverished high risk samples of women” using criteria such as being aged under 19, unmarried or low SES, being on “food stamps and assistance”, eligible for Medicaid, African-American, income below the poverty line, or a high percentage of Black participants. One of the primary studies (Nair et al. 2003) reported a home based intervention for substance-abusing mothers. All the primary studies were carried out in the USA.

Doggett et al. (2005 SR++) examined interventions for pregnant or recently pregnant women with alcohol or drug problems. Their inclusion criteria encompassed trials where more than 50% of high risk women used drugs or alcohol. The criteria was self-reported drinking of an average of more than 80g per day or binge drinking. Drug problems were defined as using illicit drugs or women abusing prescribed drugs.

A fourth paper (McNaughton, 2004 SR-) reviewed nurse-delivered home interventions to any population, however reports that “the majority” were either pregnant or post-partum. The 13 primary studies included ten interventions of particular interest to this review of reviews. These populations included: adolescent mothers at risk for social and economic problems, unmarried women with less than 12 years of education or unemployed, ethnically diverse newborns, African-Americans eligible for Medicaid or single or unemployed, African Americans with high incidence of low birth weight, pregnant women drug users, women with risk of low

birth weight or birth complications, low income teenagers and “socially at risk women”. The review details that one of these primary studies was with Australian women (Armstrong et al. 1999). It is assumed that the others were from the USA.

A further review paper (Kearney et al. 2000 SR-) included papers on home nursing interventions for families of newborn infants. Fifteen of the included 20 studies targeted women with “maternal social risks”, three were aimed at parents of preterm infants and two targeted socially at risk families of preterm infants. The included studies were all carried out in the USA or Canada and were of randomised or quasi randomised design.

Two reviews considered adolescent women in particular. Letourneau et al. 2000 (SR-) examined 19 supportive interventions for adolescent mothers and their children in the post-partum period. The authors excluded studies where adolescent parents were included as part of larger study populations. The authors did not include the location of the studies so it is assumed that they all originate from the USA. No details regarding the primary paper study participants are provided. A second review specifically targeting adolescent parents (Coren & Barlow (2009 SR++) identified four RCT studies conducted in adolescents, all took place in the USA.

At risk/disadvantaged families

The other reviews included in this review of reviews encompassed wider populations of children/families at risk or termed disadvantaged. Bayer et al. (2009 SR+) examined the efficacy of preventive interventions for behavioural and emotional problems in children aged birth to eight years. The review included only randomised controlled trials, and both progressive and universal programmes and also all types of interventions including both group and home delivered. Of the eight pre-school programmes evaluated, three (reported in six primary papers) consisted of home visiting for at risk populations and are of relevance to this review of reviews. One programme is described as for first time mothers screened as single or low income (Nurse Home Visitation, Olds et al. 1995, 1998, 1999), and the other two are described as being “for at risk families” (Early Start Programme, Fergusson et al. 2005, 2006 and Family Check Up, Gardner et al. 2007, Dishion et al. 2008). Two of

the programmes were from the USA (Nurse Home Visitation and Family Check Up), with the other (Early Start Programme) from New Zealand.

Kendrick et al. (2000 SR++) examined 34 home visiting studies across varying populations of parents and children including teenage mothers, substance abusing mothers, pregnant and post partum women at risk of child abuse, socio-economically disadvantaged families, low birth weight babies, and infants with failure to thrive. Thirty two of the 34 primary studies could be considered to have been carried out in at risk populations. The greatest proportion of the studies were carried out in North America with four from the UK (Davis & Spurr 1998, Sutton 1992, Seeley et al. 1996, Barker et al. 1988/1994), one from Ireland (Johnson et al, 1993), one from Jamaica and one from Bermuda. The studies were all randomised controlled trials or quasi experimental studies including a control group. The 12 studies that were used for the meta-analysis included populations of ethnic minority teenage mothers, working class/low SES families, infants born within a specified timescale (1979-1981), children at risk of cognitive development problems, children with failure to thrive and cocaine/heroine users.

The Bernazzani et al (2001 SR+) review similarly included a diverse range of families focussing on children aged less than three years. Of the seven RCTs included in this work five are of relevance to this review. One was carried out with low birth weight premature infants (McCarton et al. 1997), one with women of low SES or unmarried under the age of 19, one with pregnant women who were mostly of African American origin (Kitzman et al. 1997), and the other two primary studies were with low income families (Johnson & Breckenridge 1982; St-Pierre & Layzer 1999). These five studies were all carried out in the USA.

A meta-analysis of 60 home visiting interventions in the USA (Sweet and Appelbaum, 2004 SR+) described 75% of the study families as being at “environmental risk”. The authors describe their definition as a generic measure of potential negative consequences for the child that may be attributable to the environment (including low income, welfare dependency, abuse, teenage parent, maternal depression). The populations in this review included low income families (55%), low birth weight child (15%), families at risk of child abuse or neglect (13.6%), teenage mothers (10.2%),

depressed mothers (5.1%) and families on public assistance (3.4%). It is reported that 75% of the included programmes began and ended between birth and three years of age.

The Bakermans-Kraneburg et al. 2003 (SR-) meta-analysis included sensitivity and attachment interventions across a broad range of parents of children less than 54 months of age. They described the included interventions as aiming to enhance positive parental behaviours. The samples were described as low SES, multi-risk, multi-problem, highly anxious mothers, preterm infants, feeding problems, adolescent mothers, depressed mothers, drug-using adolescent mothers, internationally adopted infants, anxious-withdrawn children, first time mothers, mothers with large and small social networks, clinically referred infants, Jewish mothers, middle and high SES. Of the 80 studies, 58 could be considered to be within the scope of this review of reviews. In a second paper (Bakermans-Kraneburg et al. 2005 (SR+) the age range was also under 54 months with studies not restricted to a specific population. The majority of the primary studies included however are described as in low SES populations (including pre-term infants and adolescent mothers).

Another meta-analysis (Manning et al. 2010 SR+) identified and evaluated eleven primary studies, also all based in the USA. The authors reported that the at-risk populations were mainly socio-economically disadvantaged, and were “people with poor levels of education, living in areas of high unemployment, living in poverty according to low income standards, and perhaps isolated as a result of ethnicity and language”. Over 70% of participants were from African-American backgrounds. This review of early developmental prevention programmes evaluated a wide variety of programmes including centre-based and home visits for children aged 0-5.

The Nelson and Westhues (2003) meta-analysis similarly included US interventions described as being for disadvantaged children and families. In this review 56% of the study participants were African-Americans and 65% of programmes included both parents. In terms of age of child at the start of the programme, 68% were between birth and three years and 32% were over four. A further meta-analysis (MacLeod & Nelson, 2000 SR++) included interventions to promote “family wellness” in children up to the age of 12 years. The review included all types of prevention programmes

(universal, selective and indicated) and also included a wider age range than the remit of this review of reviews. However, the authors reported that 75% of participants in the primary studies were of low socio-economic status and that 57% of primary studies were carried out in pre-natal or pre-school population therefore it was included in this review of reviews. The country of origin for the primary studies is not stated, it is assumed that as the study was funded in Canada, that they were North American.

The Zoritch et al. review (2009 SR+) included only studies based in the USA with a high proportion of African-American children under the age of 5. This review of day care programmes described six of the eight studies as targeting families of lower socio-economic status. One study was for infants born prematurely.

The studies in the D'Onise et al. (2010 SR+) review included programmes for children aged 0-9 years. While the review did not have the expressed purpose of evaluating interventions for at-risk children, it reported that the majority of the intervention groups (76%) were sampled from variously defined populations at risk of school failure. Indicators of being at risk used by the primary study papers reportedly were: low family income; income below the poverty line; and low maternal IQ. The high proportion of primary studies with at risk populations meets the inclusion criteria for this review. However, it should be noted that data from these is not distinguishable from the other non at risk populations in the review results. The authors reported that 30 of the included primary studies were conducted in the USA, two in the UK, one in Canada, one in Sweden, one in Turkey and one in Mauritius.

Anderson et al. (2003 SR+) reviewed 17 studies (in 23 reports) of centre-based interventions for children aged 3 to 5 described as being at risk due to family poverty. This review provides no other population details. The country of origin is not specified however it is assumed that they all originated from the USA.

Burgher (2010 SR–) examined the impact of early childhood education and care programmes on children's cognitive development. This review reported a wide range of programmes, predominantly in the USA, but also programmes in the UK, Germany, Netherlands, Switzerland and France. Of the 23 primary studies evaluated,

ten were categorised as having economically disadvantaged participants (Socio-Economic Panel, Dutch Public Preschool, Chicago, Early Childhood Longitudinal Study – Kindergarten, Carolina, Head Start Family and Child Experiences Study, Head Start Impact, Study Miami, National Child Development Study, Birth Cohort Study) seven partially having economically deprived participants (EPPE, EPPNI, Early Childhood Longitudinal, Albuquerque, Oklahoma, Georgia, National Longitudinal Study) with six reported as not analysed by economic disadvantage (Dutch Cohort of Primary Education, School Success of Immigrant Children, Delaware, Arkansas Better Chance, Delaware, Vietnam). Of these, the programmes which were universal rather than progressive interventions were outside the scope of this review of reviews. The paper identified five primary studies as "targeted", these were: Dutch Public Preschool Study, Chicago Early Childhood Longitudinal Study-Kindergarten, Head Start Family and Child Experiences Study, Head Start Impact Study, and the Miami School Readiness Project.

4.4 Interventions

The review papers considered a large group of interventions across a range of countries with the largest number evaluating programmes in the USA, and smaller numbers including work from outside the US including Canada, Europe and Australia/New Zealand.

Shaw et al. (2006 SR+) considered 22 primary papers reporting randomised controlled trials of postpartum support programs, reporting these by author and description rather than providing a name of the intervention. Programmes of relevance to the current review of reviews were: a nurse home visit intervention delivered weekly for six weeks to women who were at risk of family dysfunction in Australia. Also, a telephone-based peer support intervention delivered by a trained mother who had previously experienced post natal depression aimed at new mothers at risk of post natal depression. Another programme of relevance was an intervention whereby trained community mother visits once a month for a year for first time mothers in a deprived area of Dublin. Also, midwife visits and tailored care based on guidelines for post-partum disorders. Finally, a programme of education in family planning and health for under 17 year old women who were unwed and on Medicaid.

In a review of nurse home visiting (Kearney et al. 2000 SR 2000-) interventions (with families of newborns) in-home interventions were defined as those conducted by nurses for the purposes of promoting health and preventing illness. The review reported that nine programmes were initiated in pregnancy and 11 after birth. The duration of home visiting ranged from 3 months to 3 years. No further details of the interventions were provided apart from some studies were described as being delivered by public health nurses, some by research nurses, and some by an interdisciplinary team.

Doggett et al. (2005 SR++) included home visits that commenced during pregnancy and/or after birth in their review of interventions for mothers with drug or alcohol problems. They noted however that all the studies included were predominantly postpartum visits with only one primary study (Black, 1994) having any element of antenatal support and this was limited to two visits for two weeks before delivery. The interventions were delivered by a variety of professionals (community health nurses, nurses, trained specialists, nurse midwives,paraprofessional advocates) or lay African-American women. The interventions encompassed education and advice, encouraging self-empowerment, specific treatment programmes for drugs, parenting skills. One primary study included out of home group sessions for parents.

Letourneau et al. (2004 SR-) searched for primary studies reporting “support-education” interventions for post-partum adolescent mothers. While not providing a definition of this type of intervention the authors described adolescent mothers benefitting from family support, partner support and multiple sources of support with many intervention programmes in the USA combining social support from professionals with parenting education. They described that included interventions were designed to increase social support, contraceptive behaviour, employability, parental confidence and psychological wellbeing, parenting skills and knowledge, and or child health/development. This paper included both group and individual interventions with 12 of the 19 included interventions having an element of one-to-one support. These interventions varied in duration (from 4 weeks to 5 years) and in frequency (from 3 sessions a week to visits every 2 months or variable as needed/agreed). The number of sessions also varied significantly from one

programme that provided only two sessions, to another that provided weekly visits over 2.5 years.

A second review which targeted adolescent mothers (Coren & Barlow, 2009 SR++) identified four RCTs. Three of the primary studies related to individually-delivered interventions (Koniak-Griffin 1992, Black 1997, and Lagges & Gordon 1999) however the fourth primary paper (Truss 1977) evaluated a group intervention and was thus outside the remit of this review of reviews. One programme was delivered in school (Lagges & Gordon GRADS) and was also outside the remit of this review of reviews. The review paper described all the interventions as including video-tape modelling with feedback. One was described as being delivered by nurses, there are no details of the provider for the other programme of relevance.

Another review considering home visitation programmes in the neonatal period (Kendrick et al. 2000 SR++) included programmes delivered in a home setting by a range of providers described as: students; teachers; nurses; community women; social workers; lay home visitors; paraprofessionals and health visitors. The content of the interventions was diverse, for example child health teaching, use of toys to encourage child development, emotional support, toys and books provision, problem-solving, child development programmes, counselling, reduction of physical dangers, and solving housing/food issues. The number of visits and length of contact varied widely including weekly visits or monthly visits, ranging from a single visit to regular contact up to age 3. Sharps et al. (2008 SR-) provided brief details of the eight nurse home visit intervention papers they reviewed that were targeted at families with household incomes below the poverty line, or eligible for Medicaid/assistance, or substance abusers (one study). The programmes began with weekly or bi-weekly home visits, with a reduction in level of visits over time. The programmes lasted for between 1 and 5 years. The interventions were delivered by nurses, paraprofessionals, or lay visitors, with mention of specific training being provided for them in six of the eight studies.

The McNaughton (2004 SR-) review provided brief details regarding the problem addressed, sample, intervention, outcome measures and findings for the 13 nurse home visitation programmes included in this work. The length of the interventions for

the papers of interest to this review of review varied from 4 or 5 visits in total (Koniak-Griffin et al. 2000, Norbeck et al. 1996, Barnes-Boyd 1995) to 41 visits (Olds et al. 1986). The length of contact with families varied from 6 weeks to 24 months (not reported in four primary papers). Visits lasted between 1-2.5 hours (although this information was not provided in over half the primary papers).

A meta-analysis of 60 home visiting interventions (Sweet & Appelbaum, 2004 SR+) included only US programmes whose primary service delivery strategy was home visits. They described the programmes as including parenting education, social support, counselling, leadership and advocacy training, basic adult education, information on child development, shared activities, supply of materials, home-based education, case management and health and development screening. Most programmes were intended to last for between 3 and 36 months with 6.7% intended to last for 3-5 years and 5% having no defined boundary. The review authors reported that in many cases it was difficult to extract the average length of visits. Most programmes were delivered by employed professionals (75%), with 45% using paraprofessionals and only 8.3% using non professionals.

The Bakermans-Kraneburg et al. (2003 SR-) paper provided few details of interventions. The authors described that interventions aimed to enhance positive parental behaviours such as responsiveness, sensitivity or involvement. From the data analysis, 54 of the 81 interventions targeting sensitivity were delivered in the home. Figures were not provided for the interventions targeting attachment. The second Bakermans-Kraneburg meta-analysis (2005 SR+) described that all interventions were aimed at optimising parenting or parent-child interaction and that some included promotion of child cognitive development (although those solely focussing on cognitive development were excluded). This paper coded interventions in terms of the number of sessions and duration of the intervention, whether it was delivered by a professional or non-professional, whether it included cognitive components, whether it was delivered in the home, whether video feedback was used, and whether it targeted parental sensitivity or mental representation or provided social support. All programmes consisted of fewer than 17 sessions, with 5 entailing 0-4 sessions. Over half the programmes included cognitive components,

with over half starting between birth to six months, slightly less than half prenatally and six starting later than six months old.

The Bernazzani et al. (2001 SR++) review encompassed a diverse range of populations and provides only limited detail of the interventions. For the five studies of relevance to this review, one intervention began at age 12 months until the age of three, one commenced at 16 weeks gestation up to age two, one at gestational age 25 weeks up to age two, one began at seven weeks up to age three, and the final one was described as beginning before the age of one up to five years. The duration of the interventions thus ranged from two to six years. The authors reported that while all the studies of relevance involved intensive home visitation, half had additional components such as attending a child development centre or parent group.

The review papers describing day care/nursery-based interventions tended to provide programme names, with only limited details of content, the vast majority of this work is from the USA. Many of these programmes included multiple strands. The scope of this work was to evaluate day care/educational setting interventions in comparison to home based interventions, however many of the programmes were educational setting combined with home visits. Identifying specifically what the content of interventions was often proved challenging due to limited information.

Bayer et al. (2009 SR+) examined 58 primary papers evaluating programmes targeting behaviour or emotional development in infancy, toddler/preschool and school age from predominantly US but also some non-US countries. Only some of these programmes fulfil the criteria of this review of reviews, with many of them reportedly delivered in groups (for example High/Scope Perry Preschool, Parent Education Programme, Incredible Years, Scott Programme, Community-based parenting programme). Other programmes outside the inclusion criteria were Triple P (reportedly for children with identified behavioural problems), and Toddlers Without Tears (reportedly a universal intervention). Programmes which appeared to fulfil the inclusion criteria were: Nurse Home Visitation Programme (USA), Early Start Programme (New Zealand), Family Check Up (USA), Home-Based Nurse Intervention (USA), Positive Parenting and Sensitivity Discipline (Netherlands), and Head Start (USA). The review paper provided details of interventions only for

programmes that the authors considered were effective and applicable for an Australian context. No details of the other interventions considered and categorised as ineffective were provided.

