Interventions for Promoting Early Child Development for Health

An environmental scan with special reference to Scotland







Scottish Collaboration for Public Health Research and Policy Rosemary Geddes MBChB, MMed (PH), FCPHM (SA) Sally Haw BSc, HnMFPH John Frank MD, CCFP, MSc, FRCP (C), FCAHS, FFPH A report for the Early Life Working Group of the Scottish Collaboration for Public Health Research and Policy (SCPHRP)

Interventions for Promoting Early Child Development for Health: An environmental scan with special reference to Scotland

Rosemary Geddes, Sally Haw and John Frank

Scottish Collaboration for Public Health Research and Policy

MRC Human Genetics Unit building

Western General Hospital

Crewe Road

Edinburgh EH4 2XU Scotland U.K.

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Definitions

Environmental scan – In management terms, an environmental scan is the internal communication of external information about issues that may potentially influence an organisation's decision-making process. Our environmental scan refers to the process of rapidly scoping the literature for evidence of what works, reviewing the current policy landscape and interviewing key informants to determine which programmes are currently being delivered.

Early child development – The World Health Organization's definition of early child development is the development of physical, socio-emotional and language-cognitive capacities in the early years (1). We include in our definition of early child development the following five domains: physical, social, emotional, communication, and language and cognitive skills.

Early childhood – Usually early childhood is defined as the period from 0–8 years old but in this report we define it as the period from birth until the age of formal entry into primary school.

Mixed early child development intervention – Intervention including a mixture of approaches which could be centre-based and home-based and/or directed at both children and parents.

Model early childhood programmes – Model programmes are generally highly resourced and implemented on a small scale (sample sizes of 20 to 700 in this study) at a few sites (one to three) under optimal conditions. They are similar to efficacy studies in that they determine whether an intervention works in ideal circumstances.

Targeted interventions – Targeted programmes are aimed at particular groups. Targeting can be done by geography, immigration status, biological risk factors (e.g. prematurity), family social risk factors, as well as socioeconomic status.

Universal interventions – Universal early childhood programmes do not discriminate between groups in terms of their need and are implemented for the benefit of all (children and/or families) in the population.

School readiness – Traditionally school readiness was defined as encompassing five skills and attributes: physical wellbeing and motor development; emotional health and a positive approach to new experiences; age-appropriate social knowledge and competence; age-appropriate language skills; and age-appropriate general knowledge and cognitive skills. More recently in the US the School Readiness Indicators Initiative has developed and includes in their definition of school readiness child, family and community components¹.

¹ Called the Ready Child Equation conditions for school readiness include: children's readiness for school; school's readiness for children; and capacity of families/communities to provide developmental opportunities for children.

Executive summary

Background and objectives

The Early Life Working Group of the Scottish Collaboration for Public Health Research and Policy (SCPHRP) has prioritised the equitable promotion of cognitive and social development of children aged two to four years as a key goal. This literature review was conducted to provide practitioners, academics, policymakers and other interested stakeholders with a synthesis of international research evidence that assesses the effectiveness of early childhood interventions aimed at promoting cognitive and social development. Further objectives were to identify the key policies, programmes and interventions, already in use or being piloted in Scotland, designed to impact on cognitive and social development in young children, highlight deficiencies in the current system and suggest potential areas for action.

Methodology

We searched five databases and the grey literature for relevant review level studies of early childhood interventions from 1995 to July 2009 aimed at children 0–5 years with outcome measures relating to child cognitive and language development, social-emotional outcomes or subsequent academic and life achievement. Reviews evaluating interventions by an experimental or quasi-experimental design, or natural experiments with control groups were included. We excluded studies of programmes specifically targeting minority groups in other countries, with little in common with minority groups in Scotland, and those targeting special groups such as children with disabilities or abused children. A search was also conducted for websites providing information relevant to research undertaken, and interventions, policies and programmes delivered, in Scotland which impact on cognitive and social development in the early years. Informal face-to-face, telephone and email interviews were conducted with relevant government departments, academic institutions, research and voluntary organisations.

Data collection and analysis

The search yielded 16 relevant review level studies and reports, which included narrative and systematic reviews and meta-analyses. The grey literature provided a further 11 reviews and reports. From the 27 sources, 26 intervention programmes were identified which were relevant for the objectives and for which there was sufficient information. The quality of the evaluations of each intervention programme was assessed using 10 criteria based on guidelines used in other literature reviews on early intervention studies, and themes which repeatedly emerged as being important for successful evaluation of early childhood interventions.

Most early childhood interventions are designed to have a protective influence against various stressors that children are exposed to, and to partially compensate for risk factors, such as low socioeconomic circumstances and the effect they have on children's overall development. Although the objectives were broadly the same, interventions were highly variable in their eligibility criteria, target group, intensity, longevity, services provided, venues where services were provided and the outcomes which they aimed to improve. Furthermore, the scale at which programmes were implemented and the resources invested differed. Interventions were therefore classified into five clusters as follows: model targeted programmes beginning in infancy; large-scale targeted programmes beginning in infancy; model targeted programmes beginning in preschool; large-scale targeted beginning in preschool; and universal interventions focusing on child development and parenting.

A sixth group of studies, General Early Childhood Education, was included. No prospective controlled trials could be found on standard preschool versus no preschool. Most local and international studies on preschool were observational studies. Even though these were excluded for the environmental scan, an exception was made for the sixth group and observational studies were included.

Results: Effectiveness of early childhood interventions

Model early childhood development programmes have generally been high quality, intensive and wellimplemented with small sample sizes, and replication on a large scale has been difficult. Evaluations of model interventions have been robust and many show statistically significant positive results and good effect sizes. Large-scale interventions have frequently been poorly defined with short-term follow up and numerous methodological problems in their evaluation, making it difficult to assess their true impact.

Model targeted early childhood interventions

The model, targeted early childhood interventions **beginning in infancy** show us that high-quality early childhood education, combined with some home visits to improve the home learning environment, targeted at high risk groups from a very early age can result in positive cognitive and academic achievement outcomes as well as greater early adult self-sufficiency. The highly successful Carolina Abecedarian Project provided high-quality, intensive education from infancy for five to eight years. The intervention groups displayed statistically significant higher IQ scores up to age 15 years, higher academic achievement, fewer placements in special education and retentions in grade, and a higher percentage of college completion. Programme teenage mothers were more likely to: have completed high school, participated in post-secondary training, be self-supportive, be employed and have jobs that were skilled or semi-skilled, and less likely to have subsequent children. There were significantly fewer smokers and less marijuana use in the Abecedarian intervention groups.

The model early childhood programmes **beginning in preschool** were of higher quality with more qualified staff, closer supervision of staff by experts, lower child-staff ratios and smaller group sizes, than the large-scale public programmes. Programmes were more effective in those at highest risk and some interventions were found to be 'wasteful' of resources in children from educated families. The High/ Scope Perry Preschool Project developed and implemented in the Ypsilanti School District, Michigan in the US, represents the most famous and successful early childhood intervention project with the longest follow up. Statistically significant improvements were seen on IQ from age four to eight years. Academic achievement at age 14 and 19 also significantly improved compared to control groups. By age 27 there was more high school completion and higher mean years of schooling. The intervention group had higher monthly earnings, higher percentages of home ownership, and a lower percentage receiving social services at some time between ages 18 and 27 years. There were fewer lifetime arrests and fewer adult criminal arrests including crimes of drug making or dealing. Women had fewer teenage pregnancies and illegitimate children. Improvements continued through to age 40 years in terms of educational attainment, income, family environment and health insurance, and resultant returns on investment.

The Incredible Years Basic Parenting Programme and the Dinosaur Child-Training curriculum for small groups have been well-evaluated and demonstrate some improvements in behavioural problems and social competence in children and improvements in parenting approaches and skills. The programme has been implemented at sites in the UK with positive results but follow up of participants was short.

Large-scale targeted early childhood interventions

Evaluations of large-scale programmes frequently suffered from poor methodological designs and the measured outcomes did not necessarily reflect the real impacts of the intervention. In addition, evaluations were frequently conducted too early, before programmes were properly implemented and established and thus could be shown to work. Lack of standardisation of intervention and control group exposures meant that confounding and contamination may have been serious problems in the evaluations. Attrition and lack of long-term follow up were also problems for most of the large-scale studies. The US Head Start is the largest early childhood intervention worldwide but the body of evidence on Head Start was judged insufficient to make any conclusions about its impact by the US General Accounting Office. Programmes which managed to avoid some of these problems were Early Head Start, the Nurse-Family Partnership, and the Chicago Parent–Child Centers.

The US Early Head Start was one of the few large-scale infancy-start programmes which took into account the programme approach the family had been offered (centre-based, mixed or home-based) and differing implementation patterns in their evaluation. Control groups did not access the same services as intervention groups. Early Head Start provided child, family, community and staff development services. Intervention group children showed improvements in cognitive and language development, better social-emotional development by independent observation, higher emotional engagement with the parent in play and higher sustained attention with play objects. They also displayed lower aggressive behaviour than control groups. Best results, across several domains of child development and parenting behaviour, were seen in families utilising centre- **and** home-based services, and at sites which fully implemented and established programmes early.

David Olds' Nurse–Family Partnership, the home visitation programme which begins during pregnancy, has shown success in all child development domains. It differs from other large-scale targeted programmes in that there were three well-conducted randomised controlled trials (RCT) evaluations, follow up was longer, attrition was lower and interventions were well-defined with unlikely contamination of the control groups. Best outcomes were seen in the children of mothers who had low emotional intelligence and/or poor mental health prior to programme participation, with significant improvements in cognitive and language development, behavioural adaptation which included attention, impulse control and sociability, fewer officially-verified incidents of child abuse and neglect, and fewer health care encounters and days hospitalised for children's injuries or ingestions. At 15 year follow up the Elmira study showed 59% fewer self-reported arrests. In the higher risk subgroup (poor unmarried mothers) their adolescents displayed 54% fewer arrests, 69% fewer convictions, 59% fewer sexual partners, 28% fewer smokers and 51% fewer days drinking. Doubts, however, remain that implementation of this programme in the UK would yield similar effects since a universal public health care system with health visitors is already in place (which US control groups did not have).

The Chicago Child–Parent Centers is one of the few large-scale programmes beginning in preschool that provides us with good evidence of efficacy. In the achievement domain, a higher percentage of the experimental group completed high school and college whilst fewer dropped out of school, were placed in special education or experienced grade retention. In terms of crime and life success, there were lower proportions of overall and violent arrests, higher rates of full-time employment, fewer cases of child maltreatment, higher coverage by health insurance and a lower percentage of depressive symptoms.

Universal interventions focusing on child development and parenting

Universal interventions focusing on child development and parenting show promising outcomes but follow up in the studies has been short-term. The Parents As Teachers intervention demonstrated statistically significant but small effect sizes for cognitive-language and social-emotional outcomes in children. Despite the numerous randomised controlled trials using the Positive Parenting Program (Triple P), its effectiveness in parents of under-threes remains uncertain in terms of objectively assessed social-emotional child outcomes. Providers in Scotland felt that Triple P was more effective in those whose lives were more ordered and not in the most deprived families and that the Triple P videos showing relatively affluent Australian families were difficult to identify with. Both Parents As Teachers and Triple P appear to be effective in reducing child maltreatment and injuries.

General early childhood education

Preschool, whilst not eliminating the differences, can help to reduce disadvantage due to social and environmental factors. It can raise early language, prereading and maths skills, with children from extremely poor families displaying the strongest gains. Quality of the preschool is important and those with warm interactive relationships with children, a trained teacher as a manager, a good proportion of trained teachers on the staff, and which view educational and social development as complementary and equal in importance have better child outcomes.

Full-day programmes appear to be effective for children who are particularly disadvantaged who gain cognitively from more intensive preschool but don't seem to show strongly negative behavioural consequences associated with additional hours. Half-day programmes may be sufficient for children of middle or higher socioeconomic status or income with whom more than 30 hours shows a taper-off of cognitive benefits and intensification of negative social-emotional effects.

The home learning environment is of more importance for intellectual and social development than parental occupation, education or income. Activities (educational games, visits, events, reading etc) have an influence on children's cognitive development and can moderate, but not eradicate, the effect of sociodemographic disadvantage.

Cost-benefit

Economic studies on four of the early childhood intervention programmes (Perry Preschool Project, Chicago CPCs, Nurse–Family partnership and Abecedarian project) showed that between \$6,000 and \$30,000 was spent per child or family. Every dollar invested, however, resulted in returns of between \$3.72 and \$6.89. Returns were from reductions in government spending as result of reduced use of special education services, reduced involvement in juvenile delinquency, reduced welfare and dependency costs, reduced criminal justice costs, and increases in tax contributions.

Results: Early childhood policy, programmes and interventions in Scotland

International policy strongly supports the rights of the child to health care and education, and places a major emphasis on interventions in the early years, particularly with regard to social-emotional and language-cognitive development. For the last decade Scottish health policy acknowledges the profound effects of early influences on lifelong health and numerous policies have been introduced which support the improvement of child health and reducing health inequalities. Most policy documents refer to the body of evidence on the effectiveness of early childhood intervention and the economic argument for taking this approach. The most recent relevant policy, *The Early Years Framework*, calls for a renewed focus on the 0–3 year age group as the period of a child's development that shapes future outcomes. It emphasises the increased need for developing parental skills, antenatal and postnatal support, and centre and community based services for young children.

The implementation of *Hall4* across Scotland has resulted in a screening and surveillance programme with a reduced core content and which aims to more effectively target children and families most in need. The strategy is to classify children as low, medium or high risk by six to eight weeks of age, after which there is no routine contact with those deemed to be low risk until the universal visual screening at age four years (except for immunisation, when contact depends on the care giver bringing the child). There is evidence from Glasgow that only half of high risk children at age one year or older are identified by four months by health visitors.