Details of the programmes considered effective and of relevance to the current review are as follows. The Nurse Home Visitation programme was described as for first-time mothers screened as single or on low income, consisting of 60 visits of one and a half hours from pregnancy to two years of age. The visits were carried out by a nurse who had regular supervision. The Early Start programme was described as a 2-3 year weekly home visiting programme for at risk families. The programme was delivered by family support workers with 5 weeks training. The Family Check Up was a brief support programme offered in homes or community centres for at-risk families consisting of up to six 20-30 minute sessions delivered by psychologists. The staff received 40 hours of training and were regularly supervised. Other potentially relevant programmes were not described in the review paper.

MacLeod & Nelson (2000 SR++) reviewed interventions promoting family wellness in children up to the age of 12. The review included all types of preventive programmes and excluded therapy and treatment interventions, and also sexual abuse prevention programmes. The primary studies included used controlled designs to evaluate programmes described as home visiting, multi-component, social support/mutual aid, media, and parent training. Of these, 41% included home visiting, 20% were multi-component, 9% were social support, and 3% were media. The review also identified that the setting of the intervention was in the home for 68%. It was reported that 52% were selective and 39% were indicated. In terms of provider, 68% were described as formal (professionals or paraprofessionals), 4% were volunteers, 5% were mixed and 23% did not report this information. The length of the intervention was less than 6 months for 39%, 7-12 months for 20%, 13-18 months for 12%, 19-24 months for 11% and more than 60 months for 2%. The mean number of visits was 54, and the mean number of components was six.

Of the programmes reviewed by Burgher (2010 SR-) three evaluated early education services encompassing a range of institutions including nursery classes, playgroups, private day care nurseries, local authority day care nurseries, nursery schools and

integrated education and day care centres (Effective Provision of Pre-School Education (EPPE UK); Early Years Transition and Special Education Needs (EYTSEN UK); and Effective Pre-school Provision in Northern Ireland). These projects compared children who had attended preschool with children who had not received a formal education placement therefore were outside the scope of this review of reviews as examining universal rather than progressive interventions. The Socio-Economic Panel (Denmark) study reportedly targets all four and five year olds, analysing the outcomes following kindergarten attendance. This study therefore is also outside the scope of the current review of reviews as a universal intervention. The Dutch Cohort Study of Primary Education (Netherlands), School Success of Immigrant Children (Switzerland) and Panel (France) similarly appear to be universal interventions. The Early Childhood Longitudinal Study (USA) is a survey of types of early education and care examining non-parental centre based care with parental care rather than examining the effectiveness of an intervention. The paper identified only five studies as "targeted" – the Chicago Longitudinal Study, Head Start Family and Child Experience Survey (FACES), Head Start Impact Study, Dutch Public Preschool Study and Miami School Readiness Project.

The Chicago (USA) study was described as an intervention targeting low-income children, consisting of educational and family-support services for children between three and seven years. It encompasses structured and unstructured classroom learning experiences with parenting education, home visits and health and nutrition services. Head Start (USA) is a program for children living in poverty and is therefore of relevance to this review. It was described as a child development programme that has the overall goal of increasing school readiness, enrolling primarily three and four year olds. The Dutch Public Preschool Study (Netherlands) was described as a wide variety of early education and care programmes designed to stimulate socio-emotional and cognitive development. Various institutions target different age groups between birth and eight years, with most programmes available on a part-time basis. The vast majority of programmes were described as adopting an eclectic, practical pedagogical approach. The Miami School Readiness Project was described as a study assessing the extent to which ethnically diverse children from low income households made school readiness gains in their pre-kindergarten years. No detail of the intervention was provided.

The review paper by D'Onise et al. (2010 SR+) provided minimal details of the interventions apart from intervention age, and categorisation of whether it is a preschool intervention, a health service intervention, a social service intervention, a parenting programme, a home visiting programme, or a kindergarten programme. Interventions in the USA which appeared to be of relevance to this review were classified by the paper as follows: Perry Pre-school (preschool, home visiting); Chicago (preschool, kindergarten home visits, health service, social service); Head Start (preschool, health service, social service, parent programme); Comprehensive Child Development Programme (preschool home visits, parent programme, health service, social service): Georgia Early Childhood Study (preschool home care); Milwaukee project (centre based health service, parent programme, home visits); Early Training Project (preschool, home visits); Philadelphia study (health service, social service, home visits); Syracuse Family Development Research (day care, home visits, parent programme, health service, social service).

Categories for the Non USA studies which appeared to be of relevance were: Better Beginnings (Canada education and community development, home visits, nutrition); Swedish Day Care (Sweden day centres); Turkish Early Enrichment Project (Turkey preschool, home visits, parent programme). This review paper while reporting a high percentage (76%) of study populations were children at risk of school failure, does not distinguish these in the findings. The lack of reporting of the content of the interventions also resulted in findings across all these programmes being examined.

Manning et al. (2010 SR+) reviewed: The Abecederian Project; Parent-child Development Centres; Chicago; Early Training Project; Early Infancy Project; Learning to Learn; Louisville experiment; Mother Child Program; Perry Preschool Program; Syracuse Family Research Development; and the Direct Institution Project, all in the USA. No details of these USA interventions are provided beyond describing them as encompassing structured pre-school programmes, centre-based developmental day care, home visitation, family support services and parental education delivered to at risk populations. It was reported that 45% of studies incorporated a home visitation component and family support component, and 64% contained a structured preschool programme.

Zoritch et al. (2009 SR+) reviewed papers from the Milwaukee study, the Perry Pre-School Program, the Infant Health and Development Program, Project CARE, and the Carolina Abecedarian Project. One paper was described as a parent training project (Gray, 1970), another as carried out by the Institute for Developmental Studies (Deutsch 1966). One paper appeared to be outside the remit of this review as it encompassed one to one intervention in a centre (Palmer 1972). The population of this study (mixed socio-economic status) also renders it outside the remit.

The Infant Health and Development Program (Brooks-Gun 1994) was described as home visits in the first year combined with day care from 1 to 3 years of age. The Carolina Abecederian Project (Campbell 1994) was described as day care for 5 years (up to 8 years for some) combined with a home-school resource teacher when children entered school. The Institute for Developmental Studies intervention (Deutsch, 1966) was described as centre-base with small groups of children emphasising language development. The Milwaukee project (Garber 1988) encompassed home visits for four months followed by a centre-based training programme for six years. The Parent Training Project (Gray 1970) entailed summer schools and home visits over two or three years. The Perry Pre-school Project was centre based (12.5 hours per week) combined with home visits (1.5 hours per week) over two years for the majority of children. Project CARE was described as day care and home visits starting from six week of age (followed up at six months). All these programmes were carried out in the USA, and while being identified as answering the research question regarding the effectiveness of day care, all but one (Deutsch 1966) seemed to have substantial elements of home visiting in addition to the day care provision.

The Nelson and Westhues (2003 SR+) meta-analysis encompassed many of the studies included in the previous three reviews outlined (D'Onise et al, Manning et al. Zoritch et al.) This review considered: Better Beginnings Better Futures, Bright Start, Brookline Early Education Program, Brooklyn, Busselton Study, Carolina Abecedarian Project, Chicago Parent-child Centre, Comprehensive Child Development Program, Early Training Project, Five Site, HIPPY NY, HIPPY Arkansas, Houston Parent Child Development Centre, Infant Health and Development, Institute for Developmental Studies, Learning to Learn, Louisville

Experiment, Mother-child Home Program, New Haven, Optimum Growth Project, Parenting Intervention, Perry Preschool, Philadelphia Project, Portland and Trenton, Prenatal/Early Infancy Project (Elmira), Project CARE, Syracuse, University of Illinois, Vermont Mother-Infant Project, Washington, and the Ypsilati/Carnegie Infant Education Project.

The review reported that 71% included home visiting, 68% included parent training, 47% included social support, 68% included preschool (in a preschool centre), 12% included family planning, 53% included a parent-child interaction programme, and 44% included group activities. Twenty one percent of programmes had only one or two elements, and 79% had three or more. The length of intervention was more than 52 weeks for 65% of the interventions with the child, and more than 60 weeks of intervention with the parents for 47%. Half the programmes had more than 12 sessions with parents and half fewer. Just over half (56%) had more than 300 sessions with the child.

Anderson et al. (2003 SR+) reviewed programmes which are centre-based (defined as being provided in an alternative physical and social environment to the home. While intending to include only centre-based interventions, the authors commented that “a few program(me)s also included a home visitation component”. The programmes are reported as operating full or half days for nine to 12 months of the year. The review included Head Start, Carolina Abecedarian Project, High/Scope Preschool, Smart Start, South Carolina preschool, Perry Preschool Program, Philadelphia Head Start and Get Set.

4.5 Outcomes

The research questions of the included review papers varied (see Table 4.4), with the study question influencing the type of outcomes that authors searched for and reported. The included reviews examined outcomes which the authors described variously as relating to maternal psychological health, child health, and non-health such as child development assessments. One review paper considered primarily cognitive development outcomes (Burgher, 2009 SR-). Only one of the reviews (Manning et al. 2010 SR+) used the terminology of the review of reviews scope, (social and emotional development), and this was only one element of a range of

outcomes included in this paper. Therefore measures which can be considered a proxy of these elements were considered across the included work.

Review papers which reported solely physical health outcomes were outside the scope of this review of reviews which was focussed on vulnerable children's social and emotional development. However, authors' definition of outcome targets could be unclear. The D'Onise et al. (2010 SR+) review paper for example, while describing "health outcomes" reported study data on social competence, delinquency, behaviour, and self esteem. Another review paper (Sharps et al. 2008 SR-) also described health outcomes for mother or child as the target, however other (non-health) measured outcomes are reported.

Table 4.4. Study research questions

Authors	Review research question	Main outcomes considered (as described)
Anderson et al. 2003	What is the effectiveness of early childhood development programmes?	Cognitive outcomes, social outcomes, child health screening, family outcomes
Bakermans-Kranenburg et al. 2005	Are preventive early childhood interventions effective in improving home environments?	HOME scores
Bakermans-Kranenburg et al. 2003	Are early prevention programmes effective in enhancing parental sensitivity and infant attachment?	Observational measures of parental sensitivity or infant attachment security
Bayer et al. 2009	What preventive interventions for children's mental health would work in an Australian context?	Behaviour or emotional problems
Bernazzani et al. 2001	What is the impact of early parenting and home visitation programmes on childhood behaviour problems and delinquency?	Behaviour problems
Burgher, 2009	How does early childcare and education affect cognitive development?	Cognitive development

Coren & Barlow, 2009	How effective are individual and group based parenting programmes for improving psychosocial outcomes?	Maternal psychosocial health, infant health and development
Doggett et al. 2005	What is the effect of home visits during pregnancy and/or after birth for pregnant women with a drug or alcohol problem?	Drug and alcohol use, infant physical health, infant development, home environment, use of health services, maternal self esteem, maternal education
D'Onise et al. 2010	Can pre-school improve child health outcomes?	Physical health, social, mental health
Kearney et al. 2000	What is the effect of nurse home visiting on vulnerable families?	Maternal health and life course, parenting attitudes and behaviour, child health and development, use of well-child health care
Kendrick et al. 2000	Does home visiting improve parenting or the home environment?	Measures of parenting and the home environment
Letourneau et al. 2004	What are the support needs and available intervention studies for adolescent mothers and their children?	Quantity and quality of social support, contraceptive knowledge and behaviour, employability, parental confidence and psychological wellbeing, parenting skills and knowledge, child health and development
MacLeod & Nelson, 2000	What is the effectiveness of programmes promoting family wellness and preventing maltreatment?	Placement rates, maltreatment, parent attitude, parent behaviour, HOME
Manning et al. 2010	What are the non-health outcomes in adolescence of early developmental prevention programs in at risk populations?	Cognitive development, educational success, social emotional development, deviance, social participation, criminal justice, family wellbeing
McNaughton, 2004	How effective are nurse home visits for maternal-child clients?	Maternal outcomes included – education, postnatal depression, use of drugs, use of services, subsequent

		pregnancies Child outcomes included – birth weight, parent-child interaction, social competence, child injuries, infant development, health problems, home environment
Nelson & Westhues, 2003	How effective are pre-school prevention programmes for disadvantaged children and families?	Indicators of cognitive development, social-emotional behaviour, parent-family wellness
Sharps et al. 2008	How effective are post-partum programmes with intimate partner violence content on maternal and child health outcomes?	Child abuse potential, reports of physical or domestic abuse
Shaw et al. 2006	How effective is post-partum support on improving parenting, mental health, quality of life and physical health?	Parent-child interaction and relationship, stress, postnatal depression, home environment, health
Sweet & Appelbaum, 2004	Is home visiting an effective strategy?	Child outcomes – cognitive, socio-emotional, prevention of child abuse (actual abuse, potential for abuse such as accidents or injuries and parent stress) Parent outcomes – enhanced childrearing, enhancement of maternal life course
Zoritch et al. 2009	What are the effects of out of home day care for pre-school children	Educational outcomes, health and welfare, maternal effects

The seven review papers reporting post-partum programmes (Shaw et al. 2006 SR+; Sharps et al. 2008 SR-; McNaughton 2004 SR-; Kearney et al. 2000 SR-; Letourneau et al. 2004 SR-; Doggett et al. 2005 SR++; Coren & Barlow 2009 SR++) used wide ranging outcome measures. Shaw et al. (2006 SR+), reported that eight of their included primary studies used a variety of measurement instruments to assess parenting knowledge, attitudes and skills including a self-response questionnaire on

infant care knowledge, an attachment inventory (no further details), child abuse and neglect reports (no further details), the Home Observation for Measurement of the Environment (HOME inventory), and the Parenting Stress Index. Thirteen primary studies reportedly used a validated measure of depression or anxiety such as the Edinburgh Postnatal Depression Scale or the Centre for Epidemiological Study of Depression Scale. One primary study used the State-Trait Anxiety Inventory and five primary studies examined maternal quality of life using the SF-36. Four primary papers reportedly measured self-reported maternal satisfaction.

The primary studies in the McNaughton (2004 SR-) review of interventions during pregnancy and the post-partum period similarly used a range of outcomes including self-reported questionnaires, medical records, child development assessment (Bayley Scales of Infant Development), and other scales including the Edinburgh Post Natal Depression Scale, Nursing Child Assessment Teaching Scale, and HOME. Kearney et al. (2000 SR-) also considered a wide range of outcomes relating to maternal and life course, parenting attitudes and behaviours, child health and development. The most common measure of parenting was the HOME scale (used in ten of the 20 studies), the Nurse Child Assessment Feeding Scale or Nursing Child Assessment Teaching Scale were used in six studies. Twelve primary studies used the Bayley Scales of Infant Development. In addition to these, health records and maternal reports were also used.

Another review of studies in post-partum women (Sharps et al. 2008 SR-) aimed to examine any impact of programmes on intimate partner violence (IPV) and thus used measures of IPV such as the Conflict Tactics Scale and self reporting of the occurrence of violence. Whilst the review outlined that one of the inclusion criteria had been having quantitative data describing health outcomes for women and their infants, the only other measure reported in the review was the Child Abuse Potential Scale. The Doggett et al. review (2005 SR++) concerned mothers with drug or alcohol problems thus included outcome measures relating to this amongst a wide range of other outcomes relating to infant health and development, use of services and measures of home environment and social circumstances. The main maternal outcomes were self-confidence/self-esteem and continued education.

Letourneau et al. (2004 SR-) reviewed support-education interventions for post-partum adolescent mothers. They examined outcomes relating to the quantity and quality of social support, contraceptive knowledge and behaviour, employability, parental confidence and psychological wellbeing, parenting skills and knowledge, and child health and development. The one study specifically measuring changes in social support was delivered in a group and is thus outside the scope of this review of reviews.

The other review of interventions for adolescent mothers (Coren & Barlow 2009 SR++) included outcomes relating to maternal psychosocial health (for example anxiety and stress or depression, self-esteem, knowledge or parenting or child development). The included primary studies used the Nursing Child Assessment Teaching Scale, Bzoch Scale, and Utah Test to measure child outcomes. The Parental Attitudes Questionnaire, the Parenting Knowledge Test, the About your Childs Eating Questionnaire, the Parent-Child Early Relational Assessment, the Semantic Differentials Measure, Pharis Self-confidence Scale, Caldwell Home Inventory, and the Nursing Child Assessment Teaching Scale were used to evaluate parent outcomes.

Three review papers considered measures of parenting and the home environment in particular (Kendrick et al. 2000 SR++; Bakermans-Kraneburg et al. 2005 SR+; Bakermans-Kraneburg et al. 2003 SR-). The first of these (Kendrick et al.) reported that the most common standard measure used was the Home Observation for Measurement of the Environment Inventory (HOME). Of the 34 primary studies, 17 reported HOME scores, 27 reported other measures of parenting, and 10 reported both HOME and other measures of parenting. The review used the studies reporting HOME scores only in the meta-analysis. The studies which were not included in the meta-analysis reported a wide range of parenting measures including assessments of interaction between parent and child, parental attitudes and actions, and parents' developmental expectations of their child.

The second paper focussing on parenting (positive parenting behaviours) Bakermans-Kraneburg et al. (2003 SR-) included only papers using observational measures. They included studies reporting data from the HOME measure, in

particular the observation scale for maternal sensitivity, and also the Ainsworth sensitivity rating scale in their meta-analysis. In addition they considered interventions reporting the Nursing child Assessment Teaching Scale or the Erickson rating scales for maternal sensitivity and supportiveness, and interventions using other measures of parental behaviour "clearly related to sensitivity". The second Bakermans-Kraneburg (2005 SR-) meta-analysis only included papers using the HOME measure.

A review of home visiting (Sweet & Appelbaum, 2004 SR+) divided child outcomes into cognitive, socio-emotional, and prevention of child abuse. Child abuse prevention was further divided into measures of actual abuse, potential abuse (using measures such as number of hospital visits or accidents) and parent stress (inclusion described by the authors as because higher levels of stress related to parenting may result in child abuse). Maternal outcomes were: enhanced childrearing (including parent behaviours and attitudes); and maternal life course outcomes (such as education, employment and reliance on welfare). A meta-analysis of interventions for family wellness and prevention of child maltreatment (MacLeod & Nelson 2000 SR++) outlined that outcomes measured were: placement rates; maltreatment; parent attitude; parent behaviour and HOME. This paper provided no further information regarding these outcomes however and which tools (other than the HOME measure) were used by the primary studies to assess these elements.

Bernazzani et al. (2001 SR+) focussed on behaviour outcomes following early intervention programmes that target parenting skills. Of the five primary studies relevant to this review of reviews, outcomes related to maternal report or teacher report of behaviour, the Child Behavior Checklist, Childhood Personality Scale, Infant Behavior Record, and other reports such as police incidents.

Bayer et al. (2009 SR+) reviewed programmes for children's mental health. As described earlier, this review paper provided detail on only the programmes that the authors judged to be effective. General areas of positive outcomes were reported, however no information regarding the measurement instruments was provided. The general areas described in the studies of relevance to this review of reviews were: child abuse; mother successive pregnancies; adolescent delinquency; work force

involvement; child internalising problems; child cognitive development and behaviour; positive and non-punitive parenting; parent report of severe assault; improved preschool attendance; child externalising problems; maternal health; family functioning and economics; proactive and positive parenting skills and child disruptive behaviour.

D'Onise et al. (2010 SR+), considered mental health, social outcomes and physical outcomes. The data relating to physical outcomes will not be reported in detail as it is outside the scope of the review of reviews. The full range of outcomes considered in this review paper were: social competence; delinquency; obesity; mortality; injury; health service use; behaviour; immunisation; growth; asthma; general health; fitness; depression; mastery; self esteem and mental health.

Zoritch et al. (2009 SR+) evaluated eight day care programmes from the USA. They reported "educational outcome" measures (such as IQ, school success, retention in grade, reading, writing, mathematics, behavioural measures, self esteem and career aspirations and mother-child interaction). A second category of measures was "health and welfare" including hospital admission, injuries, otitis media, speech and language development, teenage pregnancy, employment, marriage, criminal behaviour, welfare assistance. The third category was "maternal effects" encompassing maternal employment and education and family income.

Anderson et al. (2003 SR+) also evaluated day care (centre-based) interventions in the USA for children from families in poverty. Four categories of outcomes were evaluated – cognitive, social, child health and family. Cognitive outcomes included IQ scores, grade retention, academic achievement scores and school readiness test scores. Social outcomes included behavioural assessments of social interaction, teen pregnancy, high school dropout, use of social services, delinquency and arrests. Child health included receipt of screening tests and dental examination within the previous year. Family outcomes included parental education, employment, and receipt of welfare.

Manning et al. (2010 SR+) conducted a meta-analysis of "non-health outcomes" using data from interventions that had follow up data in adolescence. All the

programmes were from the USA. The outcomes examined in this review paper were: academic achievement; cognitive; reading grade; maths grade; school success; high school graduation; adult employment; socio-economic success; teen pregnancy reduction; social responsibility; family functioning; child behaviour problems; social-emotional; school drop-out; cognitive and language development; personal behaviour; criminal and antisocial behaviour; academic and vocational training; and annual income.

The meta-analysis by Nelson and Westhues (2003 SR+) grouped effect sizes into the areas of cognitive impacts, social-emotional impacts and parent-family wellness impacts. No details were provided in this paper of assessments within each category.

4.6 Effectiveness of the interventions

Review papers have been categorised according to the type of intervention/s included. Seven review papers examined primary studies evaluating interventions during pregnancy and the post-partum period. Seven review papers reported interventions delivered in the home for other populations (in addition to or not including pregnancy/post-partum). Four review papers examined interventions described as educational or day care or centre-based education and two review papers were meta-analyses of outcomes in adolescence from a wide range of programmes.

Home visit interventions delivered during pregnancy or post-partum

Seven reviews reported primary studies which provided an intervention directed at improving outcomes during pregnancy or immediately post-partum (Sharps et al. 2008, Shaw et al. 2006, McNaughton 2004, Kearney et al. 2000, Letourneau et al. 2004, Doggett et al. 2005, Coren & Barlow 2009).

Sharps et al. (2008 SR-) reviewed eight home-based intervention primary studies including intimate partner violence content. Four of the primary papers reported data from three randomised controlled trials by Olds et al. in populations of women eligible for Medicaid, below the poverty level or high percentage ethnic minority (Colorado study, Memphis study, Elmira study). Two of the primary papers reported original

trial data and two follow up data (one at two years and one at fifteen years post-trial). Follow-up data from the Colorado study indicated that a para-professional intervention had no significant effect on levels of intimate partner violence compared to the control group (no figures provided). The intervention delivered by nurses indicated a significant reduction in IPV compared to the control group (odds ratio 0.47 p=0.05) for reported IPV in the previous six months. The odds ratio for IPV reported since the age of two was however not significant (odds ratio 0.6 p=0.09). The reporting of outcomes for the other three primary studies is unclear with associations between IPV and intervention described rather intervention effectiveness.

Of the other four primary studies in the Sharps et al. review, one reported no significant difference (Nair et al. 2003, no data provided) between intervention and control groups following a lay visitor delivered intervention (based on the Infant Health and Development Program) for substance abusing mothers using a measure of mother's environmental risk - "cumulative risk index" (no other details). A second primary study (Cerney et al. 2001) reported a decline in the Child Abuse Potential measure (no data provided) following a nurse delivered intervention for military families at risk of child abuse. The third (Duggan et al. 2004) reported no significant differences (no data provided) in mother or child outcomes (no details of these) following a para-professional delivered intervention (the Healthy Start Program) for families with household income below the poverty level. The final primary study (Tandon et al. 2005) examined self-reported outcomes for the staff delivering the intervention rather than the effectiveness of the Healthy Start program.

The authors of the review concluded that these programmes were likely to improve pregnancy and infant outcomes. However, the data provided is extremely limited, with only one primary study of the eight reported in depth, and this data indicated that the intervention was effective when delivered by nurses but not para-professionals and only over a six month follow up. Of the other primary studies it was reported that one had a significant intervention effect and two found no significant difference between intervention and control groups. No data was provided to substantiate these conclusions however.

A review of home visit interventions for pregnant or recently pregnant women with drug or alcohol problems (Doggett et al. 2005 SR++) concluded that there was no significant difference in continued illicit drug use following intervention (2 primary studies RR 0.95 CI=0.75-1.2), no significant difference in continued alcohol use (2 sudies RR 1.08 CI =0.83-1.41), the Bayley Mental Development Index (3 studies weighted mean difference 2.89 CI=-1.17-6.95) or Bayley Psychomotor Index (WMD 3.14 CI=-0.03-6.32) or any other outcomes reported by a single study.

Shaw et al. (2006 SR+) reported 22 primary randomised controlled trials of post partum support interventions. Of these, five studies were in populations which could be described as vulnerable. One primary study (Armstrong et al. 1999) conducted in women at risk of family dysfunction or child abuse in Australia concluded that nurse home visits improved parent-child interaction and increased women's satisfaction with the service (no data provided). Following the intervention there was a significant reduction in score on the Edinburgh Postnatal Depression Scale for first-time mothers with a score greater than 12 (difference -2.23 CI -3.72 to -0.74 p=0.004).

A second primary study (in Canada, Dennis, 2003) in new mothers at high risk for postnatal depression also reported a positive outcome following a telephone based peer support intervention, with fewer women in the intervention group having Edinburgh Postnatal Depression Scale scores greater than 12 at eight weeks (15% versus 52.4%. odds ratio 6.23, CI 1.4-27.84 p=0.01). The other primary studies also described improvements following intervention. One (Johnson et al. 1993) is described as finding improved maternal self-esteem (fatigue, feeling miserable and desire to stay indoors) in women in a deprived area of Dublin following a public health nurse support intervention (no data provided). The other (Quinlivan et al. 2003, Australia), improved contraceptive knowledge and use in teenage mothers following home visits by nurse-midwives (reduction 12% versus 28.3% in repeat unplanned pregnancies p=0.003 and increased contraceptive use RR 1.35 CI 1.09 to 1.68 p=0.007).

The final primary study which could be considered to have been conducted in a vulnerable population (MacArthur et al. 2002) was provided to first-time mothers who were identified as having additional needs by midwives. The study found quality of

life improvements in the mental health component of the SF36 (difference between intervention and controls 2.96 CI 1.16 to 4.77 p=0.002). There was also a reduction in the number of women with an Edinburgh Postnatal Depression Score of 13 or greater (21.25 versus 14.39% CI 11.99 to -1.71 p=0.010). The review authors concluded that there is some evidence that high-risk populations may benefit from post-partum support.

The McNaughton et al. review of pregnancy and post-partum interventions (SR-) included ten primary studies in populations described as at risk. This review paper reported primary study findings only as a positive or negative for each outcome measure, rather than providing specific details. The primary papers reported a statistically significant treatment effect only in regard to educational outcomes for mother (in the Koniak-Griffin et al. paper) and a statistically significant lack of treatment effect only in regard to use of prenatal care (in the Koniak-Griffin et al. paper) The review outlined a range of positive effects relating to physical health of the mother and child, mental health of the mother, improved parent-child interaction and home environment. It concluded that about half the studies were successful in achieving desired outcomes thus home-visiting can address a range of client problems. However, in view of only one primary study reporting statistically significant findings this conclusion may overstate the evidence.

The Kearney review (2000 SR-) of nurse home visits to vulnerable families with newborn infants examined 20 studies in the USA and Canada. The review reported that mothers' psychological status was positively affected in three of four studies (Barnard et al. 1988, Beckwith 1988, Marcenko & Spence 1994 - no data provided) and not improved in one (Kitzman et al. 1997). Perceived social support was improved in two studies and in subgroups in a third (no data provided). Repeat pregnancies and births were reduced in one of three programmes (little data provided), and community living skills were not improved in two studies in which they were measured. Rates of employment or return to school were not improved in one study (Kitzman et al. 1997), but were improved in a subgroup of low-income unmarried mothers (Olds et al. 1988). In regard to HOME scores, the global score improved in only four of the ten reports, with also mixed findings in regard to change in subset scores. In regard to parent-child interaction four studies reported positive

effects of the nine measuring this aspect, and of 12 teams using the Bayley Scales, four reported positive intervention effects. The review authors concluded that nurse home visiting had a more consistent effect on maternal wellbeing, interaction and parenting than on child health or healthcare use. They described child development gains as mainly being limited to preterm infants.

Letourneau et al. (2004 SR-) reported 19 support-education intervention studies for post-partum adolescent mothers in the USA. The three interventions assessing contraceptive knowledge and behaviour found positive changes for the intervention group (Marsh & Wirick 1991 gains in contraceptive knowledge and behaviour, Weinman et al. 1992 positive change in attitudes to sexual intercourse, O'Sullivan & Jacobsen 1992 decrease in repeat pregnancies 12% versus 28%, no other details of changes reported). Three interventions assessing self-confidence and self-esteem also reported positive outcomes (significant gains in self-confidence and self-esteem Censullo 1994, significant increases in self-esteem Marshall et al. 1991, significant difference in level of coping, loneliness and parenting confidence at 3 month follow up Schinke et al. 1986, all data as reported). The paper also found gains in: knowledge of child development in three primary studies; gains in parenting techniques in one; reduction in risks for child abuse in one; increases in parenting skills and knowledge; provision of a stimulating home environment in two; and a reduction in the number of days in hospital for two. No data was provided however for these outcomes beyond this positive report. The review authors concluded that limitations in study design presented challenges to evaluating the interventions, with more research needed.

Two studies were of relevance in the Coren and Barlow (2009 SR++) review of interventions for adolescent mothers in the USA. Koniak-Griffin (1992) found a non-significant effect for the Nursing Child Assessment Teaching Scale (2 child outcomes subscales) and large significant effects favouring the intervention group on the same measure for three parent outcomes subscales evaluating mother infant interaction, maternal sensitivity in interaction, and cognitive growth fostering capacity of mothers (-0.79 [-1.53 to -0.006], -0.82 [-1.56 to -0.08], -0.61 [-1.34 to -0.11]. The same primary study also found significant effects in favour of the intervention group on two Semantic Differentials Measures of maternal identity (-0.81 [-1.55 to -0.08 and -0.78

[-1.51 to -0.04]). The other primary study in this review (Black 1997) found a large significant effect favouring the intervention group on the About your Childs Eating Questionnaire (-1.28 [-1.84 to -0.71]) and the Parent-Child Early Relational Assessment Maternal Mealtime Communication (-0.54 [-1.07 to -0.02]).

Table 4.5 Overview of home visit interventions in the pregnancy/post partum period

Paper (author, date)	**Target population**	**Included interventions** (as described by the reviews)	**Studies included**	**Quality**	**Brief summary of outcomes**
Doggett et al. 2005	Pregnant or recently pregnant women with a drug or alcohol problem	Home visits delivered by professionals or lay visitors	6 experimental or quasi experimental studies	++	Lack of impact on illicit drug use, continued alcohol use, Bayley Mental Development Index, Bayley Psychomotor Index, other infant/home environment/social/maternal outcomes
Kearney et al. 2000	Families of newborn infants described as vulnerable because of poverty, social risks or prematurity	Nurse home visits	26 papers/20 primary studies experimental or quasi experimental design only	-	Mother psychological status +ve impact 3 of 4 studies Perceived social support +ve impact 2 of 3 studies Repeat pregnancies +ve impact 1 of 3 studies Community living skills no impact 2 of 2 studies Rates of employment/return to education no impact one study +ve impact on subgroup one study Parent-child interaction +ve impact in four of 9 studies Child development +ve impact in four of 12 studies
McNaughton, 2004	Pregnant women or women with young children described as “majority pregnant or postpartum with multiple risk factors”	Nurse home visits	13 primary studies	-	Mother’s educational outcome (one study) +ve impact Lack of effect on prenatal care (one study)
Sharps et al. 2008	Women during pregnancy and within one year of birth described as	Pre-natal or post partum home visit intervention by nurses, paraprofessionals or lay health workers	8 primary study papers	-	Lack of effect on intimate partner violence (one study) delivered by paraprofessionals +ve effect on partner violence [OR 0.47] intervention delivered by nurses (one study at 6 month follow up only)

	impoverished and high risk	aimed at improving health outcomes and including an assessment of intimate partner violence			
Shaw et al. 2006	Women within one year of giving birth, including general and at risk population	Post partum support programmes	22 primary study papers (RCTs only) 5 in vulnerable populations	+	+ve effect on parent-child interaction (one study) +ve effect on satisfaction with service (one study) +ve effect on postnatal depression (2 studies) +ve effect on maternal self-esteem (one study) +ve effect on contraceptive knowledge/use + repeat pregnancy (one study)
Adolescent pregnant/post partum mothers					
Coren & Barlow, 2009	Adolescent mothers	Parenting programmes (group and individual)	3 primary study papers, 2 of relevance	++	+ve effect on NCAST 2 child outcome scales, mother-child interaction scales and maternal identity +ve effect on parent communication during mealtimes (one study)
Letourneau et al. 2004	Adolescent mothers	Social support –education interventions	21 primary papers /19 interventions	-	+ve effect on contraceptive knowledge/behaviour (3 studies) +ve effect on maternal self confidence/self esteem (3 studies) +ve effect on maternal knowledge of child development (3 studies) +ve effect on parenting skills (3 studies)

Home visit interventions for wider populations

Seven reviews reported outcomes from home visiting interventions in wider populations (Kendrick et al. 2000 SR++; MacLeod & Nelson 2000 SR++; Bakermans-Kraneburg et al. 2003 SR-; Bakermans-Kraneburg et al. 2005 SR+; Sweet & Appelbaum 2004 SR-; Bernazanni et al. 2001 SR+; Bayer et al. 2009 SR+).

Kendrick et al. (2000 SR++) analysed 34 primary studies of home visit interventions for families (including pregnant/post-partum women). All but two of the papers could be considered to be in at risk populations. For the studies not included in the meta-analysis, the review reported that of 17 studies assessing parent-child interaction 12 found significantly better interaction between mother and child in the intervention

group. Five found no significant difference between intervention and control groups in relation to interaction. Of the seven studies assessing parental attitudes and actions towards discipline three studies reported significant favourable outcomes and four found no positive effect. In regard to parents' developmental expectations four of five studies found significant differences favouring the intervention group. The review authors summarised the findings as being that only six of the 27 studies reporting measures of parenting other than HOME failed to show positive results in the intervention group.

This review paper also reported a meta-analysis of 12 studies using HOME scores. Fourteen effect sizes were extracted from these studies. The meta-analysis using Fisher's method obtained a "highly significant result" suggesting home visiting was effective at improving the home environment as measured by HOME (chi square 126.9 28 df $p< 0.001$). Restricting the analysis to randomised studies or studies with high quality produced similar effectiveness findings (chi square 93.3 22df $p<0.001$). The authors highlighted that most of the primary studies did not report repeated measures over time, with more of the studies with follow up periods of less than two years appearing to show a treatment effect. They suggested that the effect of the intervention may reduce over time. They also highlighted that the multi-faceted nature of the interventions made it impossible to separate out the effects of various aspects.