Sure Start Local Programmes, set up as a cornerstone of the UK Government's drive to tackle child poverty and social exclusion, were charged with providing five core services: outreach and home visiting; support for families and parents; good quality play, learning and childcare; primary and community healthcare including advice about child and family health; and support for children with specialised needs. Existing services were reshaped and value added where necessary. The evaluation in 2005 of Sure Start England suffered from methodological problems and displayed little evidence of efficacy. The more robust 2008 evaluation demonstrated a statistically significant difference in independence and social behaviour favouring intervention children, but no difference in language skills, immunisations or accidents.

In Scotland, only one report of Sure Start activity was found to be evaluated with control groups. Quasiexperimental evaluation of the extended preschool provision for vulnerable two year olds pilot programme did not provide evidence that progress in intervention groups was significantly different from matched controls on child cognitive and language development, or social-emotional outcomes.

Numerous interventions designed to impact on maternal and child health have been implemented in Scotland but very few have been evaluated with experimental designs. Starting Well was one of National Health Demonstration Projects in Scotland. The quantitative evaluation of phase one of Starting Well used a quasi-experimental study design but at 6 months only 57% of families were followed up and by 18 months attrition was more than 50% of the original sample. Triple P was used to support the parenting education and practical support part of the Starting Well programme. The study found: significantly lower rates of depression among mothers at six months but no difference at 18 months; no significant improvement in the quality of the home environment; higher levels of client satisfaction with health visitor support; and higher levels of dental registration. The evaluation of phase two of Starting Well has not yet been published. No evaluations of Starting Well or Triple P in Scotland, within the Edinburgh City Community Health Partnership boundary. A randomised controlled trial may not be deemed necessary since England are currently conducting one.

Education policy provides standards for early education and childcare and tools for centres to conduct self-evaluation using quality and performance indicators. These indicators do not, however, include any individual measurement of children's progress using standardised tests. There does not appear to be any policy or practice of routine standardised monitoring or assessment of cognitive, language or social-emotional development in children 0–6 years in Scotland.

Monitoring early child development

At the population level, the current health and education information systems in Scotland would be inadequate for monitoring the more proximal effects of early childhood interventions especially in relation to cognitive-language and social-emotional development. For the other sectors, the eCare programme offers promise but there would have to be incentives to encourage practitioners to enter information accurately and regularly. Data linkage would need to be considered to link early interventions with medium and longer term outcomes.

The role of the broader context

The literature is dominated by evaluations of micro-level, targeted interventions, probably because these are easiest to robustly evaluate, but we should neither conclude that universal interventions and service provision are not effective nor that targeted interventions are without harm. Combinations of targeted and universal programmes, based on robust evaluation evidence of effectiveness, are necessary to achieve the larger, long-term objective of better and fairer human development and health over the life-course. These, however, may not be sufficient. The critical importance of the larger context should not underestimated, particularly social welfare and labour-market policies that influence the first years of life of children, through economic effects on their parents. Even the most impressive community programmes that stimulate early child development will struggle to 'shift the social distribution of human development outcomes' unless these enabling social and economic policies are also in place.

Conclusion

Early childhood intervention programmes are uniquely powerful at reducing lifelong disadvantage due to social and environmental factors. Significant improvements in all domains of child development, school achievement, delinquency and crime prevention, and life success have been demonstrated with the greatest effects seen in those at highest social risk. IQ and developmental index effects seem to be greatest earlier on, with differences reducing as children age, but academic achievement differences persist leading to better outcomes in adult life. Mixed, two-generation approaches, that is, a combination of centre and home-based programmes focusing on children and parents, appear to be effective. Although initial investments are great, the returns over the long term can be much greater. Scottish health policy demonstrates a clear commitment to early childhood development but much work remains in terms of detail of policy implementation, identification of high risk children and families, and early childhood monitoring systems.

Recommendations

Detailed plans and strategies are required for the implementation of the *Early Years Framework* in Scotland. Early childhood development programmes to equitably address cognitive and behavioural development should be adopted. Programmes should provide a universal seamless continuum of care and support from pregnancy through to school entry with the intensity of support graded according to need (see table on page 62). Robust methods to identify pregnant women and infants at high social and developmental risk are necessary.

Context **must** be taken into account when considering new interventions and alternatives like strengthening or intensifying current systems should be evaluated alongside new programmes. Data to monitor children's development in the Scottish population, and the effectiveness of related programmes, are lacking. More early-stage measures are needed as well as better late-stage measures, which would require data linkage. Crucially, interventions which may affect the broader context, such as family, culture, neighbourhood, and economic, labour and welfare policy, and bring about the necessary social change, must be considered.



Chapter 1 – Introduction

Child wellbeing

Out of 21 Organization for Economic Cooperation and Development (OECD) countries, the UK ranks as last for child wellbeing (2). This takes into account six different dimensions, amongst others educational wellbeing, family and peer relationships, and behaviour and risk. Britain ranks in the bottom quarter in all dimensions except physical health and safety.

Inequality

In Scotland in 2005, full term singleton babies in the most deprived decile were 2.4 times more likely to have low birth weight than those in the least deprived decile (3). In 2006, under-75 deaths were 3.6 times more likely amongst the most deprived than the least deprived decile. Amongst 45–74 year olds, deaths due to coronary heart disease were 3.8 times more likely, cancer deaths were 2.3 times more likely and alcohol deaths were 12.3 times more likely in the most deprived decile compared with the least deprived decile. In those aged 15–44 years, the most deprived were almost 5 times more likely to die than the least deprived. In relative terms, all of these indicators have been stable or widened over the last decade representing poor progress in attempts to reduce health inequalities.

Increasing inequalities and resultant segregation diminishes opportunities for social cohesion. Inequality has spill over effects on society at large, including increased rates of crime and violence, impeded productivity and economic growth, and the impaired functioning of representative democracy (4). The social gradient in health within a country is caused by the unequal distribution of power, income, goods and services. This affects people's access to health care and education, their conditions of work and leisure, their homes and communities, and their chances of leading a flourishing life (5). Sir Michael Marmot argues in his recent WHO Report that this is the result of poor social policies and programmes, and unfair economic arrangements (5).

Human development and opportunity

Human development is a complex interaction of genetics and environmental factors. The early childhood period is considered to be the most important developmental phase throughout the lifespan and can have immediate, delayed or long-term impacts on health. These impacts can be intergenerational and difficult to reverse. Early child development strongly influences wellbeing, obesity/stunting, mental health, heart disease, competency in literacy and numeracy, criminality and economic productivity and social participation throughout life (6). Development, especially of the central nervous system, is most rapid in the unborn child and during the early years when environmental conditions to which children are exposed literally 'sculpt' the brain. Brain research demonstrates that throughout this period there are a series of "windows" during which particular skills are best acquired (figure 1). Ironically, government support to young families has traditionally been trivial when compared with later investments in education, remedial services, hospitals, courts, prisons and social welfare services – all of which can do little to influence critical development (7). This 'mismatch' between opportunity and investment is not well understood (8), although there are signs that it is being recognised. Based on available evidence, some economists now argue that investing in the early years is the most powerful a country can make (9).