MacLeod and Nelson (2000 SR++) examined effect sizes from 56 programmes designed to promote family wellness and prevent child maltreatment. Just over half of these programmes were prenatal or preschool, 75% of them were for families of low SES, and 68% were in the home setting. The authors reported that the total mean weighted effect size was 0.41, with social support/mutual aid (reactive) having the highest effect size and multi-component pro-active interventions having the second greatest effect (0.56). Pro-active home visiting interventions had a total mean weighted effect size of 0.406. Interventions delivered in the home for participants with low SES had lower effect sizes than those with mixed SES levels (0.351 versus 0.756 $p<0.05$). The authors reported that effect sizes were high for interventions of 13-32 visits and lower for interventions of 1-12 visits and 33-50 visits. Effect sizes were lower for interventions with a component of social support than for those without

a component of social support. Effect sizes were largest for measures of family wellness and smaller for measures of child maltreatment.

Bakermans-Kraneburg et al. (2003 SR-) carried out a meta-analysis of 51 RCT primary data sets with 88 outcomes of all study designs relating to parental sensitivity. The authors reported that RCT interventions to improve maternal sensitivity appeared to have a moderate effect (d=0.33, p<0.001). Including all the studies in the set produced an effect size of 0.44 (p<0.001) with the randomised studies producing less effect than non-randomised studies. For the RCTs only - interventions focussing on sensitivity only showed an effect size of d=0.45 p<0.001, those combining sensitivity and support were d=0.27 p<0.001, and those encompassing representation sensitivity and support were d=0.46 p<0.001. There was no significant difference between interventions conducted in the home and elsewhere, for all the studies p=0.07, for RCTs only p=0.12. For interventions in home RCTs only d=0.29, all studies d=0.40. For interventions outside the home RCTs only d=0.48, all studies d=0.52. Lower effects were found for studies using HOME (d=0.21) or NCAST (d=0.25) as outcome measures compared with other rating scales or measures (d=0.38/d=0.45).

Characteristics of more successful interventions across all the studies were: that video feedback was included (p=0.04); interventions had less than 16 sessions (p<0.001); interventions did not include personal contact (instead provided equipment) p<0.05; and interventions started later (after age of 6 months) p=0.04. Multiple regression analysis indicated two significant predictors of outcome – the focus of intervention (b=0.26 p=0.03), and child's age at start (b=0.23 p=0.04).

In this same study, the number of data sets relating to attachment interventions was 29, with 23 RCTs. The effect size for attachment security was d=0.19 p<0.05 across all designs and d=0.20 p<0.05 for RCTs only. The analysis of these data did not separate studies by home/not home delivery. The authors reported that studies which had the largest effect size for sensitivity were also most effective in enhancing attachment security, and that video feedback, number of sessions and children's age at start were significant for this outcome in line with the sensitivity findings.

A later meta-analysis by Bakermans-Kraneburg (2005 SR++) evaluated whether early childhood interventions were effective in improving home environments (as measured by the HOME inventory). This study included 48 primary papers with 56 intervention effects. The authors included a broad population in this review and concluded that interventions with middle-class non-adolescent parents produced higher effect sizes than interventions with low SES or adolescent participants. Across all the included studies they calculated a combined effect size on the HOME total score of d=0.20 ($p<0.001$). Echoing the previous findings, they highlighted that randomised studies tended to have smaller effect sizes (d=0.13) compared to non-randomised designs (d=0.58). Indicators of successful outcomes were that interventions had a moderate number of sessions over a defined period and were home-based.

Sweet and Appelabaum (2004 SR+) carried out a meta-analysis of 60 home visiting interventions in the USA. Weighted mean standardised effect sizes ranged from -0.43 to 0.318 with six of the ten effect sizes calculated significantly differing from zero. For three of the five child outcomes the average effect sizes were significantly greater ($p<0.001$) than zero (cognitive development 0.184, socio-emotional development 0.096 and potential abuse 0.239). Child abuse and parent stress were the exceptions For the five maternal outcomes similarly three of the five average effect sizes were significantly greater (2x $p<0.01$ 1x $p<0.001$) than zero (parenting behaviour 0.139, parenting attitudes 0.110, maternal life course education 0.134). Maternal employment/wages and public assistance were the exceptions. The authors reported that mean effect sizes for cognitive outcomes were significantly higher when families were targeted than were universally enrolled (M=0.165 SD=1.50 versus M=-0.104 SD 3.18). Studies targeting low income parents were more successful than other studies in terms of preventing child abuse (M=0.354 SD=1.69 versus M=0.55 SD=1.59) however were less successful than other studies in enhancing parenting behaviour (M=0.55 SD=1.59 versus M=0.206 SD=1.70). The authors highlighted that all the effect sizes would be classified as small. They also concluded that no one programme feature emerged as having a significant influence on outcomes with “more often than not design features of programmes not related to effect sizes at all”.

Bayer et al. (2009 SR+) reported 58 primary RCT papers evaluating interventions to improve young people's behavioural and emotional problems (up to age 8). Most primary studies reportedly targeted at risk children with selective environmental and/or indicated behavioural risks. Most focussed on children's behavioural problems, with few targeting emotional problems. This review had the aim of identifying interventions for mental health that would be suitable for an Australian context rather than providing a detailed evaluation of all available interventions. The review paper divided the interventions into effective programmes with moderate bias, effective programmes with high bias and ineffective programmes rather than reporting specific outcomes data.

Another review focussing on childhood behavioural problems was Bernazzani et al. (2001 SR+). This paper included five RCTs of relevance to this review of reviews. The authors concluded that overall the effectiveness of parent training in the prevention of behaviour problems was mixed, with three studies reporting no evidence of effectiveness (St-Pierre & Layzer; Kitzman et al; McCarton et al.), and two reporting mainly beneficial effects (Johnson & Breckenridge; Olds et al. 1986/98). The studies using the Child Behavior Checklist tended to report no significant impact, whereas those using reported behaviour tended to suggest more positive findings.

The Nurse Home Visitation Programme, Early Start Programme and Family check up were programmes delivered to at risk families that were considered to be "effective with moderate bias". Two RCTs with two and 15 year follow ups underpinned the evidence for the Nurse Home Visitation, one RCT underpinned the Early Start Programme with six month and three year follow up. Two RCTs provided evidence for the effectiveness of Family Check Up with one and two year follow ups. Of the other relevant programmes, the Home Based Nurse Intervention and Incredible Years Individual Parenting Programme were categorised as effective but as having high bias. As it is not possible to identify home-delivered versus centre or group delivered interventions, and no detail is supplied regarding populations or specific outcomes data, this review paper has only limited value in answering the review of review questions.

The Manning et al. (2001 SR+) review paper included both home visit and centre-based interventions and will be outlined below in regard to long term outcomes.

Table 4.6 Overview of interventions delivered as home visits

Paper (author, date)	**Target population**	**Included interventions** (as described by the reviews)	**Studies included**	**Quality**	**Brief summary of outcomes**
Bakermans-Kraneburg et al. 2005	Child age less than 54 months, including papers in at risk populations	Interventions aimed at optimising parenting or parent-infant interaction	48 primary studies, 56 intervention effects	+	Combined HOME total score effect size from the 56 was d=0.20 (p<0.001). Interventions of RCT only designs significantly less effective (d=0.13) than other studies (d=0.58). Low SES appeared to profit less than middle-class samples (d=0.12 versus d=0.25 Q=3.7 p=0.05). Studies with adolescent mothers showed lower effect sizes (d=0.11 more than 70% adolescent versus d=0.24 few adolescents Q=17.4 p<0.01). Number of sessions significantly associated with effect size, Interventions starting later or prenatally were more effective than those starting in first 6 months of life. Interventions in home more effective than in centres (d=0.22 versus d=-0.05 Q=13.1 p,0.001)
Bakermans-Kraneburg et al. 2003	Child age less than 54 months, including 58 papers in at risk populations	Interventions relating to sensitivity or attachment	51 primary data sets, 88 outcome measures	-	+ve effect on maternal sensitivity - in the home interventions RCTs d=0.29, all studies d=0.40. Video feedback, interventions fewer than 16 sessions, starting after 6 months were more successful.
Bayer et al. 2009	Children aged 0-8 years described as mostly at risk.	Interventions for emotional and behavioural problems	58 primary study papers (RCT studies only)	+	Nurse home visitation programme, early start programme and family check up were

		described as "most programmes targeted to at-risk children".			classified as most effective with moderate bias. The home based nurse visitation, incredible years parenting programme were categorised as effective with high bias
Bernazzani et al. 2001	Child aged under 3, five studies in at risk populations	Interventions with parent training or parental support as a major component	7 RCT papers (5 relevant)	+	+ve impact on behaviour (parental/school/other report 2 studies treatment effect 0.25 to 1.05) No sig impact on behaviour (Child Behav Checklist 3 studies)
Kendrick et al. 2000	Any families including 26 studies described as in populations at risk of adverse maternal or child health outcomes	Post natal programmes with at least one home visit	34 primary study papers, 12 included in meta-analysis. RCTs or NRCTs. 32 of relevance.	++	+ve effect on parent-child interaction for 12 of 17 studies +ve effect on parental attitude and actions towards discipline for 3 of 7 studies +ve effect on parental expectations for 4 of 5 studies +ve effect on home environment (12 studies)
MacLeod & Nelson, 2000	Children up to age 12 years, 75% low SES	Programmes designed to promote family wellness and prevent child maltreatment, 75% low SES families 68% delivered at home	56 programmes, RCTs, 50% preschool	++	Proactive home visiting interventions had a total mean weighted effect size of 0.406. Total mean weighted effect size was 0.351 for home interventions for participants with low SES. Measures of family wellness larger effect than child maltreatment, and higher for interventions of 13-32 visits. ES lower for interventions with social support component.
Sweet & Applebaum, 2004	Families with young children. The majority of programmes (75%) targeted families "at some type of environmental risk"	Home visiting programmes "excluding programmes where home visits were a supplement to another intervention"	60 programmes	+	Weighted mean effect sizes ranged from 0.43 to 0.318, 6 0f 10 effect sizes differed from zero. +ve effect on 3 of 5 child outcomes (cognitive development, socio-emotional development, potential abuse) +ve effect on 3 of 5 maternal outcomes (parenting behaviour,

					parenting attitudes, maternal education)

Centre-based or educational setting programmes

Four reviews described interventions delivered in centre-based or educational/day care settings (Burgher 2010 SR-, D'Onise et al. SR+, Anderson et al. 2003 SR+, .Zoritch et al. 2009 SR+).

Burgher (2010 SR-) reported 32 primary studies of 23 early education or day care programmes. The interventions were centre based, including a wide variety of different institutions such as preschools, childcare centres, crèches, playgroups, day care nurseries, and nursery schools. The review included both universal and progressive interventions, with little detail provided regarding the content of the programmes or the population. Only five projects were identified as being progressive interventions (Dutch Public Preschool study, Chicago study, Head Start Impact Study, Head Start Family and Child Experience Survey, and the Miami school readiness project). The other primary papers included studies exploring associations rather than effectiveness data, or comparing day care with care at home or evaluated universal kindergarten/nursery provision. These papers were outside the remit of this review of reviews.

Specifically in relation to the five programmes identified as progressive and therefore of interest to this review of reviews, the following outcomes data can be identified. It was reported that the Head Start Family and Children Experience Survey found that the proportion of the gap between four year old programme attendees and national norms was closed between Autumn and Spring of the third year of the programme for early reading and vocabulary. The gap was reportedly closed by up to 28% for two of the three cohorts. Effect sizes were noted as 0.26 for vocabulary, 0.05 for letter-word identification, 0.13 for early writing, 0.08 for early maths, 0.67 for book knowledge, and 0.60 for colour naming. The Head Start Impact Study reportedly found a range of effect sizes for different measures – pre-reading 0.19 to 0.24, pre-writing not significant to 0.16, vocabulary not significant to 0.12, oral comprehension not significant and early maths not significant.

The Chicago study was reported as reducing the proportion of children who later needed special education or were at risk of special education needs (no data). Also, the number of children who were kept back a year was smaller for those who had attended pre-school (no data). Long term educational outcomes from this intervention were reported as not significantly different between treatment and control groups in college attendance (29.4% versus 27.4%), or higher grade completed (11.73% versus 11.44%). The review reports that no effect size data were reported for this programme.

The Dutch public pre-school study reportedly found that there were significant verbal and "fluid intelligence" gains for the intervention group relative to age norms (effect size 0.36 for verbal intelligence and 0.44 for fluid intelligence). Findings from this study are described as limited however due to having no control group without pre-school experience. The Miami study also found gains in cognitive and language skills with children at the 32nd to 43rd percentile on entry and 47th to 52nd percentile at the end of the programme however, as the Dutch study has no control group comparator.

The review authors concluded that almost all the programmes had significant positive short term effects and smaller longer term effects on cognitive development. In relative terms, they concluded that children from socioeconomically disadvantaged families made as much, or slightly more progress than their more advantaged peers across all the progressive and universal interventions. They cautioned however that the effects of preschool are challenging to evaluate due to the programmes having different objectives and being located in different institutions.

D'Onise et al. (2010 SR+) reported 37 primary studies considering evidence for the effect of centre-based interventions on healthy four year olds. The primary studies were reportedly conducted in "mostly disadvantaged populations in the USA" with study populations mostly sampled from those at risk of school failure. The review authors describe considerable heterogeneity in terms of the included interventions, with differing levels of intensity and different services offered. While the authors describe the review aim as evaluating centre-based care, the summary table of intervention provides classifications in terms of preschool, centre based, health service, parent programme, home visit, or nutrition. Many of the interventions are

ascribed several classifications with some including both centre-based and home visit elements.

This review targeted physical, social and mental health, rather than the cognitive outcomes of the Burgher paper describe above. It was reported that there were 215 effect size estimates across the 37 studies, with only 28% of them not including a null value and having an effect size of greater than Cohen's d of 0.2. The authors reported that 53% of the studies demonstrated no effect of the intervention. There were 36% estimates that supported a beneficial effect (these tended to be in relation to obesity, growth, social competence and crime). There were 11.6% adverse effect estimates which were described as mostly for externalising behaviour problems.

In terms of mental health outcomes, four primary studies (Caputo, 2004; Peters et al. 2003; Raine et al. 2003; Weikart et al. 1978) examined internalising problems, but only one study found a positive association (Peters et al. 2003). This reported a reduction in the symptoms of anxiety for the intervention group compared to the control in the Better Beginnings Better Futures programme (Cohen's d = 0.47, $p<0.01$). Sixteen studies examined externalising problems using behavioural scales. Nine studies showed no effect (Belsky et al. 2007; Goodson et al. 2000; Henry et al. 2004; Kaminski et al. 2002; Lee et al. 1990; Loeb et al. 2005; Osborn & Millbank 1987;, Reynolds, Sammons et al. 2007), five studies found a reduction in externalising problems including the high quality Perry Preschool Project and Mauritius study as well as methodologically weaker projects (Schweinhart et al. 1980; Weikart et al. 1978; Raine et al. 2003; Kagitcibasi et al. 2001; Roy 2003). Two small experimental studies found moderated effects on externalising (e.g. Cohen's d range 0.23-0.32), the names of these programmes are not given (Haskins, 1985). Two primary studies considered the quality of the intervention in relationship to effect on behaviour (Belsky et al. 2007, Sammons et al. 2007) and one, the Effective Provision of Preschool Education project found improved self regulation and pro-social behaviour if children attended a centre rated as high quality.

D'Onise et al. (2010 SR+) also reported on social competency outcomes. Self concept was examined by four primary studies; three of these studies (Caputo 2004, Garber 1988, Gray et al. 1983) showed no effect on self concept of children followed

up into their teens (the effect of the fourth study, Beller 1983, is not stated). Twelve studies measured overall social competence, with six using the same validated Social Skills Rating Scale. Six studies (Andersson 1992; Gray et al. 1983; Hickman 2006; Kamiinski et al. 2002; Lee et al. 1990; Peters et al. 2003; Weikart et al. 1978) reportedly found beneficial effects of the intervention on social competence (no data provided).

The review authors concluded that there was limited evidence of beneficial outcomes from the interventions, with a wide array of outcomes assessed; however there was no significant effect for the majority of these. They reported that parenting programme interventions had mostly null effects, with beneficial effects more apparent for cognitive-social interventions. They described a general trend towards beneficial effects, in particular regarding mental health, social competency and crime prevention. They commented that the multi-faceted nature of the interventions was problematic, and the quality of the studies was assessed as either moderate or weak.

Anderson et al. (2003 SR+) reviewed 16 studies of centre-based interventions in the USA. Twelve of the studies examined cognitive outcomes. Of these, nine used standardised assessments such as the Woodcock-Johnson Test and six demonstrated increases in academic achievement in intervention groups (papers relating to Head Start, South Carolina, Abecedarian Project, High/Scope Perry Project), one a negative effect (a Head Start paper) and two could not be used to calculate effect sizes (papers relating to South Carolina and Head Start). The review calculated the median effect size for the six studies of 0.35. The median effect size for school readiness was 0.38 (three studies, all positive). Seven studies used IQ measures, with six of these reporting increases, the review calculated a median effect size on IQ of 0.43. Five of the studies measured social outcomes. Three measured social competence with two demonstrating benefits (no data – Head Start) and one a negative effect for intervention children (no details – Head Start). Two studies demonstrated long-term decreases in social risk behaviours (no details - Perry programme). Two studies examined family outcomes, both reporting positive effects (no details - Head Start). The review authors found that more than 70% of effects reported were regarding cognitive outcomes. They concluded that consistent

improvements were found in measures in the cognitive domain with a lack of evidence relating to social or family outcomes.

Zoritch et al. (2009 SR+) evaluated eight day care interventions in the USA (seven of which are relevant to this review) for disadvantaged families (six) and for premature babies (one). The authors performed a meta-analysis for some educational and social outcomes, only four of these (IQ, retention in grade, special education classes) included more than one study in the analysis and are reported below. The review found that all studies indicated an association between attendance at day care and an increase in IQ. The weighted mean difference in IQ between intervention and controls was 14.4 (CI 12.3-16.4) from four studies. The weighted mean difference in IQ at age 5 was 8.0 (CI 5.8-10.2) from two studies. Provision of additional home visiting in one study (CARE) was not associated with increased IQ. The involvement of fathers in one programme was associated with increased gain in cognitive outcomes (Brooks-Gunn, 1994). The IQ effect appeared to decrease a year or two after the end of the intervention in most studies, but the early cognitive gains were associated with later prevention of school failure. The Perry Program indicated an IQ difference of 13 points at one year in to the intervention, five points at age seven, and no difference by age 14.

Differences that favoured the intervention group relating to education and development were: odds ratio for grade retention (0.47 CI 0.17-0.49) in five studies, odds ratio for requiring a special education class 0.29 (CI 0.17 to 0.49), improved classroom and personal behaviour as rated by teachers in the Perry study, less delinquent behaviour (36% versus 52%), fewer arrests (at aged 27 number arrested five or more times 7% intervention versus 35% controls). In the Milwaukee study intervention children showed less disruptive behaviour (no data). In the Abecedarian study at 12 and 15 years intervention children rated themselves higher on self concept, (no data). In the Infant Health and Development Program maternal rating of child behaviour were higher at three years (but not five). Observer ratings of maternal positive involvement with a task were higher for the intervention group at 30 months in this study (no data).

Favourable effects on mothers reported were: an average one more year education, fewer were unemployed, and more were financially self supporting (Abecedarian Project no specific data). In the Milwaukee Project mothers were more likely to have stable employment and a higher weekly income (no data). No differences regarding maternal employment were reported in the Perry Program.

Favourable effects on mother-child interaction reported were: infants communicated with their mothers at a higher level in the Abecedarian project (no data): there was more reciprocal communication reported in the Milwaukee Project and the Infant Health and Development Program (no data): no differences regarding closeness or the quality of relationship were found in the Perry Program.

In regards to long term follow up, in the Perry Program study at age 19 more of intervention group held jobs (50% versus 32%), more were attending college or job training (38% versus 21%) fewer were in receipt of welfare assistance (18% versus 32%). Fewer had teenage pregnancies (64 per 100 versus 117 per 100) or been arrested (31% versus 54%). In this study at 27 years the experimental group had a higher rate of school graduation (71% versus 54%), half as many arrests (2.3 versus 4.6) significantly higher earnings ($1219 versus $766 per month). Marriage rates were higher and single parent rates lower (no data). The authors of this review concluded that out of home day care can have beneficial effects in relation to enhancing cognitive development, preventing school failure, children's behaviour, and maternal education and employment. The authors suggested that the chance of success is higher if the intervention starts at three rather than four years of age.

Table 4.7 Overview of interventions delivered in day care/centres

Paper (author, date)	**Target population**	**Included interventions** (as described by the reviews)	**Studies included**	**Quality**	**Brief summary of outcomes**
Anderson et al. 2009	Children aged 3 to 5 years at risk because of family poverty	Centre based programmes	16 studies reported in 23 primary papers	+	+ve effect on academic achievement, median effect size of 0.35 (six studies), +ve effect on school readiness, median effect size 0.38 (three studies) +ve effect on IQ median effect size 0.43 (six studies)

					Lack of evidence relating to social or family outcomes
Burgher, 2010	Pre-school children (age not specified) majority of families described as economically disadvantaged	Pre-school programmes targeting cognitive development	32 primary study papers (23 programmes) 5 identified as progressive	-	+ve impact on proportion of gap for early reading and vocabulary (ES 0.26 vocabulary, 0.005 letter-word identification, 0.13 early writing, 0.08 early maths, 0.67 book knowledge, 0.60 colour naming Head Start survey study.
D'Onise et al. 2010	Healthy 4 year old children described as from mostly disadvantaged populations in the USA and at risk of school failure	Centre-based pre-school interventions	37 primary study papers	+	28% of 215 effect size estimates were greater than 0.2. 53% of studies demonstrated no intervention effect. 36% of estimates supported a beneficial effect (mostly in relation to obesity, growth, social competence, crime) +ve impact on anxiety (d=0.47, one study) +ve effect on externalising problems in 7 of 16 studies +ve effect on behaviour in one of two studies +ve effect on self concept in one of four studies +ve effect on social competency in six of 12 studies
Zoritch et al. 2009	Children under 5 most from families of low SES, all but one study African-American population	Out of home day care, 5 had element of home visiting in addition	8 primary study papers, 7 of relevance	+	+ve impact on IQ (weighted mean difference 14.4 intervention versus control (four studies) +ve impact on grade retention (OR 0.47 in five studies) +ve impact on delinquent behaviour (one study) +ve long term impact on employment, education, teenage pregnancy, earnings.

Home visit and educational interventions – outcomes in adolescence

The Zoritch et al. review provides data regarding long term follow up for participants in day care programmes. Two reviews specifically examined the long term impact of interventions across a wide range of centre-based and home visit programmes (Manning et al. 2010 SR+, Nelson & Westhues 2003 SR+).

Manning et al. (2010 SR+) conducted a meta-analysis of 17 primary papers (of 11 programmes) of “early developmental” prevention programmes (children aged 0-5) delivered to at risk populations. Outcome measures were reported during adolescence. Interventions included structured preschool programmes, centre based developmental day care, home visitation, family support services and parental education. The mean effect size across all the programmes and outcomes was 0.313, with the largest effects seen for educational success during adolescence (effect size 0.53, CI 0.40-0.69), social deviance (0.48, CI 0.26-0.70), social participation (0.37, CI 0.18-0.57), and cognitive development (0.34, CI 0.25-0.44). There were smaller effects for family wellbeing (0.18 CI 0.06-0.28) and social-emotional development (0.16, CI 0.05-0.26).

The review authors concluded that early development programmes have small to medium positive effects on individual and family wellbeing which last in to adolescence. They commented that programmes which lasted longer than 3 years, and were more intense (more than 500 sessions per participant) were the most effective. ($d = 0.283$ versus $d = 0.494$ $p<0.001$). They also described a lack of high quality studies, with small sample sizes and a need for greater description of programme content and philosophies.

Nelson and Westhues (2003 SR+) conducted a similar meta-analysis of the effectiveness of preschool prevention programmes for disadvantaged families including home and centre-based components with follow up in the long term. This review considered 34 programmes in the USA. The found that cognitive impacts tended to be greatest during the preschool period ($d=0.52$) however they were still evident up to grade 8 ($d=0.27$) and persisted in to high school and beyond ($d=0.30$). Social-emotional impacts were similar at kindergarten level ($d=0.27$) and high school and beyond ($d=0.33$). Parent wellness impacts were $d=0.33$ at preschool, and $d=0.30$ at grade 8. The authors reported that programmes with direct teaching components in pre-school and those that followed through from pre-school to school tended to have the greatest cognitive impacts. They also found that longer programmes tended to produce greater impacts on cognitive outcomes at pre-school and on social-emotional outcomes as school age. More intense programmes tended to produce greater impacts on pre-school cognitive outcomes and grade 8 parent-

family outcomes. They concluded that there was evidence to suggest that these programmes had short, medium and long term impacts.

Table 4.8 Overview of papers reporting long term outcomes

Manning et al. 2010	Children aged 0-5 mostly from at risk populations	Structured pre-school programmes, centre-based developmental day care, home visitation, family support services, parental education.	17 primary study papers	+	Mean effect size across all programmes 0.313. Educational success ES 0.53, social participation ES 0.37, cognitive development ES 0.34, family wellbeing ES 0.18, social-emotional development ES 0.16. More intensive programmes more successful
Nelson & Westhues, 2003	Pre-school disadvantaged children and their families	Universal or selective prevention or promotion interventions focusing on the promotion of child, parent or family well-being	34 programmes	+	Cognitive impacts d=0.52 during pre-school period, grade 8 d=0.27. Social emotional impact d=0.27 kindergarten, d=0.33 high school Parent wellness d=0.33 preschool d=0.30 grade 8

4.7. EVIDENCE STATEMENTS

Review Evidence Statement 1:
Home visits during pregnancy and the post-partum period

There is moderate evidence from six review papers suggesting that post-partum home visits interventions may be effective for improving parental outcomes in at risk families, with one suggesting that nurse-delivered interventions may be more effective than those delivered by para-professionals or lay visitors. One additional review paper in contrast suggests that there is insufficient evidence regarding the effectiveness of post-partum visits to women with an alcohol or drug problem.

These studies were carried out in populations described as families at risk of dysfunction or child abuse, mothers at risk for postnatal depression, mothers identified as having additional needs, families living in a deprived area and teenage mothers African-American women, drug users, economically deprived women and socially at risk women, preterm infants and mothers with maternal risk.

In regard to specific outcomes: one of these reviews provides weak evidence (as rated in this review) for the effectiveness of programmes delivered by nurses on intimate partner violence and reducing child abuse potential in low income families, ethnic minority families, substance abusing mothers, and families at risk for child

abuse.

Three provide evidence rated as moderate that interventions may impact on maternal outcomes (such as psychological status, postnatal depression, maternal self-esteem, quality of life and contraceptive knowledge and use). One study suggests that child development outcomes may be improved in pre-term infants.

Two further reviews provide evidence that post-partum interventions may be effective for parental outcomes in adolescent mothers. One review describes positive outcomes such as improved self-confidence and self-esteem following support-education interventions for post-partum adolescent mothers. A second suggests that interventions may have a positive impact on parent outcomes such as improving maternal-child interaction and maternal identity.

Coren & Barlow 2009 [SR++] reviewed four studies which targeted adolescent mothers.
Doggett et al. 2005 [SR++] reviewed six randomised or quasi randomised studies of home visits for pregnant or postpartum women with a drug or alcohol problem.
Kearney et al. 2000 [SR-] reviewed 20 studies of pregnancy and post-partum home interventions in vulnerable families including preterm infants and mothers with maternal risk.
Letourneau et al. 2004 [SR-] reviewed 19 support-education interventions for post-partum adolescent mothers.
McNaughton 2004 [SR-] reviewed 13 studies of which 10 were in at risk populations.
Sharps et al. 2008 [SR-] reviewed eight primary studies on interventions for intimate partner violence.
Shaw et al. 2006 [SR+] reported 22 RCT primary studies of post-partum support.

Review Evidence Statement 2:
Home interventions for wider populations

Seven reviews provide evidence that is considered to be moderate regarding the effectiveness of home visitation interventions for at risk families. Small to medium effects are reported on maternal sensitivity and the home environment, a moderate effect size on parent-child interaction and measures of family wellness, and a small effect size on: attachment security; cognitive development; socio-emotional development; potential abuse; parenting behaviour; parenting attitudes; and maternal life course education. One review provides mixed evidence regarding the impact of parenting interventions on childhood behaviour problems.

The study populations in the primary papers were described as including ethnic minority teenage mothers, pregnant and post-partum women who were socially disadvantaged or substance abusers, low birth weight newborns, children with failure to thrive, low SES families, low income families, families at risk of abuse or neglect and families considered to be at risk. One review concluded that interventions delivered in the home for participants with low SES had lower effect sizes than those with mixed SES levels. A second review similarly concluded that interventions with low SES or adolescent populations had lower effect sizes than middle class non-adolescent parents. One review noted that lower effects were found for studies using HOME or NCATS as outcome measures compared with other rating scales or measures.

One study reported that characteristics of more successful interventions across all the studies were: that video feedback was included; interventions had less than 16 sessions; interventions did not include personal contact; and started after the age of 6 months. Another concluded that interventions were more successful when of a moderate number of sessions (5-16 versus more than 16) in a limited time period, and were carried out at home either prenatally or after the age of 6 months. Another review in contrast concluded that effect sizes were higher for interventions of 13-32 visits and lower for interventions of 1-12 visits and 33-50 visits. Also, that effect sizes were lower for interventions without a component of social support than for those that included social support. One review suggested that there may be some reduction in intervention effect over time, and highlighted that the multifaceted nature of interventions provides challenges in ascertaining which element or elements of an intervention are most effective.

Bayer et al. 2009 [SR+] a review of 58 primary study interventions for emotional and behavioural problems.
Kendrick et al. 2000 [SR++] a review of 34 primary study papers with 12 included in a meta-analysis.
Bernazzani et al. (2001 SR+) a review of seven RCT interventions targeting behaviour problems
Sweet & Appelbaum 2004 [SR+] a review of 60 programmes.
Bakermans-Kraneburg et al. 2005 [SR+] a meta-analysis of 48 studies (39 in low SES/pre-term populations) of interventions aiming to optimise parenting or parent-child interaction using the HOME outcome measure.
Bakermans-Kraneburg et al. 2003 [SR-] a meta-analysis of 70 studies (58 in at risk populations) of interventions relating to sensitivity or attachment.
MacLeod & Nelson 2000 [SR++] a review of 56 programmes designed to promote family wellness and prevent child maltreatment.

Review Evidence Statement 3:
Programmes delivered in educational or centre settings

Four reviews provide moderate evidence regarding the effectiveness of interventions delivered in an educational or day care centre with most evidence relating to cognitive outcomes. One review found that more than 70% of positive effects reported were regarding cognitive outcomes. Most of the programmes were described as being conducted with economically disadvantaged populations however some reviews included both universal and progressive interventions, with little detail provided regarding the content of the programmes or the population.

Positive effects were reported for some programmes in regard to vocabulary, letter-word identification, letter knowledge book knowledge, and colour naming, vocabulary, reduced number of children who were kept back a year, increased IQ score, verbal and "fluid intelligence" gains, improved classroom and personal behaviour as rated by teachers, less delinquent behaviour, mother-child interaction, and fewer arrests at aged 27 Reported effectiveness however varied across programmes with one review reporting that 53% of the studies demonstrated no effect of the intervention. One review highlighted the potential for an adverse effect on externalising behaviour problems.

Burgher 2010 [SR-] a review of 32 primary studies across a variety of educational and day care settings examining cognitive outcomes.
D'Onise et al. 2010 [SR+] a review examining physical, mental health and social outcomes in 37 primary studies.
Zoritch et al. 2009 [SR+] a review of day centre provision including seven studies of relevance.
Anderson et al. 2003 [SR+] a review of 16 studies of centre-based interventions.

Review Evidence Statement 4
Longer term outcomes

Two good quality meta-analyses of outcomes following early developmental prevention programmes provide moderate evidence of lasting impact, particularly on cognitive outcomes. Study populations were described as at risk or disadvantaged with many including a high proportion of participants from African-American backgrounds. Interventions included structured preschool programmes, centre based developmental day care, home visitation, family support services and parental education.

One review reported that the largest effects were seen for educational success

during adolescence, reduced social deviance, increased social participation, and cognitive development, with smaller effects for family wellbeing and social-emotional development. It was highlighted that programmes with more than 500 sessions were significantly more effective than those with fewer. The other review reported that more intense programmes tended to produce greater impacts on pre-school cognitive outcomes, and programmes with direct teaching components in pre-school and those that followed through from pre-school to school tended to have the greatest cognitive impacts.

Nelson and Westhues 2003 [SR+] a meta-analysis of the effectiveness of 34 preschool prevention programmes.
Manning et al. 2010 [SR+] a meta-analysis of 17 primary studies (11 programmes) including structured preschool programmes, centre based developmental day care, home visitation, family support services and parental education.

5. DISCUSSION

5.1. Summary of identified research

This review or reviews was focussed on systematic reviews of interventions conducted in a home or early years setting, targeted towards vulnerable families with children aged below five. We identified 20 review papers which met the inclusion criteria. The review papers focused on interventions for pregnant and post-partum women, interventions delivered in the home for wider populations, and interventions in educational/day care settings. There were four review papers that were rated as high quality, with an overall lack of reporting of methods to minimise reviewer bias or error in study selection, extraction and quality appraisal across the set. Much of the literature reports work carried out in North America with implications for applicability outside this region. The included reviews included primary studies across a wide time period, with some studies dating from the late 70's.

5.2 Research questions for which no evidence was identified

A range of populations that could be considered at risk or vulnerable were included. The main issues regarding addressing the subsidiary research questions were that most individual studies were not large enough to consider their impact in terms of differing demographic groups, for example in terms of differences in ethnic, cultural and religious background. Compared to home based, we identified fewer studies of interventions based in early years settings which met the criteria for inclusion in this

review making it difficult to draw conclusions on delivery settings due to the lack of evidence base. Many of the interventions delivered outside the home which our searches identified were group parenting programmes which are excluded from the scope of this review, this may have in part accounted for the small number of reports on this type of intervention which we identified as suitable for inclusion here.

5.3 Evaluating the impact of different approaches

Finding an effective methodology for the evaluation of the type of interventions reported here, particularly in terms of strong outcomes which measure wellbeing directly yet are not self reported is immensely challenging. This will have led to some of the problematic features of the papers and limitations of the literature.