Source: Graph developed by the Council for Early Child Development (Nash 1997; Early Years Study 1999; Shonkoff 2000) http://www.councilecd.ca

Early childhood interventions

Early childhood intervention policies and programmes are based on the premise that it is possible to alter outcomes such as cognitive, emotional and social skills in young children (10, 11). In Scotland, policies and programmes have being developed which target early child development, but there are relatively few outcome and impact measures to determine the success of these interventions. Additionally, the field of early childhood development cuts across different sectors, with many different professions contributing to the delivery of interventions and services, often in an uncoordinated way. Furthermore, it is not always clear how comprehensive the delivery of services is across the population. With scarce resources in increasingly difficult economic times, an evidence-informed approach to health policy development and implementation is essential – public policies and programmes should be based on what has been shown to be effective elsewhere, and rigorously evaluated where they are currently implemented for the first time.

An environmental scan in the field of early child development and an assessment of needs, gaps and opportunities in Scotland is required to translate knowledge into effective healthy policy and practice.

Background to the report

In mid-2006 the Scottish Collaboration for Public Health Research and Policy (SCPHRP) was established to strengthen the fields of public health research and policy in Scotland. The collaboration's core mandate is to:

- Identify key areas of opportunity for developing novel public health interventions that **equitably** address major health problems in Scotland, and move those forward.
- Foster collaboration between government, researchers and the public health community in Scotland to develop a national programme of intervention development, large-scale implementation and robust evaluation.
- Build capacity within the public health community for collaborative research of the highest quality, with maximum impact on Scottish policies, programmes and practice.

The initial workshop resulted in the formation of four working groups through which the collaboration would execute its mandate. Each group was charged with drafting a three-year work plan focusing on one of the four life-course stages for public health interventions. The Early Life Working Group subsequently had its first meeting and made a decision to focus on three areas: cognitive and social development in children aged two to four years; physical and mental health in infants; and maternal and infant nutrition. A Maternal and Infant Nutrition Strategy is currently being developed by the Scottish Government and is expected to be published in spring 2010. A considerable amount of work is already underway that focuses on maternal-infant mental health. Therefore, it was decided to focus the environmental scan on cognitive and social development in children aged two to four years attention, but where there is much compelling scientific evidence.

Aim of report

The aim of the environmental scan is:

To identify interventions, based on evidence from the global scientific literature, that hold promise for equitably promoting cognitive and social development in children aged two to four years in the Scottish context.

Objectives of report

The objectives of the environmental scan were to:

- Identify current interventions, policies and programmes delivered in Scotland that are designed to impact on cognitive and social development in young children.
- Determine whether these policies and interventions are evidence-informed and the extent and nature of any planned evaluations.
- Identify any other ongoing research in Scotland and the UK relevant to cognitive and social development in young children.
- Identify international evidence of public health interventions applied before or during early childhood which are effective in promoting positive cognitive and social development in young children.
- Identify gaps in policies and programmes designed to promote cognitive and social development in children in Scotland and prioritise areas of action.
- Identify potential interventions for development by the Early Life Working Group which will address some of these gaps.
- Review availability of indicators and methods for monitoring early child development in Scotland and identify gaps and opportunities for improving monitoring systems.

Chapter 2 – Methods

Environmental scan

Although all aspects of early child development are important, it was not our intention to duplicate the work of the Maternal and Infant Nutrition Strategy Group, the Expert Working Group on Infant Mental Health or the Glasgow City Parenting Support Subgroup. These groups have concentrated on maternal and child mental health, attachment, parenting programmes and social-emotional development in infants. In addition, the Scottish Government commissioned a general review of the effectiveness of interventions to address health inequalities in the early years which was published in July 2008 (12). In that document home visiting programmes and parent education and support in the early years is reviewed. Our environmental scan, therefore, focuses particularly on the evidence that early childhood programmes improve scientifically validated **outcome measures** relating to social-emotional and cognitive-language development in children, subsequent academic achievement and other life outcomes.

Literature review

Search strategy

We searched EMBASE, MEDLINE, PSYCHINFO, CINAHL and ERIC databases in July 2009. We used keywords related to effectiveness, early childhood (toddler, preschool, day care), parenting programmes, community interventions (school, day care), and methods terms (reviews, randomised trials, controlled clinical trials, cohort, longitudinal study).

Inclusion criteria:

- Review level studies of early childhood interventions from 1995 to July 2009.
- Interventions aimed at children 0-5 years.
- Outcome measures must include those relating to child cognitive and language development and/or subsequent academic achievement or child social-emotional outcomes.
- Interventions must have had evaluation by an experimental or quasi-experimental study or a natural experiment with control groups.
- Human studies in English language.

Exclusion criteria:

- Programmes **without** quantitative evaluation with a control group.
- Programmes with no outcome measures relating to either child cognitive and language development or academic achievement or child social-emotional outcomes.
- Programmes specifically targeting minority groups with little in common with minority groups in Scotland (for example, Aboriginal people in Australia or First Nations in Canada).
- Programmes targeting **only very specified groups** at extremely high risk, such as children in care or abused children.

Primary studies referred to in the reviews were accessed where necessary for more information. Reference sections in identified studies were used to identify other relevant studies. In addition, the grey literature was searched for review-level reports on the effectiveness of early childhood interventions published in the last 15 years. From these sources early childhood intervention programmes were identified and those with more than 20 participants in each the intervention and control groups were examined. Statistically significant (choosing the p<0.05 level for Type I error) benefits in the domains of: language-cognitive and academic achievement; social-emotional competencies; educational progression; health; child maltreatment; crime and delinquency; social services and benefits use; and employment success, were identified.

Website search

A search was conducted for websites providing information, resources and documents relevant to research, interventions, policies and programmes delivered in Scotland which impact on cognitive and social development in the early years.

Interviews

Face-to-face, telephone and email interviews were conducted with stakeholders from relevant government departments (education and health), academic institutions, research and voluntary organisations.

Needs, gaps and opportunities assessment

The results of the literature review, website search and interviews were summarised. The gaps identified in policies and programmes to promote cognitive and social development in children in Scotland were highlighted and potential interventions proposed.

Chapter 3 – Results: Effective interventions in early childhood

Summary

Early childhood intervention programmes

- Early childhood intervention programmes can help to reduce disadvantage due to social and environmental factors. Significant improvements in all domains of child development, school achievement, delinquency and crime prevention, and life success have been demonstrated.
- Successful interventions utilise a mixed, two-generation approach, that is a combination of centre and home-based with child and parenting programmes, and the greatest effects are seen in programmes targeting those at highest social risk.
- Although initial financial investments are great, economic returns can be three to seven times greater.
- IQ and developmental index effects seem to be greatest earlier on, with differences reducing as children age, but academic achievement differences persist leading to better outcomes in adult life.
- Model programmes have been high quality and intensive with small sample sizes, and replication on a large scale has been difficult. Large scale interventions have frequently been poorly defined with short-term follow-up and numerous methodological problems in their evaluation, making it difficult to assess their true impact.