Validated measures which make a indirect assessment of child emotional and social wellbeing such as scales measuring child development or child behaviour are available and were used by some authors. Factors such as time constraints and programmes which were delivered in the home by lay volunteers rather than health professionals in particular, may have meant that the use of this type of robust, validated measure was not always possible. In order to also provide a more direct measure of wellbeing many of the interventions were evaluated using self-reported measures which have significant issues with regard to their validity, especially in relation to young children, where often the self reporter is the parent rather than the child due to obvious age constraints. However, as self reported measures are often the best available measure due to the lack of other appropriate, validated measures, this does not always mean the results are not reliable. The validated, robust measures available in the educational settings where interventions were delivered and assessed by teaching staff invariable related to cognitive development (and less frequently behavioural development) as proxy measures of wellbeing.

Many studies used a wide variety of outcome measures; often a mixture of robust and validated scales of child behaviour and development along side numerous self reported measures of child wellbeing, parent wellbeing, home environment and social support factors. In most cases only a small number of this wide variety of outcomes measures showed any positive association with the intervention leading to concerns that the few positive observations may have been observed due to chance

(generated by excessive analysis of the data). Also there was often inconsistency in the associations seen between very similar outcome measures across the different studies. These concerns over the validity and consistency of outcome measures raise questions over the reliability of the data presented and ultimately mean that the results of these studies should be interpreted with caution when considering the drawing of conclusions or development of recommendations.

Finally some of the studies had relatively short term (less than a year) follow up which creates comparison problems as those with longer follow ups are at greater risk from drop out and dilution of any positive effects over time.

5.4 Adverse or unexpected outcomes

One review paper (D'Onise et al. 2010) reported that while most of the 37 studies included in their meta-analysis reported null effects, there were 11.6% adverse effect estimates generated. The authors reported that two small experimental studies found a small to moderate adverse effect (an increase) on externalising behaviour problems in their intervention groups. The Perry study found a small increased risk of ever taking drugs other than marijuana or alcohol by the age of 15 years in the intervention group

5.5 Applicability in the UK context

A large proportion of the primary studies that were examined in the review papers were carried out in the USA. This has implications for applicability in a UK setting. One of the included papers (Burgher, 2010) describes the comparison of North American and European interventions as needing to be treated with caution as children in the American programmes "typically suffer from greater economic disadvantage that those in Europe". The delivery of the programmes in terms of location, content and staff delivering the intervention also requires consideration when applying to the UK context.

5.6 Implications of the review findings

Inconsistency in the use of key terms relevant to this review may be problematic. There are varying definitions of both vulnerability and wellbeing and authors use a variety of measures to define both. Vulnerability in particular is a problematic term

and is defined inconsistently by a variety of measures including areas of residence and parent related socioeconomic factors such as employment status, education level and relationships status.

Very few of the papers used the term vulnerability, therefore proxy terms such as at risk of educational failure, low socioeconomic status, women at risk of postnatal depression were used to determine inclusion and exclusion. The review included papers which were answering different research questions to the target of this work, requiring selective extraction of data. A lack of information in some of the papers made this challenging with the potential for error in omission or inclusion.

Many authors highlighted the multi-faceted nature of the interventions considered here. While endeavouring to divide the evidence into home-based versus centre-based provision it should be recognised that in many programmes there are elements of both. The programmes included in the reviews encompassed diverse content ranging from supportive visits to parent education, contraceptive advice, child development promotion, health education and drug programmes. Interventions also varied considerably in regard to the number of sessions provided, the age at which sessions began, the length of sessions and the period of time of the contact. This diversity and complex nature of the interventions precludes identification of elements which may lead to more successful programmes. There is some disparity in the evidence regarding who should deliver the programme, programme length and intensity. The included papers also varied considerably in the degree of reporting of the intervention. As a result, these limitations should be considered when making recommendations based on these studies.

This review of review level evidence considered evaluation studies which reported on the effectiveness of progressive interventions to promote wellbeing in under 5 year old children. Although some of the reviews identified a volume of evidence (up to 70 papers in a single review) some of them provided only limited data on the effectiveness of the interventions. Many of the primary papers considered a vast range of outcome measures, resulting in the potential for reviews to be selective in the data that they reported. This was the case for some included reviews which presented detailed findings in regard to only some papers, with a tendency to report only positive primary study outcomes. This may be inevitable due to the large

number of assessments used within primary studies and also large number of programmes that many reviews considered.

1. APPENDICES

APPENDIX 1: EVIDENCE TABLES

Review Details	Review Search Parameters	Review population and setting	Interventions	Outcomes and method of analysis	Results	Notes
Authors Anderson et al. **Year** 2003 **Aim of review** What is the effectiveness of early childhood development programmes? **Design** Narrative review **Quality score** **+**	**Databases searched** Psychinfo, ERIC, Medline, Social Science Search, Head Start database **Other searching** Reference lists, internet resources, contact experts **Years searched** 1965-2000 **Inclusion criteria** Controlled studies, outcomes relating to cognition, social outcomes, child health, family outcomes	**Included populations** Children aged 3-5 at risk because of family poverty **Excluded populations** Outside age range, not low SES **Settings** Centre based – in a public school or child development centre	**Intervention description** No details **Control/comparator** No details	**Primary outcomes** Cognitive, social, family, child health **Secondary outcomes** **Follow up** Not specified	16 studies (23 papers included). Twelve of the studies examined cognitive outcomes. Of these, nine used standardised assessments such as the Woodcock-Johnson Test and six demonstrated increases in academic achievement in intervention groups (papers relating to Head Start, South Carolina, Abecedarian Project, High/Scope Perry Project), one a negative effect (a Head Start paper) and two could not be used to calculate effect sizes (papers relating to South Carolina and Head Start). The review calculated the median effect size	**Limitations identified by author** **Limitations identified by review team** Lack of detail of interventions **Evidence gaps** Need for research regarding behavioural and social outcomes, health and family outcomes **Funding** Collaborative Center for Child Wellbeing and the Robert Wood Johnson Foundation

					for the six studies of 0.35. The median effect size for school readiness was 0.38 (three studies, all positive). Seven studies used IQ measures, with six of these reporting increases, the review calculated a median effect size on IQ of 0.43. Five of the studies measured social outcomes. Three measured social competence with two demonstrating benefits (no data – Head Start) and one a negative effect for intervention children (no details – Head Start). Two studies demonstrated long-term decreases in social risk behaviours (no details - Perry programme). Two studies examined family outcomes, both reporting positive effects (no details - Head Start). The review authors found that more than 70% of effects	

					reported were regarding cognitive outcomes. They concluded that consistent improvements were found in measures in the cognitive domain with a lack of evidence relating to social or family outcomes. **Attrition** Not detailed	
Authors Bakermans-Kraneburg et al. **Year** 2005 **Aim of review** Are early prevention interventions effective in improving home environments? **Design** Meta-analysis **Quality score** **+**	**Databases searched** PsychLIT, Dissertation Abstracts, Medline **Other searching** Reference list checking, book chapters searched, one author involved in a primary study **Years searched** Not stated **Inclusion criteria** Any research design, any quality	**Included populations** Any child under 54 months **Excluded populations** None specified **Settings** Any	**Intervention description** Interventions aimed at optimising parenting or parent-child interaction using the HOME assessment to evaluate. Interventions concentrating on cognitive development only were excluded **Control/comparator** any	**Primary outcomes** HOME measure **Secondary outcomes** **Follow up** Not specified	48 papers found (56 intervention effects) Impact on HOME total scores relating to parental interactivity, responsivity, acceptance of child, learning materials, little impact on physical environment subscale. Combined HOME total score effect size from the 56 was d=0.20 (p<0.001). Interventions of RCT only designs significantly less effective (d=0.13) than other studies (d=0.58). Most interventions aimed at mothers	**Limitations identified by author** **Limitations identified by review team** **Evidence gaps** Need for further consideration of interventions for young mothers **Funding** None identified

					only. Of the RCTs 36 in USA, 1 in Australia, 1 in Canada. Of the RCT studies conducted outside of the USA effect size was d=0.52, for studies in the USA d=0.10. Low SES appeared to profit less than middle-class samples (d=0.12 versus d=0.25 Q=3.7 p=0.05). Studies with adolescent mothers showed lower effect sizes (d=0.11 more than 70% adolescent versus d=0.24 few adolescents Q=17.4 p<0.01). Number of sessions significantly associated with effect size (5-16 sessions d=0.50 versus more than 16 sessions d=0.10 Q=20.0 p<0.001) Interventions starting later or prenatally were more effective than those starting in first 6 months of life. Content of intervention	

					(support, sensitivity, combinations) no significant difference. Interventions in home more effective than in centres (d=0.22 versus d=-0.05 Q=13.1 p,0.001) **Attrition** Not reported, no significant difference in effect sizes for attachment in studies with more or less attrition.	
Authors Bakermans-Kraneburg et al. 2003 **Year** 2003 **Aim of review** Are early prevention interventions effective in enhancing parental sensitivity and attachment? **Design** Meta-analysis **Quality score** **-**	**Databases searched** PsychLIT, Dissertation Abstracts, Medline **Other searching** Reference list checking, book chapters searched, experts contacted **Years searched** Not stated **Inclusion criteria** Case studies excluded, unpublished, conference presentations excluded	**Included populations** Any child under 54 months **Excluded populations** None specified **Settings** Any	**Intervention description** Interventions aimed at enhancing positive parental behaviours such as responsiveness, sensitivity or involvement. Full details of interventions available from the authors. **Control/comparator** any	**Primary outcomes** Parental sensitivity, parental attachment, observational measures only **Secondary outcomes** **Follow up** Not specified	Meta-analysis of 51 RCT primary data sets and 81 outcomes of all study designs relating to parental sensitivity. RCT interventions to improve maternal sensitivity appeared to have a moderate effect (d=0.33, p<0.001). Including all the studies in the set produced an effect size of 0.44 (p<0.001) with the randomised studies producing less effect than non-randomised studies. For the RCTs only -	**Limitations identified by author** **Limitations identified by review team** **Evidence gaps** **Funding** None identified

					interventions focussing on sensitivity only showed an effect size of d=0.45 p<0.001, those combining sensitivity and support were d=0.27 p<0.001, and those encompassing representation sensitivity and support were d=0.46 p<0.001. There was no significant difference between interventions conducted in the home and elsewhere, for all the studies p=0.07, for RCTs only p=0.12. For interventions in home RCTs only d=0.29, all studies d=0.40. For interventions outside the home RCTs only d=0.48, all studies d=0.52. Lower effects were found for studies using HOME (d=0.21) or NCAST (d=0.25) as outcome measures compared with other rating scales or measures (d=0.38/d=0.45).	

					Characteristics of more successful interventions across all the studies were: that video feedback was included (p=0.04); interventions had less than 16 sessions (p<0.001); interventions did not include personal contact (instead provided equipment) p<0.05); and interventions started later (after age of 6 months) p=0.04. Multiple regression analysis indicated two significant predictors of outcome – the focus of intervention (b=0.26 p=0.03), and child's age at start (b=0.23 p=0.04). In this same study, the number of data sets relating to attachment interventions was 29, with 23 RCTs. The effect size for attachment security was d=0.19 p<0.05 across all designs	

					and d=0.20 p<0.05 for RCTs only. The analysis of these data did not separate studies by home/not home delivery. The authors report that studies which had the largest effect size for sensitivity were also most effective in enhancing attachment security, and that video feedback, number of sessions and children's age at start were significant for this outcome in line with the sensitivity f **Attrition** Not reported	
Authors Bayer et al. **Year** 2009, Australia **Aim of review** What is the effectiveness of interventions for mental health in 0-8 year olds? **Design**	**Databases searched** Medline, PsychInfo, Cinahl **Other searching** Hand searching of recent reviews 1996-**2007** **Years searched** 1995-2007 **Inclusion criteria** RCTs with follow up of more than 6 months	**Included populations** Child mean below 9 years. Most programmes targeted towards at risk children, with selected environmental and/or behavioural risks **Excluded populations**	**Intervention description** Preventive interventions for behavioural and emotional problems **Control/comparator** Any	**Primary outcomes** Outcomes of behaviour or emotional problems assessed on standard measures, excluded papers with "narrow behavioural or emotional outcomes e.g. fire setting, fear of snakes" Intention to Treat Analysis with up to 15% loss to follow up	58 Infancy and toddler/pre-school papers included (group programmes + where possible to identify universal excluded). Paper divides into effective programmes with moderate bias, effective programmes with high bias and	**Limitations identified by author** Limitations of searching + potential reviewer bias. **Limitations identified by review team** Some economic data, specific outcome data not provided.

Systematic review **Quality score** +		Children with clinical diagnosis of a mental health problem **Settings** All settings – paper divides by infancy & pre-school		**Follow up** 6 months to 3 years follow up	ineffective programmes. Effective individual programmes for at risk - moderate bias – Nurse Home Visitation Programme, Early Start Programme, Family Check-up. Effective with high bias – Home-based nurse intervention, High/Scope, Triple P Parenting Programme, Positive Parenting and Sensitivity Discipline. Ineffective programmes – Infant health and development programme, home visiting programme, comprehensive child development programme, family nurse partnership. Parent education programme: effective for anxiety disorders. No other effect reported. Aspects of programmes considered effective and applicable to	**Evidence gaps** Paucity of research on prevention of emotional problems. **Funding** State of Victoria, Australia

					Australia. Nurse Home visitation: effective for child abuse, mother successive pregnancies and work force. Ineffective for child cognitive development and behaviour. Early Start: effective for child internalising problems, positive and punitive parenting, parent report of severe assault, improved preschool attendance. Ineffective for child externalising problems, maternal health, family functioning and economics. Family check up: effective for proactive and positive parenting skills correlated with changes in child disruptive behaviour. Ineffective for negative parenting and child	

					internalising behaviour. Triple P: effective for child behaviour problems, parenting practices, parent confidence anxiety and stress. Ineffective for some parent child interaction measures and parent distress/conflict measures. **Attrition** Details of attrition not provided	
Authors Bernazzani et al **Year** 2001 **Aim of review** How effective are parenting programmes for preventing behaviour problems and delinquency **Design** Narrative review **Quality score**	**Databases searched** PsychInfo, Medline, Cochrane Library, Future of Children publication **Other searching** Reference list searching of previous reviews **Years searched** 1967-2001 **Inclusion criteria** Controlled trials, studies scoring 4 or 5 stars on Threats to Trial Integrity Score	**Included populations** Families with a child aged under 3 at start of intervention **Excluded populations** Not defined **Settings** Any	**Intervention description** Parent training or support a major component **Control/comparator** Any	**Primary outcomes** Assessments of disruptive behaviour including self reported delinquency, self parent or teacher reported measures of disruptive behaviour, observer measures of disruptive behaviour in a classroom **Secondary outcomes** **Follow up** Immediate end of intervention to 13 years	7 studies included, four child under 12 months, ranged from 2 to 6 years. 4 studies no evidence of effectiveness, two reported beneficial effects, one mainly beneficial with some harmful effects. Treatment effect ranged from 0.25 to 1.05. **Attrition** Not reported, described as low	**Limitations identified by author** Limited number of studies included, few designed to prevent disruptive behaviours **Limitations identified by review team** Limited searching of databases **Evidence gaps** Need for longer term follow up,

+						**Funding** Canadian Institute for Advanced Research, FCAR, Molson Foundation, SSHRC Canada, St-Justine Hospital Research Center
Authors Burgher **Year** 2010 Switzerland **Aim of review** Effects of intervention on cognitive development linked to social background **Design** Systematic effectiveness review **Quality score** -	**Databases searched** "Computerised databases like ERIC, PsycInfo, PubMed" **Other searching** Online research portals ec.europa.eu/research, books, major research reports were search for via the internet **Years searched** Published after 1990 + 1 study 1987 included "because of its importance" **Inclusion criteria** Primary studies with a control group, the research procedures and sample were specified in detail, average to large scale samples with at least	**Included populations** Pre-school - advantaged and disadvantaged families, majority of programmes economically disadvantaged population **Excluded populations** Not specified **Settings** Centre-based including different institutions such as preschools, childcare centres, crèches, playgroups, day care nurseries, nursery schools	**Intervention description** A promotion or prevention programme focussed on child well-being **Control/comparator** A comparison group that either received no preschool education or had been assigned to another programme	**Primary outcomes** Indicators of the construct of children's cognitive development **Objective** – British Abilities Scales, reading and maths tests, Concepts test, Ordering test, Revised Amsterdam Child Intelligence Test RAKIT, "General cognitive tests", administrative records, Academic Rating Scale, Peabody Picture Vocabulary Test, Woodcock-Johnson Tests of Achievement, McCarthy Draw-A-Design task, school progress records, Oral and Written Language Scale, Comprehensive Test of Phonological Processing, Deleware State Testing Program, Learning Accomplishment Profile,	23 programmes examined. Range of effect sizes between programmes and for different measures between 0.03-0.985. Pre-reading 0.28, 0.38, 0.19-0.24 Letter-word identification 0.05, 0.79, 0.985 Early writing 0.13, n/s-0.16 Language 0.46, 0.03, 0.52-0.55 Vocabulary 0.26, n/s-0.12 Colour naming 0.60 Number concepts 0.47, 0.47, English 0.22 Maths 0.26, 0.04, 0.23, 0.08, n/s IQ/cognitive skills 0.58, 0.36, 0.44, 0.15, 0.33-0.55 Reading 0.12 Book knowledge 0.67 Science 0.27	**Limitations identified by author** Heterogeneous studies **Limitations identified by review team** Poorly reported search strategy, difficult to extract information for at risk children specifically Pre-test data not included in all studies Predictive validity of early academic test scores may differ across assessments as a function of test type, construct being assessed, length of prediction, and administration procedures - so

	300 participants, published journal paper or research report, studies included in 4 other reviews (Anderson et al 2003, Barnett, 1995, Boocock 1995 and Currie 2001) "largely omitted"			Raven's Matrices, English Picture Vocabulary Test **Subjective** - official reports, teacher reports, student profiles, family and participant surveys, other tests for maths/reading/language **Follow up** Follow up 4 years to 46 years	Oral comprehension n/s Spelling 0.64,0.743 Applied problems 0.38, 0.355 4 programmes benefitted mainly the disadvantaged children, others brought about general progress for all children involved. **Attrition** Not reported	need to treat results with caution **Evidence gaps** Need to disentangle aspects of pre-school experience **Funding** No declared funding body
Authors Coren & Barlow **Year** 2009 **Aim of review** How effective are parenting programmes for improving psychosocial outcomes for teenage parents and their children **Design** Narrative review **Quality score ++**	**Databases searched** Medline, Embase, Cinahl, PsychLit, Sociofile, SSCI, ASSIA, Cochrane Library ERIC, NRR **Other searching** Reference list searching **Years searched** 1970-2000 **Inclusion criteria** RCTs	**Included populations** Parents below the age of 20 **Excluded populations** Not defined **Settings** Any	**Intervention description** Parenting programmes in individual or group form, offered antenatal or postnatal, using a structured format, focussed on improving parenting **Control/comparator** Waiting list, no treatment or placebo	**Primary outcomes** Nursing Child Assessment Teaching Scale, Bzoch League Receptive Expressive Emergent Language Scale, Utah test of Language Development, Parental attitudes Questionnaire, Parenting Knowledge Test, About Your Childs Eating Questionnaire, Parent Child Early Relational Assessment, Semantic Differentials Measure, Pharis Self Confidence Scale, Caldwell Home Inventory **Secondary outcomes**	**Attrition** Not reported, described as low	**Limitations identified by author** Parents had volunteered to take part, mothers only included, limited study design, small number of participants **Limitations identified by review team** **Evidence gaps** Need for longer term follow up, need to include fathers **Funding**

				Follow up Not reported		HSRU
Authors Doggett et al. **Year** 2009 **Aim of review** How effective are home visits for women with drug or alcohol problems **Design** Meta-analysis **Quality** ++	**Databases searched** PsychInfo, Medline, Embase, Cinahl, PsychInfo, Cochrane Pregnancy and Childbirth Register **Other searching** Citation searching, approaching experts, hand searching of journals **Years searched** 1966-2004 **Inclusion criteria** Trials using randomised or quasi randomised design	**Included populations** Pregnant of post-partum women with drug or alcohol problems **Excluded populations** No drug/alcohol problem **Settings** Home visits	**Intervention description** Home visits **Control/comparator** Any	**Primary outcomes** Pregnancy or post partum outcomes, infant/child outcomes, psychosocial outcomes **Secondary outcomes**	Six studies identified. None provided antenatal component. No sig difference in illicit drug use (2 studies RR 0.95 CI 0.75-1.20), no sig difference failure to enrol in a drug treatment programmes (2 studies RR 0.45 CI 0.10-1.94), continued alcohol use (RR 1.08 CI 0.83-1.41). No difference in Bayley MDI (3 studies weighted mean diff 2.89 CI -1.17-6.95) or Psychomotor Index (WMD 3.14 CI -0.03-6.32). No impact on breastfeeding at 6 mpnths, incomplete infant vaccination, non-accidental injury, non-voluntary foster care, failure to use post-partum contraception, child behavioural	**Limitations identified by author** Methodological limitations of the studies **Limitations identified by review team** **Evidence gaps** Need for higher quality studies, need for studies of women's views **Funding** None identified

					problems, involvement with child protection services.	
Authors D'Onise et al. **Year** 2010 Australia/UK **Aim of review** Evidence for the effect of centre-based interventions on healthy 4 year olds **Design** Systematic effectiveness review **Quality score** +	**Databases searched** Medline, Embase, Soc Abstracts, ERIC, Psych info, Head Start, Cochrane, Campbell, C2_SPECTR **Other searching** Ref list checking, hand searching of "Child Development" **Years searched** 1980- July 2008 **Inclusion criteria** Published journal articles, grey lit, primary studies with control group	**Included populations** Healthy 4 year olds "mostly disadvantaged populations in the USA" **Excluded populations** Age, non-healthy **Settings** A centre-based programme (may include other components)	**Intervention description** Any intervention – preschool, primary school programme, health services, social services, parenting programmes, home visiting, kindergarten programme, nutrition, community development, educational daycare, Head Start, Montessori, physical activity, Bereiter-Engelmann Preschool, DARCEE preschool, various centres. Almost half of the studies examined government-funded programmes **Control/comparator** Any control group	**Primary outcomes** **Physical health outcomes – objective** "Vital statistics", measured height, measured weight, hospitalisations, dental visit, emergency admissions, vaccinations, school record of free lunch, school record of sickness days, government information, diagnosed illness **Physical health outcomes – subjective** health provider report, school records, scales of independent behaviour, pupil behaviour inventory, parental report of illness and number of injuries, parent reported health status, teacher report of health and wellbeing, reported limitations to activities of daily living **Social outcomes – objective** Pearlin Mastery Scale, self concept, Piers-	37 included studies. Range of health outcomes reported encompassing physical, social, and mental health. 215 effect size estimates reported. 28% did not include a null value and were greater than 0.2. 53% of effect estimates demonstrated no effect of centre-based interventions. 36% supported an beneficial effect of intervention – in regard to the outcomes of obesity, growth, social competence, crime. Few estimated adverse effects. Lack of consistent evidence for benefits in diet and growth. Inconsistent evidence for beneficial outcomes of an improved home environment except for obesity following	**Limitations identified by author** English language, mostly USA, reports may not have been identified by the searches. Only 3 interventions from the developing world (Turkey, Mauritius & Thailand) True extent of potential benefit from ECD interventions on health outcomes in childhood has not been adequately characterised given the array of often seemingly unrelated health outcomes assessed & the homogenous nature of the intervention populations studied **Limitations identified by review team**

				Harris Self Concept Scale, Rosenberg Self Esteem Scale, Lawrence Self Esteem Scale/Questionnaire, Coopersmith Self Esteem Inventory, Social Skills Rating Scale, California Preschool competency Test, Ypsilanti Rating Scale, , Child Behaviour Checklist, peer rejection, Parent Perceived Social Competence Scales, Social competence and behaviour evaluation questionnaire. **Social outcomes – subjective** Teacher rated social competence **Mental health outcomes – objective** Centre for Epidemiological studies Depression Scale, Ontario Child Health Study Questionnaire, , Revised Behaviour Problem Checklist, behaviour composite score, Strengths and Difficulties Questionnaire, school record of conduct/emotional problems, behaviour by	programmes with emphasis on nutrition. No effect on diagnosed physical illness. Inconsistent findings regarding general health. No impact on mortality. Lack of association between intervention and self esteem. Six studies found beneficial effects on social competence, 6 found no effect. Mixed findings in regard to mental health problems. Some evidence of effect on crime/delinquency. **Attrition** 64%-98% sample followed up	Process of checking includes + extractions not reported **Evidence gaps** Need for standardised robust measures **Funding** National Health and Medical Research Council Australia

				high educational quality, Socially Resilient Scale, , Parental Acceptance-Rejection Questionnaire, Child Behaviour Checklist, Kindergarten Developmental Checklist, composite of classroom behaviour scores, Eyberg Child Behaviour Inventory, ADHD rating scale, Behaviour Problems Index, Rutter A/B scale, Connors Teacher Rating Scale, parental report of school suspensions, self report of suspensions, criminal record, court records. **Mental health outcomes – subjective** self rated school conduct , self report questionnaire, teacher reported delinquency **Secondary outcomes** 24 hour child and parent dietary recall, use of bicycle helmets, traffic safety **Follow up** 1 year to age 20		
Authors Kearney et al.	**Databases searched** "research literatures of nursing, medicine,	**Included populations**	**Intervention description** In home interventions	**Primary outcomes** Mental health and life course – psychological	Mother psychological status positively affected by	**Limitations identified by author**

Year 2000 **Aim of review** What is the effect of home visits to vulnerable young families **Design** Narrative review **Quality score** **-**	psychology, public health, education, sociology and social work" **Other searching** Hand searching + reference list checking **Years searched** 1970 onwards **Inclusion criteria** Experimental or quasi experimental designs	Vulnerable families defined as families of newborns with either medical (prematurity) or social risks (poverty, single parenthood, adolescent parenthood, substance abuse, or risk of child abuse **Excluded populations** Interventions of a single visit, children with chronic problems other than prematurity **Settings** Home	conducted by nurses for the purpose of promoting health and preventing illness. **Control/comparator** Any	status, perceived social support, repeat pregnancy and birth within 2 years, community living skills, rates of unemployment or return to school, alcohol related incidents, relationship building, parenting skills, home environment factors, rates of child injury, preventable illness, abuse, response to infant cues, Bayley Scales, Stanford Binet IQ, Denver Developmental Screening, health records, maternal records, immunizations **Secondary outcomes** **Follow up** No details	visits in 3 or 4 studies, not improved in 1. Perceived social support was improved in 2 studies and in subgroups in a third, repeat pregnancies and births within 2 years were reduced from 31% to 14% in a subgroup of women with high psychological resources, and repeat pregnancies but not live births were reduced in a subgroup of poor unmarried women. Neither outcome was affected in a programme for black adolescent mothers. Community living skills not improved in 2 studies that measured it. Rate of employment or return to school were not improved except in a subgroup of low income unmarried mothers in one study (Olds). Direct focus on nurse parent relationships appeared as	**Limitations identified by review team** Home visits in the US considered by parents a sign of inadequacy, unlike UK where home visitors are common. No discussion of process of extraction/inclusion. No details of individual quality. **Evidence gaps** Need to confront problems of attrition **Funding** None identified

					important as boosting parental resources and social support. In 4 of 10 reports of HOME scores intervention groups improved over control. Abusive attitudes reduced in 2 studies but not 2 others. Parenting attitudes and behaviours improved in six studies but not 5 others. Injuries, child abuse or neglect were reduced in 3 samples but not in 4 others. Positive impacts on maternal child interaction were reported in 4 of 9 studies. The studies that focussed on this as a specific aim found positive effects. 4 of 12 studies reported positive intervention effects on Bayley Scales of 9 to 19 point improvement. Three studies reported improvement on Stanford Binet scale, no effect on Denver Scale. The Child	

					behaviour checklist showed no change in 2 studies. Of the 5 studies which showed intervention effect in child development 3 were conducted with preterm infants. Costs were provided in 5 studies, Old's intervention model $1,772 per family. Kang cited costs of $550 per family. **Attrition** Described as substantial in many studies	
Authors Kendrick et al. **Year** 2000 **Aim of review** Does home visiting improve parenting and the home environment? **Design** Narrative review with meta-analysis of 12 studies **Quality score ++**	**Databases searched** Medline, Cinahl, Embase, Cochrane **Other searching** Hand searching of Health Visitor, contact with experts and organisations, advertising in journals, reference lists **Years searched** 1982-1996 **Inclusion criteria** RCTs or NRCTS evaluating a home visiting programme	**Included populations** Not specified **Excluded populations** Not specified **Settings** Home	**Intervention description** Diverse range of interventions, aim of intervention and length of intervention. Included nurses, lay home visitors, community women, students, teachers, social workers. Purpose – health advice, counselling, child rearing advice, parent training, provide books and toys, problem solving, encouraging	**Primary outcomes** HOME Measures of parenting including assessment of interaction, mother-child attachment, attitudes towards child rearing, developmental expectations, attitude towards child **Secondary outcomes** **Follow up** Varied up to 2 years	12/17 studies assessing interaction reported significantly better interaction for intervention group. 5 studies no difference in mother-child attachment maternal interaction, engagement or warmth. 3/7 studies assessing parental attitudes and behaviour reported favourable outcomes for intervention group. 4 studies found no effect on	**Limitations identified by author** Lack of detail in data precluded further meta-analysis Short follow up, may suggest effect fades over time **Limitations identified by review team** **Evidence gaps** Need to isolate elements of

	including at least one visit. Programme had to include tasks within the role of a British health visitor		interaction with child, child development programme. Ranged from single session to intervention over 2 years, weekly visits, monthly visits, bi-monthly **Control/comparator** No visits, no training		preference for use of positive as opposed to negative motivation in disciplining the child, the extent to which parents were authoritarian or attitudes to child rearing. 5 studies reported developmental expectations, four found difference favouring the intervention group. **Attrition** Not reported	successful intervention **Funding** HTA NHS R&D
Authors Letourneau et al. **Year** 2004 **Aim of review** What are the support needs and interventions available for adolescent mothers? **Design** Narrative review **Quality score**	**Databases searched** CINAHL, Medline, Psych Info, Eric, Healthstar **Other searching** Reference list checking **Years searched** 1982-2003 **Inclusion criteria** Post hoc evaluations of existing programs, quasi experimental intervention studies, experimental RCT studies	**Included populations** Adolescent mothers in post partum period **Excluded populations** Not defined **Settings** Any	**Intervention description** Social support-education **Control/comparator** Any	**Primary outcomes** Contraceptive knowledge and behaviour, employability, parental confidence and psychological wellbeing, parenting skills and knowledge, child health and development **Secondary outcomes** **Follow up** Not described	The three interventions assessing contraceptive knowledge and behaviour found positive changes for the intervention group (Marsh & Wirick 1991 gains in contraceptive knowledge and behaviour, Weinman et al. 1992 positive change in attitudes to sexual intercourse, O'Sullivan & Jacobsen 1992 decrease in repeat	**Limitations identified by author** Primary study designs **Limitations identified by review team** Lack of detail regarding process of inclusion/exclusion, limited detail of studies, poor reporting of data **Evidence gaps** Which elements of an intervention are

-					pregnancies 12% versus 28%, no other details of changes reported). Three interventions assessing self-confidence and self-esteem also reported positive outcomes (significant gains in self-confidence and self-esteem Censullo 1994, significant increases in self-esteem Marshall et al. 1991, significant difference in level of coping, loneliness and parenting confidence at 3 month follow up Schinke et al. 1986, all data as reported). The paper also reports gains in knowledge of child development in three primary studies, gains in parenting techniques in one and reduction in risks for child abuse in one, increases in parenting skills and knowledge, provision of a stimulating home environment in two and a reduction	most successful **Funding** None identified

					in the number of days in hospital for two. No data is provided however for these outcomes beyond this positive report. The review authors concluded that limitations in study design presented challenges to evaluating the interventions, with more research needed.	
Authors MacLeod and Nelson **Year** 2000 **Aim of review** What is the effectiveness of programmes promoting family wellness and preventing child maltreatment? **Design** Meta-analysis **Quality score** ++	**Databases searched** Child abuse and neglect, ERIC, Psychlit, Medline, Criminal Justice Periodical Index **Other searching** Reference list checking, hand searching **Years searched** 1979-1998 **Inclusion criteria** Prospective randomised studies with controlled group, journal article, published paper, book, dissertation. An effect	**Included populations** Children 0-12 **Excluded populations** Sexual abuse programmes **Settings** all	**Intervention description** All types of prevention programmes, sexual abuse prevention excluded **Control/comparator** Any	**Primary outcomes** Placement rates, maltreatment, parent attitude, parent behaviour, HOME **Secondary outcomes** **Follow up** any	Total mean weighted effect size was 0.41, with social support/mutual aid (reactive) having the highest effect size and multi-component pro-active interventions having the second greatest effect (0.56). Pro-active home visiting interventions had a total mean weighted effect size of 0.406. Interventions delivered in the home for participants with low SES had lower effect sizes than those with mixed SES levels	**Limitations identified by author** **Limitations identified by review team** **Evidence gaps** **Funding** Social development partnerships Human Resources Development Canada

	size could be calculated, a measure related to child maltreatment or family wellness, all types of prevention programmes				(0.351 versus 0.756 p<0.05). Effect sizes were high for interventions of 13-32 visits and lower for interventions of 1-12 visits and 33-50 visits. Effect sizes were lower for interventions with a component of social support than for those without a component of social support. Effect sizes were largest for measures of family wellness and smaller for measures of child maltreatment. **Attrition** Not reported	
Authors Manning et al. **Year** 2010 Australia **Aim of review** How do early development programmes affect outcomes in adolescence.	**Databases searched** 10 databases including SAGE full text, CSA, Informit **Other searching** Manual search of key journals and review articles, Author contact, unpublished studies included.	**Included populations** Children aged 0-5. 72% of all participants were African American. **Excluded populations** Programmes aimed at treating children with	**Intervention description** EDP include: Structured pre-school programme (64%) Home visitation component (54%) Family/parenting support (46%) Centre based child care/ developmental day care component (36%)	**Primary outcomes** Seven domains: Cognitive development Educational/academic success Social emotional development Deviance Social participation Criminal justice outcomes Family wellbeing.	11 intervention programs reported in 17 follow up studies. Mean weighted effect sizes for 7 domains: Criminal justice: 0.234 Family wellbeing: 0.178 Cognitive development: 0.339 Social participation:	**Limitations identified by author** Lack of good quality longitudinal studies with adolescent outcomes. Sample sizes reduced power. 80% of studies had sample sizes less than 300.