Preschool education

- High quality preschool experience enhances all-round development in children whilst poor quality may actually lead to worse outcomes than no preschool. Whilst preschool cannot eliminate disadvantage due to social backgrounds, it can ameliorate the effects thereof and thus reduce social exclusion.
- Duration of attendance is important, an earlier start (before 3 years) for those at high risk being associated with better cognitive development.
- British studies have shown that full time is no better than part-time attendance whilst larger US studies suggest that the most disadvantaged gain cognitively from more intensive preschool, but don't seem to show strongly negative behavioural consequences associated with additional hours.
- High quality preschool is an effective intervention for the reduction of special needs education and grade retention, especially for the most disadvantaged children.
- Family characteristics have a greater impact on outcomes for children than preschool factors, however, the effect of attending preschool (versus not) on developmental progress is greater than the effect of social disadvantage.

Home learning environment

 The home learning environment is very important to cognitive and social-emotional development, more than parental occupation, education and income, and it continues to have an effect through to age 7 years. Activities that children participate in (being read to every day, outdoor and indoor physical, creative and educational activities, and visiting a range of events and places) positively influence cognitive development and can moderate the effect of socioeconomic disadvantage. In this chapter the findings of the literature search are presented. The review level studies identified through the search are listed and the criteria used to assess the quality of the evaluations of the early childhood intervention programmes are described. A summary of the main interventions identified and their effectiveness is provided.

Literature search

The rapid review was conducted over a period of 5 months (from mid-July to mid-December 2009). One of the authors was employed to conduct title and abstract reviews, full text reviews and quality assessment. The preliminary keyword searches produced 5,220 hits. After removal of duplicate sources, titles and abstracts were examined resulting in the selection of 491 studies. After gaining access to the actual studies a further 133 were selected as being potentially relevant. Publications were then selected or rejected according to the inclusion and exclusion criteria. This process yielded 16 review level studies and reports. These included narrative and systematic reviews and meta-analyses. The grey literature provided a further 11 reviews, reports and web resources.

Review level studies and reports identified through the formal literature search:

Anderson LM, Shinn C, Fullilove MT, Scrimshaw SC, Fielding JE, Normand J, *et al.* The effectiveness of early childhood development programs. A systematic review. Am J Prev Med. 2003 Apr; 24(3 Suppl):32–46.

Barlow J, Parsons J. Group-based parent-training programmes for improving emotional and behavioural adjustment in 0–3 year old children. Campbell Systematic Reviews. 2005.

Barnett WS. Long-term effectiveness of early childhood programs on cognitive and school outcomes. The Future of Children. 1995; 5(3):25–50.

Barnett WS, Belfield CR. Early childhood development and social mobility. Future Child. 2006 Fall; 16(2):73–98.

Bates SL. Evidence-based family-school interventions with preschool children. School Psychology Quarterly. 2005;20(4):352–70.

Centre for Mental Health in Schools at UCLA. Preschool programs: a synthesis of current policy issues. Los Angeles, CA: Centre for Mental Health in Schools; 2006.

Currie J. Early childhood intervention programs: what do we know? Washington DC: Brookings Institute; 2000.

Drummond JE, Weir AE, Kysela GM. Home visitation programs for at-risk young families. A systematic literature review. Can J Public Health. 2002 Mar–Apr;93(2):153–8.

Gomby DS, Larner MB, Stevenson CS, Lewit EM, Behrman RE. Long-term outcomes of early childhood programs: analysis and recommendations. Future Child. 1995 Winter; 5(3):6–24.

Hallam A. The effectiveness of interventions to address health inequalities in the early years: a review of relevant literature. Edinburgh: Scottish Government; 2008.

Hosley CA. Early childhood education programs: a review of program models and effectiveness. Minnesota: Wilder Research Center; 2000.

Karoly LA, Kilburn MR, Cannon JS. Early childhood interventions: proven results, future promise. Santa Monica, CA: RAND corporation; 2005.

McMahon D. A review of early childhood studies. Ir Med J. 2007 Sep;100(8):suppl 69-71.

Olds DL, Sadler L, Kitzman H. Programs for parents of infants and toddlers: recent evidence from randomized trials. Child Psychol Psychiat. 2007 Mar–Apr;48(3-4):355–91.

Yoshikawa H. Long-term effects of early childhood programs on social outcomes and delinquency. Future of Children. 1995;5(3):51–75.

Further review level studies and reports identified through search of grey literature:

Barnett WS. Long-term cognitive and academic effects of early childhood education on children in poverty. Prev Med. 1998 Mar–Apr;27(2):204–7.

Coalition for evidence-based policy. Evidence on the effectiveness of eight widely-implemented early childhood home visitation models. Washington DC; 2009 [updated 2009; cited 2009 August]; Available from: http://coalition4evidence.org/wordpress/.

Crane J, Barg M. Do early childhood intervention programs really work. Washington DC: Coalition for Evidence-Based Policy; 2003.

Hertzman C, Wiens M. Child development and long-term outcomes: a population health perspective and summary of successful interventions. Soc Sci Med. 1996;43(7):1083–95.

Karoly LA. Investing in our children: what we know and don't know about the costs and benefits of early childhood intervention. Santa Monica, California: RAND corporation; 1998.

Mitchell L, Wylie C, Carr M. Outcomes of early childhood education: literature review. New Zealand: Ministry of Education; 2008.

Melhuish EC. A literature review of the impact of early years provision upon young children, with emphasis given to children from disadvantaged backgrounds. London: National Audit Office; 2004.

Piquero AR, Farrington D, Jennings WG, Tremblay R, Welsh B. Effects of early family/parent training programs on antisocial behavior and delinquency. Campbell Systematic Reviews; 2008.

St Pierre RG, Layzer JI, Barnes HV. Two-generation programs: design, cost, and short-term effectiveness. Future Child. 1995 Winter;5(3):76–93.

Wise S, da Silva L, Webster E, Sanson A. The efficacy of early childhood interventions. Melbourne: Melbourne Institute of Applied Economic and Social Research; 2005.

Zoritch B, Roberts I, Oakley A. Day care for pre-school children. Cochrane Database Syst Rev. 2000(3):CD000564.

Quality of evaluations of early childhood interventions

In this environmental scan, a formal quality assessment of the reviews was not performed as is usually done with a systematic review. It was rather decided to use the reviews to identify early childhood interventions with relevant child outcomes. These interventions were then described and their effectiveness assessed using the reviews, and where necessary the primary studies. In some instances process evaluations were accessed if it was thought that the interventions had been poorly implemented. From the 27 sources, 26 intervention programmes were identified which were relevant for our objectives and for which there was sufficient information.

The quality of the evaluations of each intervention programme identified during the literature search was assessed using 10 criteria. These 10 criteria were based guidelines set out by Sackett (13) and other literature reviews on early intervention studies including Mrazek & Brown (14) and Wise et al (15). During the process of reading the resources, certain themes repeatedly emerged as being important for credible

evaluation of early childhood interventions. These themes also helped to inform the choice of criteria which were:

- 1. Study design. Only studies including evaluations which used experimental or quasi-experimental designs or natural experiments were selected from the literature. This criterion goes further than that and distinguishes between those using randomised allocation and those that did not.
- 2. Sample represents population. Many interventions were implemented in population groups (towns, neighbourhoods, sites etc). This criterion asks whether the study sample represents the population which the intervention was designed for.
- **3.** Contamination unlikely. In some studies the experimental and control groups lived side-by-side sometimes accessing the same services. The control group may thus be affected by the intervention despite not being in the experimental group.
- 4. Standardised consistent intervention. Most early childhood intervention programmes try to stipulate the minimum services required, however, if implementation sites and services offered individual families vary greatly, it is difficult to attribute outcomes to a specific intervention. It is possible to control for this using subgroup analysis but levels of service and/or implementation need to be stipulated, preferably before the evaluation.
- 5. & 6. Intermediate and long-term follow up. In this review, as in the Australian review by Wise *et al* (15), up to two years is regarded as intermediate follow up and more than two years is regarded as longer term follow up.
- 7. Low attrition. It is important to consider the level of attrition in both the experimental and control groups and where it has occurred, whether this has been taken into account. Attrition of 20% or more is regarded as high in this review.
- 8. Adequate statistical power. The case to independent variable ratio is considered and at least 5 participants to each variable are required (with 10 or more being ideal) (13).
- **9. Reliable measurement tools.** Standardised tools are used for measuring cognitive and behavioural function.
- **10.Outcome measures.** Appropriate child outcome measures are included.

Clustering of early childhood interventions

Most early childhood interventions are designed to have a protective influence against various stressors that children are exposed to. The idea is to partially compensate for risk factors, such as low socioeconomic circumstances, and the effect they have on children's overall development. Although the objectives were broadly the same, interventions were highly variable in their eligibility criteria, target group, intensity, longevity, services provided, venues where services were provided and the outcomes which they aimed to improve. The interventions were therefore classified in the following groups:

I. Targeted interventions beginning in infancy

- a. Model intervention projects.
- b. Large-scale intervention projects at multiple sites.

II. Targeted interventions beginning in preschool

- c. Model intervention projects.
- d. Large-scale intervention projects.

III. Other intervention categories

- e. Universal interventions focusing on child development and parenting.
- f. General early childhood education.

The first five groups contain early childhood interventions specifically designed to impact on children's development whilst the sixth group, general early childhood education, has been included since much research has been done to determine the effect of preschool before entering the formal obligatory schooling systems. No prospective controlled trails could be found on standard preschool versus no preschool. Most local and international studies on preschool were based on observational studies (listed below). Even though these were excluded for the environmental scan, an exception was made for the sixth group. Appendix 1 summarises, in tabular form, the interventions and their main characteristics. Appendix 2 provides an overview of the effectiveness of the different early childhood intervention programmes in child outcome domains. Appendix 3 (page 75) provides a detailed and referenced description of the intervention programmes in groups A to E, their intensity, evaluations conducted and the main child outcome effects.

Studies and reports on preschool identified through the formal literature search:

Centre for Mental Health in Schools at UCLA. Preschool programs: a synthesis of current policy issues. Los Angeles, CA: Centre for Mental Health in Schools; 2006.

Gilliam WS, Zigler EF. A critical meta-analysis of all evaluations of state-funded preschool from 1977 to 1998: implications for policy, service delivery and program evaluation. Early Childhood Research Quarterly. 2000;15(4):441–73.

Karoly LA. Promoting Effective Preschool Programs. Santa Monica, California: RAND Corporation; 2009.

Loeb S, Bridges M, Bassok D, Fuller B, Rumberger RW. How much is too much? The influence of preschool centers on children's social and cognitive development. Econ Educ Review. 2007 Feb;26 (1):52–66.

Magnuson KA, Ruhm C, Waldfogel J. Does prekindergarten improve school preparation and performance? Econ Educ Review. 2007;26(1):33–51.

Sammons P, Elliot K, Sylva K, Melhuish E, Siraj-Blatchford I, Taggart B. The impact of pre-school on young children's cognitive attainments at entry to reception. Brit Educ Res. 2004 October;30(5):691–704.

Sylva K, Melhuish E, Sammons P, Siraj-Blatchford I, Taggart B. The Effective Provision of Pre-School Education (EPPE) Project: final report. A Longitudinal Study Funded by the DfES 1997–2004. London; 2004.

Winter SM, Kelley MF. Forty years of school readiness research: what have we learned? Childhood Education. 2008;84(5):260–6.

Further studies and reports relevant to preschool identified through search of grey literature:

Centre for Longitudinal Studies. Millennium Cohort Sweep 3 Scotland Report. London: Institute of Education, University of London; 2009.

Scottish Centre for Social Research. Growing Up in Scotland: the impact of children's early activities on cognitive development. Edinburgh: Scottish Government: Children, Young People and Social Care Directorate; 2009.

Scottish Centre for Social Research. Growing Up in Scotland: multiple childcare provision and its effect on child outcomes. Edinburgh: Scottish Government: Children, Young People and Social Care Directorate; 2009.

Scottish Government. Millennium Cohort Study exploration of some distinctive results for Scotland. Edinburgh: Scottish Government Social Research; 2008.

How effective are early childhood interventions?

The common child outcomes measured to assess the effectiveness of early childhood interventions fall broadly into the following seven areas: cognitive-language outcomes; social-emotional outcomes; school achievement; health; child neglect/maltreatment; criminal activity and future success. Half of the 26 programmes had statistically significant effects in three or more domains of child development, 20% (5/26) were effective in two domains, 23% (6/26) were effective in one domain and less than 1% (2/26) did not have statistically significant effects in any domain (Appendix 2).

Effect sizes² were modest for cognitive and behavioural measures but more substantial in other domains (16). A review of early childhood education interventions (17), however, reported medium to large effect sizes in the cognitive domain for US studies targeting low-income families and combining good quality early childhood education with parenting support/education (mathematics: 0.32–0.81 in the short-term, 0.19–0.44 in the long-term; reading: 0.34–0.89 in the short-term, 0.17–0.44 in the long-term). Studies reporting on general early childhood education demonstrated small to medium effect sizes (0.10–0.23 for mathematics in the short-term and 0.02–0.23 for reading) for cognitive child outcomes.

Studies which pooled effect sizes (16, 18) for programmes showed small (0.212) to moderate (0.35) effect sizes for early family/parent training only interventions and moderate (0.325) effect sizes for combination programmes (home visits/parent education/early childhood education/preschools). Parent training programmes had a slightly greater weighted effect size than home visiting programmes (0.36 versus 0.30) where these were distinguished (18).