Design Systematic review and meta-analysis **Quality score** +	**Years searched** 1970-2008 **Inclusion criteria** Prospective "level 4" design, e.g. randomised or matched groups, quasi-experimental design. Interventions began before children started school, focus on developing or enhancing child, parent-child, or family wellbeing, programs adopted universal or selective approaches, not specifically aimed at treating mental health or severe development problems, at least one post intervention follow up, effect size could be calculated, directed at disadvantaged populations.	mental health or severe developmental delays. Interventions with no follow up in adolescence. Papers relating to economic evaluation of programmes. **Settings** Not specified	Parent education (9%). **Control/comparator** No details	**Secondary outcomes** Potential moderators included: Type of programme Program duration Program intensity (no. sessions) Number of program components Use of a follow through component. **Follow up** Adolescence	0.371 Deviance: 0.481 Education success: 0.528 Social emotional development: 0.157 Overall mean weighted effect size across domains: d=0.313, p<0.001, equal to 62% higher mean for an intervention group than a control group. ii. No significant difference with respect to no. of program components, Q=0.129, p=0.937 Significant difference between programs with fewer than 500 sessions and 500 sessions or more, Q=11.883, p<0.001 For educational success, significant difference between programs with fewer	**Limitations identified by review team** More detailed info needed on programmes and study populations **Evidence gaps** Need an enlarged evidence base that includes more long-term experiments as well as rigorous evaluations and cost-benefit analyses of large-scale programs in countries outside the US, and that also incorporates detailed information about program philosophies, modes of implementation and characteristics of client populations More interventions and evaluations outside the US **Funding** None identified
Authors McNaughton,	**Databases searched** Medline, CINAHL,	**Included populations**	**Intervention description**	**Primary outcomes** Nursing child	A range of positive treatment effects	**Limitations identified by**

Year **2004** **Aim of review** Evaluation of nurse home visits **Design** Narrative systematic review **Quality score** **-**	PsychInfo **Other searching** Reference lists **Years searched** 1980-2000 **Inclusion criteria** Home visiting intervention delivered by nurses, directed towards pregnant women or mothers with young children, use of experimental design	Pregnant or post partum women, 10 of the studies at risk populations including African-Americans, socially at risk, drug users, teenage parent, low SES. **Excluded populations** Women without young children **Settings** Home	Home visits lasted for variety of length of time, 4 or 5 visits up to 41. Weekly to bi-monthly, over 6 weeks up to 2 years. **Control/comparator** No details	Assessment Teaching Scale, Social competence, medical records, Edinburgh Post Natal Depression Scale, Parenting Stress Index, HME, Patient satisfaction, Bayley Scales, Child Abuse Potential Inventory, Breastfeeding experience scale, community life skills scale, adult conversational skills scale, life experiences survey, difficult life circumstances scale, personal resource questionnaire, Beck Depression Inventory, Nursing Child Assessment Feeding Scale, diet history, Denver Scale, Stanford Binet Intelligence, Neonatal Perception Inventories **Secondary outcomes** As above **Follow up** Immediate	were reported including improvement in maternal + child health, mental health, parent-child interaction, home environment, perceptions of infant behaviour, use of services. Only 2 statistically significant effects reported in one paper – positive impact on educational outcomes for mother, and lack of effect on use of prenatal health care. **Attrition** Refusal rates of 9-54%. Dropout rates of 2-35%. Higher dropout rates for studies lasting over 18 months.	**author** Small sample sizes, short follow up, lack of use of theoretical framework for the intervention **Limitations identified by review team** Lack of appraisal of study quality **Evidence gaps** Is home visiting an intervention or a context for an intervention **Funding** None identified
Authors Nelson & Westhues **Year**	**Databases searched** none **Other searching**	**Included populations** Pre-school children	**Intervention description** Any intervention begun during child's	**Primary outcomes** Indicators of cognitive development, social emotional behaviour or	Cognitive impacts tended to be greatest during the preschool period	**Limitations identified by author**

2003 **Aim of review** What are the long term follow up outcomes of prevention programmes for preschool children **Design** Meta-analysis **Quality score** +	Manual search of journals **Years searched** 93-2000 **Inclusion criteria** Prospective design with a control or comparison group. At least one follow up assessment in elementary school or beyond. Studies reported in a form from which effect sizes could be calculated. Reported in journal articles book chapters books unpublished reports or dissertations	**Excluded populations** Children manifesting mental health or developmental problems **Settings** any	preschool years focusing on prevention or promotion of cognition, social and emotional wellbeing or family wellbeing **Control/comparator** Any	parent-family wellness **Secondary outcomes** **Follow up** In school years	(d=0.52) however they were still evident up to grade 8 (d=0.27) and persisted in to high school and beyond (d=0.30). Social-emotional impacts were similar at kindergarten level (d=0.27) and high school and beyond (d=0.33). Parent wellness impacts were d=0.33 at preschool, and d=0.30 at grade 8. Programmes with direct teaching components in pre-school and those that followed through from pre-school to school tended to have the greatest cognitive impacts. They also found that longer programmes tended to produce greater impacts on cognitive outcomes at pre-school and on social-emotional outcomes as school age. More intense programmes tended to produce greater impacts on pre-school cognitive	**Limitations identified by review team** **Evidence gaps** **Funding** None identified

					outcomes and grade 8 parent-family outcomes. They concluded that there was evidence to suggest that these programmes had short, medium and long term impacts. **Attrition** 47% of studies retained at least 80% of participants at first follow up	
Authors Sharps et al. **Year** 2008, USA **Aim of review** What is the evidence for the effectiveness of programmes to prevent partner violence? **Review design** Systematic review **Quality score**	**Databases searched** Pubmed, CINAHL Plus, Web of Science **Other searching** Reference list checking **Years searched** 1997-2007 **Inclusion criteria** Studies in English. Quantitative data describing health outcomes for mothers and their infants. Original studies based in US	**Included populations** Pregnant women or mothers within one year of birth. All studies reported impoverished, high risk samples of women. **Excluded populations** Not reported **Settings** Any	**Intervention description** A prenatal and/or postpartum (within one year of birth) intervention that utilised nurses, paraprofessionals or lay health workers. Intervention included intimate partner violence (not family violence without IPV). **Control/comparator** Any study design included, any comparator	**Primary outcomes** Child Abuse Potential Scale, Conflict Tactics Scale, single question asking if had been the victim of domestic violence, survey asking if had a physical or domestic abuse problem, self-reported use or want for service. **Follow up** Not reported	8 papers included. 6 RCTs, 1 B&A, 1 cross-sectional. Ii Review findings presented only as summary table of studies rather than synthesis. 3 papers report no difference between control and intervention groups. 3 papers report some intervention effect . One study reports less child maltreatment linked to fewer incidents of IPV. Treatment effect of intervention decreased as level of IPV increased. One study reported “a decline” in CAP	**Limitations identified by author** Majority of studied reported cross-sectional data only – provides little knowledge about the pattern of IPV during prenatal and postpartum period Across all studies, families included in the samples were low income and Medicaid eligible, which limits generalising findings to families of other socio-economic backgrounds Studies used

-					score following intervention. Another study reported no effect for para-professional delivered intervention but a significant effect for the intervention when delivered by a nurse (OR 0.47 p=0.05 over 6 months, OR0.60 p=0.09 since child aged 2). Other 2 studies outcome not clear iii Not reported	different types of home visitors with differing educational backgrounds and preparation for the HV roles Most studies did not report documentation of home visitors' adherence to study protocols or monitoring fidelity. Thus it is difficult to determine how much of the HV intervention protocol families received and how this influenced IPV outcomes. **Limitations identified by review team** Poor reporting of findings. Lack of narrative synthesis/meta-analysis **Evidence gaps** How to improve cost-effectiveness of home visiting. **Funding** JHU-SON center

						for health disparities
Authors Shaw et al. **Year** 2006, Canada **Aim of review** What is the effectiveness of postpartum support to improve maternal parenting, mental health, quality of life? iv. Systematic review v. +	**Databases searched** Medline, Cinahl, PsycInfo, Cochrane **Other searching** None reported **Years searched** Searches carried out in 1999, 2003 and again in 2005 (no inclusion data criteria reported) Paper reports that detail regarding search strategy described in another paper **Inclusion criteria** RCTs. Studies conducted in N America, Europe, Australia or New Zealand.	**Included populations** Women post-partum (up to 1 year). 4 studies considered risk populations. 1 study women at risk for family dysfunction, 1 income of less than $15,000, 1 mother at risk for post natal depression, 1 unwed + on Medicaid + African/American, 1 selected on midwife assessment of higher need **Excluded populations** Not reported **Settings** Any	**Intervention description** Interventions initiated from immediately after birth to one year post partum. Post partum support – an interpersonal interaction between a postpartum woman and trained individuals or health care professionals. Could be delivered in any setting and in any form. **Control/comparator** Any	**Primary outcomes** For the studies of interest(at risk, e.g. low income)- Parent-child interaction, satisfaction with service, Parenting Stress Index, Edinburgh Postnatal Depression Scale, Mother-infant relationship rating, peer support, SF36, Home Observation for Measurement of the Environment. Psychological wellbeing, repeat unplanned pregnancies, immunisation record, emergency service use, return to education after pregnancy **Follow up** 28 days to 18 months	i. 22 studies included (5 in high risk pops) ii From the studies of interest – Mental health component (QoL) of SF-36 improved (diff In mean scores 2.96 95% CI 1.16-4.77 p= 0.002) and reduction in no. Of women with an Edinburgh Postnatal depression scale of more than 13 (21.25 vs. 14.39%, 95% CI -11.99 to -1.91, p=0.001. No difference in physical health component. Statistically significant improvement in home environment and reduction in parenting stress (no figures reported). Statistically significant improvement in maternal parenting skills. Reduction in no. of women with postnatal depression	**Limitations identified by author** Only studies carried out in N America, studies reporting health service utilisation excluded. **Limitations identified by review team** Search strategy limited and extraction process poorly reported **Evidence gaps** Trials needed to evaluate impact on mental health, need for more definitive outcomes measures. **Funding** Bureau of reproductive and child health, Health Canada

					score of 12/13 or below in 3 studies (p=0.010 & p=0.003 & p=0.001) ii. As above Attrition Not reported	
Authors Sweet & Appelbaum **Year** 2004 **Aim of review** What is the effectiveness of home visiting? **Design** Meta-analysis **Quality score** +	**Databases searched** Medline, Eric Psychinfo, Psychological abstracts, social work research **Other searching** Reference list checking, authors and programmes contacted **Years searched** 1965 onwards **Inclusion criteria** End of treatment measures and whole group comparison measures only included	**Included populations** USA families **Excluded populations** Children with special needs or chronically ill **Settings** Home	**Intervention description** Programmes with primary service delivery at home **Control/comparator** Any	**Primary outcomes** Child outcomes - cognitive, socio-emotional, and prevention of child abuse. Child abuse prevention was further divided into measures of actual abuse, potential abuse (using measures such as number of hospital visits or accidents) and parent stress (inclusion described by the authors as because higher levels of stress related to parenting may result in child abuse). Maternal outcomes - enhanced childrearing (including parent behaviours and attitudes) and maternal life course outcomes (such as education, employment and reliance on welfare). **Secondary outcomes**	Weighted mean standardised effect sizes ranged from -0.43 to 0.318 with six of the ten effect sizes calculated significantly differing from zero. For three of the five child outcomes the average effect sizes were significantly greater ($p<0.001$) than zero (cognitive development 0.184, socio-emotional development 0.096 and potential abuse 0.239). Child abuse and parent stress were the exceptions For the five maternal outcomes similarly three of the five average effect sizes were significantly greater (2x $p<0.01$ 1x $p<0.001$) than zero (parenting behaviour 0.139, parenting attitudes	**Limitations identified by author** Many programmes did not include information re length of sessions **Limitations identified by review team** No quality appraisal **Evidence gaps** Need for unpicking of the multifaceted nature of programmes **Funding** None identified

				Follow up Not reported	0.110, maternal life course education 0.134). Maternal employment/wages and public assistance were the exceptions. The authors reported that mean effect sizes for cognitive outcomes were significantly higher when families were targeted than were universally enrolled (M=0.165 SD=1.50 versus M=-0.104 SD 3.18). Studies targeting low income parents were more successful than other studies in terms of preventing child abuse (M=0.354 SD=1.69 versus M=0.55 SD=1.59) however were less successful than other studies in enhancing parenting behaviour (M=0.55 SD=1.59 versus M=0.206 SD=1.70). The authors highlighted that all the effect sizes would be classified as small. They also concluded that no one programme	

					feature emerged as having a significant influence on outcomes with "more often than not design features of programmes not related to effect sizes at all". **Attrition** Not reported	
Authors Zoritch et al. **Year** 2009 **Aim of review** Effectiveness of day care for pre-school children **Design** Narrative review **Quality score ++**	**Databases searched** Medline, Embase, Cochrane Register, SSI, PsychLit, ERIC, BIRD **Other searching** Hand searching of journals, reference list checking, reviews checked **Years searched** ?1977 to 1996 **Inclusion criteria** RCTs or quasi RCTs	**Included populations** Pre-school children under 5 all USA **Excluded populations** Not specified **Settings** Pre-school education	**Intervention description** Non-parental day care for pre-school education. Most were families of lower SES. All except one targeted African American origin only. Most mixed out of home care with home visiting, only three did not include an element of home visiting. **Control/comparator** Any	**Primary outcomes** Educational – IQ, measures of school success, competence in reading, writing arithmetic, general knowledge, self, parent, or teacher reported behavioural measures, self esteem and career aspirations, mother child interaction. Health and welfare – hospital admissions, injuries, infections, speech and language development, teenage pregnancy, employment, marriage, criminal behaviour, welfare assistance. Maternal effects – maternal employment, education and family income. **Secondary outcomes**	All studies showed an increase in IQ. Weighted mean difference in IQ between intervention and control was 14.4 (CI 12.3-16.4). Provision of additional home visiting in one study was not associated with increased IQ. Involvement of fathers in one programme was associated with increased gain in cognitive outcomes. The IQ effect appeared to decrease a year or two after the end of the intervention in most studies. But the early cognitive gains were associated with later prevention of school	**Limitations identified by author** Need to pay attention to comparable groups and ensure minimal loss to follow up. **Limitations identified by review team** **Evidence gaps** Need to separate out effects of parent training from day care **Funding** NHS R&D programme

				Follow up 1 study long term follow up	failure. Differences favouring the intervention group – odds ratio for grade retention (0.47 CI 0.17-0.49), improved classroom and personal behaviour, less delinquent behaviour, fewer arrests, less disruptive behaviour, higher self concept, higher maternal positive involvement. Favourable effects on mothers – average one more year education, fewer unemployed, more financially self supporting, stable employment. Favourable effects on mother-child interaction – infants communicated with their mothers at a higher level, longer periods of mutual play, reciprocal communication. Long term follow up – age 19 in one study more of intervention group held jobs at 19 (50% versus 32%) more	

					attending college or job training (38% versus 21%) fewer in receipt of welfare assistance (18% versus 32%). Fewer had teenage pregnancies or been arrested. Marriage rates higher and single parent rates lower. **Attrition** Not reported	

Appendix 2: Included studies

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MANNING M. HOMEL R. & SMITH C. (2010) A meta-analysis of the effects of early developmental prevention programs on at risk populations on non-health outcomes in adolescence. *Children and Youth Services Review*, 32, 506-519.

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Appendix 3: Excluded studies

Appendix X: Excluded Studies

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Appendix 4: Systematic review search strategies

Child terms	Broad Intervention terms	Vulnerable group terms
MeSH terms – Infant/ – Child, Preschool/ Free-text terms – Infant$ – 0 year$ old$ – 1 year$ old$ – 2 yearold – 3 year$ old$ – 4 year$ old$ – one year$ old$ – two year$ old$ – three year$ old$ – four year$ old$ – toddler$ – preschool$ – pre-school$ – under five$ – under 5 – baby – babies – newborn	MeSH terms – Early Intervention (Education)/ Free-text terms – early intervention$ – progressive intervention$ – progressive program$ – targeted intervention$ – targeted program$ – home visiting and (program$ or intervention$ or postnatal$) – family based and (program$ or intervention$ or postnatal$) – family-based and (program$ or intervention$ or postnatal$) – early education and (program$ or intervention$ or postnatal$) – child care and (program$ or intervention$ or postnatal$) – health support and (program$ or intervention$ or postnatal$) – family support and (program$ or intervention$ or postnatal$) – outreach service$ and support and (program$ or intervention$ or postnatal$)	Free-text terms – vulnerable – sensitive – disadvantaged – at risk – at-risk – low birth weight – child-parent attachment – poor and (cognitive or social or emotional$) – poor adj2 (behaviour or behavior) – difficult adj2 (behaviour or behavior) – low income – poverty – unemployed – jobless$ – single parent$ – teen$ adj2 parent$ – substance abuser$ and parent$

Appendix 5. Databases searched

- MEDLINE and MEDLINE in Process & Other Non-Indexed citations (Ovid)
- EMBASE (Ovid)
- British Nursing Index (Ovid)
- EconLit (Ovid)
- PsycINFO (Ovid)
- Health Management Information Consortium (Ovid)
- Cochrane Library (Wiley):
    - Cochrane Database of Systematic Reviews
    - Cochrane Central Register of Controlled Trials
    - NHS Health Economic Evaluation Database
    - Health Technology Assessment Database
    - Database of Abstracts of Review of Effects
- Health Economics Evaluations Database (Wiley)
- ASSIA (CSA)
- Sociological Abstracts (CSA)
- ERIC (CSA)
- Social Services Abstracts (CSA)
- British Education Index (Dialogue Datastar)
- CINAHL (EBSCO)
- Web of Science (Thompson ISI):
    - Expanded Science Citation Index
    - Social Sciences Citation Index
    - Conference Proceedings index
- Proquest Education Journals (ProQuest)
- The Campbell Collaboration
- EPPI-Centre database:
    - Database of Promoting Health Effectiveness Reviews
    - Database of Educational Research
- Social Care Online