IQ effects were strongest in early childhood but faded over time. Longer-lasting gains were seen in: school achievement, grade retention, special education, high school completion, labour market and welfare outcomes, and criminal activity. In one model programme (Perry Preschool Project), lasting benefits were seen 35 years after the intervention whilst in one larger-scale programme (Nurse–Family Partnership) lasting effects were seen 15 years later.

² An effect size is a measure of the strength of the relationship between two variables in a sample or population. Cohen's d, for example, is defined as the difference between two means divided by the standard deviation for the data. Traditionally, an effect size of 0.2 to 0.3 is 'small', around 0.5 'medium' and 0.8 to infinity, a 'large' effect.

Summary of early childhood interventions

A. MODEL TARGETED INTERVENTION PROJECTS BEGINNING IN INFANCY

Houston Parent Child Development Center; Carolina Abecedarian Project; Project CARE; Infant Health & Development Program; Syracuse Family Development Center

All programmes in group A were implemented in the US. The model targeted early childhood interventions and show us that high quality early childhood education targeted at high risk groups from a very early age (one year or earlier) can result in significant positive cognitive and academic achievement outcomes as well as greater early adult self-sufficiency, and in some studies, reduced deviant or criminal behaviour (Appendix 2, group A). The most successful programmes combine intensive high quality preschool with some home visits to improve the home learning environment. IQ effects are greatest earlier on and fade over time but academic achievement differences persist into early adulthood.

The Parent Child Development Centers were too intensive to be practically applied at any larger scale and there were no reports of cost-benefit. Results are questionable due to high attrition and thus potential bias.

The highly successful Carolina Abecedarian Project provided high quality intensive preschool from infancy for five to eight years. The Abecedarian intervention groups displayed significantly higher IQ scores than controls, with effect sizes showing decreasing differences between groups over years till no significant difference at age 15 years. Experimental groups displayed significantly higher academic achievement, often with scores increasing as a linear function of the number of treatment years, significantly fewer placements in special education and retentions in grade, and a higher percentage of college completion.

Success of the Carolina Abecedarian Project

Intervention groups displayed significantly:

- higher IQ scores than controls up to age 15 years and higher academic achievement
- fewer placements in special education (24% vs 48%) and retentions in grade (39% vs 59%)
- higher percentage of high school graduation (70% vs 67%) and college completion (36% vs 13%)
- fewer regular smokers (39% vs 55%) and less marijuana use (18% vs 39%).

Programme teenage mothers were more likely to:

- have completed high school and participated in post-secondary training
- be self-supportive, be employed (70% vs 58%) and have jobs that were skilled or semiskilled, and less likely to have subsequent children.

Abecedarian programme teenage mothers were also more likely to: have completed high school, participated in post-secondary training, be self-supportive, be employed and have jobs that were skilled or semi-skilled, and less likely to have subsequent children. There were significantly fewer smokers and less marijuana use in the Abecedarian intervention groups but no difference in other drugs, alcohol or crime.

Project CARE had two types of intervention: one with child education and one without. Project CARE with home visits and centre-based early child education mimicked the related Abecedarian project in child cognitive and achievement outcomes whilst Project CARE with home visits alone showed no significant findings on any child outcomes.

The Infant Child Development Program showed that the cognitive development of low birth weight infants who were also at socioeconomic disadvantage could be improved. Larger effect sizes were seen among the heavier babies, but this may have been due to the neonatal intensive care available at the time.

The 10-year follow up of the Syracuse programme showed that girls in the intervention group achieved better academically, had fewer absences and a higher level of social-emotional functioning than control girls. Both sexes in the intervention group displayed higher levels of family functioning, more positive self-perception and more positive perceptions of school than the control children. Unfortunately attrition was high in this study.

Table 1.

Group A	HPCDC	ABC	CARE	IHDP	Syrac
Study design	RCT	RCT	RCT	RCT	QE
Sample represents population	U1	\checkmark	\checkmark	\checkmark	\checkmark
Unlikely contamination	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Standardised consistent intervention	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Intermediate follow up	\checkmark	\checkmark	\checkmark	\checkmark	х
Long-term follow up	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Low attrition	х	\checkmark	\checkmark	\checkmark	х
Adequate statistical power	х	х	х	\checkmark	х
Reliable measurement tools	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Outcome measures	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Total out of 10	7	9	9	10	6

Evaluation of early childhood interventions in group A: Adequacy of quality

¹Sampling frame unclear

RCT=Randomised controlled trial; QE=Quasi-experimental; U=Unknown

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Summary of early childhood interventions

B. LARGE-SCALE, TARGETED INTERVENTION PROJECTS BEGINNING IN INFANCY

Comprehensive Child Development Program; First Parent Health Visitor Scheme; Community Mothers Programme; Better Beginnings Better Futures; Starting Early Starting Smart; Early Head Start; Sure Start (England); Nurse–Family Partnership

Evaluations of large-scale programmes suffered from various methodological problems which meant that, in most cases, measured outcomes could not be expected to represent what the true impact of the intervention was. Frequently there were few or weak significant findings (Appendix 2, group B) where there may well have been a real difference in practice. Evaluations of early childhood interventions, especially large-scale ones, should not be conducted too early since programmes need to be properly implemented and established before they can be shown to 'work'. This was a particular problem with the early Sure Start evaluations. Attrition was a further problem for many of the large-scale studies probably because of the cost and labour intensity of follow up of so many participants over years.

In most large-scale, targeted programmes there were defined core services provided to the intervention groups, however, these were not standardised and could have varied greatly in quality, nature and intensity since many different providers were used. In many cases existing services were given more capacity or resources, rather than establishing new services. Equally, control groups varied greatly since most programmes 'allowed' control families to access whichever services they required. Thus, the lack of standardisation of intervention and control group exposures meant that confounding and contamination may have been serious problems in the evaluations.

The US Comprehensive Child Development Program found no significant differences between intervention and control groups on any child outcome measures. The UK Child Development Programme with its First Parent Health Visitor Scheme, and the related Irish Community Mothers Programme demonstrated very few statistically significant favourable child outcomes.

The Canadian Better Beginnings, Better Futures programme found statistically significant improvements in a few child social-emotional outcomes as rated by teachers, general child health and timely immunisation in intervention compared with control groups but no statistically significant improvement in cognitive functioning.

The US Starting Early Starting Smart programme showed significant gains in language of preschoolers and a sustained decrease in externalising and internalising classroom behaviours. An improvement was also found in parenting discipline methods and cognitive stimulation in the home environment but these were not maintained.

The US Early Head Start was one of the few large-scale programmes which took into account the programme approach the family had been offered (centre-based, mixed or home-based) and differing implementation patterns in their evaluation. Control groups did not access services at the same sites as intervention groups. Early Head Start intervention groups showed improvements in cognitive and language development, better social-emotional development by independent observation, higher emotional engagement with the parent in play, and higher sustained attention with play objects. They also displayed less aggressive behaviour than control groups.

Early Head Start parents were more emotionally supportive, provided more language and learning stimulation, read to their children more, and spanked less. On subgroup analysis, these findings were statistically significant for mixed approach (home- and centre-based) programmes. For the outcomes 'engagement of the parent in play' and 'parent supportiveness in play'; they were also significant in the home-based programmes. No statistically significant impacts were found among families in centre-based

only programmes. Early Head Start sites that implemented the programme completely and early showed a stronger pattern of impacts across several domains of child development and parenting behaviour than did the later and incomplete implementers. The measured child health outcomes, however, showed no significant differences between the intervention and control groups.

Sure Start Local Programmes had been set up as a cornerstone of the UK Government's drive to tackle child poverty and social exclusion. In England the 2005 evaluation demonstrated 'very meagre evidence of efficacy' although some commentators believe the benefits in the less deprived were probably real (19). Although there were serious methodological problems with evaluating Sure Start, the more robust 2008 evaluation in England showed small but statistically significant differences in child independence and positive social behaviour favouring the intervention groups.

Success of the Nurse-Family Partnership at 15 year follow-up

When compared with control groups, intervention groups displayed significant(ly):

- improvements in cognitive/language development and behavioural adaptation in children
- 48% fewer officially-verified incidents of child abuse and neglect
- 23% fewer health care encounters and 78% fewer days hospitalised, for children's injuries or ingestions
- 59% fewer self-reported arrests

Adolescents of higher risk subgroup (poor unmarried mothers) displayed:

- 54% fewer arrests
- 69% fewer convictions
- 59% fewer sexual partners
- 28% fewer smokers
- 51% fewer days drinking.

David Olds' Nurse–Family Partnership differs from other large-scale targeted programmes in that there were three well-conducted RCT evaluations, follow up was longer (4–15 years), attrition was lower (10–23%) and interventions were well-defined with unlikely contamination of the control groups. The intensive management of this programme means that even though it has been implemented on a fairly large scale, trials were more like efficacy than effectiveness studies.

Best outcomes in the Nurse–Family Partnership were seen in the children of mothers who had low intelligence and/or poor mental health prior to programme participation. There were significant improvements in cognitive and language development, behavioural adaptation (which included attention, impulse control and sociability), fewer officially-verified incidents of child abuse and neglect, and fewer health care encounters and days hospitalised for children's injuries or ingestions. At 15 year follow up the Elmira study (20, 21) of the Nurse–Family Partnership showed fewer self-reported arrests. In the higher risk subgroup (poor unmarried mothers) their adolescents displayed fewer arrests, convictions, and sexual partners. Amongst the adolescents, there were also fewer smokers and fewer days drinking. It is noted that all three RCTs were conducted in the USA where control groups generally received no organised home visiting nor free access to primary care.

Evaluation of early childhood interventions in group B: Adequacy of quality

Group B	CCDP	FPHVS	CMP	BBBF	SESS	EHS	SSEng	NFP
Study design	RCT	NE	RCT	QE	QE	RCT	QE	RCT
Sample represents population	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	х	\checkmark
Unlikely contamination	Х	\checkmark	\checkmark	\checkmark	X ¹	Х	х	\checkmark
Standardised consistent intervention	Х	\checkmark	\checkmark	Х	Х	X ²	х	\checkmark
Intermediate follow up	\checkmark	\checkmark	\checkmark	Х	Х	\checkmark	\checkmark	\checkmark
Long-term follow up	\checkmark	×	\checkmark	Х	Х	Х	$\sqrt{3}$	\checkmark
Low attrition	Х	×	Х	NA	Х	X^4	х	\checkmark
Adequate statistical power	\checkmark	×	Х	\checkmark		\checkmark	\checkmark	\checkmark
Reliable measurement tools	\checkmark	\checkmark	Х	U		\checkmark	X ⁵	\checkmark
Outcome measures	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Total out of 10	7	6	7	4	4	6	4	10

¹Existing primary health care and early childhood centres were strengthened

²But subgroup analysis on level of implementation and intervention approach (centre or home-based or both) ³Melhuish 2008 study did follow up at 3 years

⁴Tested for attrition bias, follow up samples compared on baseline characteristics - little difference

⁵The majority of outcome measures were based on parental report.

RCT=Randomised controlled trial; NE=Natural experiment; QE=Quasi-experimental; U=Unknown; NA=Not applicable

Summary of early childhood interventions

C. MODEL TARGETED INTERVENTION PROJECTS BEGINNING IN PRESCHOOL

Perry Preschool Project; Early Training Project; Institute for Development Studies; Curriculum Comparison Study; Verbal Interaction Project (Mother–Child Home Program); Incredible Years

Model targeted early childhood intervention programmes beginning in preschool have generally been well-implemented and robustly evaluated, and show significant positive results (Appendix 2, group C) and good effect sizes. The care and education programmes were of higher quality, and had more qualified staff, closer supervision of staff by experts, lower child-staff ratios and smaller group sizes, than the large-scale public programmes.

The High/Scope Perry Preschool Project developed and implemented in the Ypsilanti School District, Michigan in the US, represents the most famous and successful early childhood intervention project with the longest follow up (to age 40 years thus far).

Success of the High/Scope Perry Preschool Project

When compared with control groups, intervention groups displayed significant(ly):

- Significant improvements in IQ from age 4 to 8 years, after which the difference between groups declined.
- Academic: better test scores at age 14 and higher literacy scores at age 19.
- Fewer requiring special education services by age 15 years (15% vs 34%).
- More high school completion (71% vs 54%) and higher mean years of schooling by age 27.

Crime/life success:

- higher monthly earnings
- higher percentage employed by age 27 years (71% vs 59%)
- higher percentages of home ownership
- lower percentage receiving social services between ages 18 and 27
- fewer arrested by age 19 years (31% vs 51%) and lifetime arrests (2.3 vs 4.6)
- fewer adult criminal arrests (1.8 vs 4.0), including crimes of drug making or dealing (7% vs 25%)
- women had significantly fewer teenage pregnancies and illegitimate children.

Significant improvements were seen on IQ from age four to eight years, after which the difference between groups declined. As regards academic achievement, better test scores were seen at age 14 (p=0.001; effect size=0.68), higher literacy scores at age 19 (p=0.025; effect size=0.43), and more high school completion (71% vs 54%; p=0.055; effect size=0.35) and higher mean years of schooling (p=0.016; effect size 0.43) by age 27.

With regard to crime and life success, there were: higher monthly earnings; higher percentages of home and second car ownership; lower percentage receiving social services at some time between ages 18 and 27; and fewer lifetime arrests (2.3 vs 4.6 arrests). Of the men who had participated in the programme, 12% had been arrested five or more times, compared to 49% of men who had not participated in the programme. There were fewer adult criminal arrests (1.8 vs 4.0), including crimes of drug making or dealing (arrests 7% vs 25%). Women had significantly fewer teenage pregnancies and illegitimate children.

The Verbal Interaction Project (later called the Parent–Child or Mother–Child Home Program) showed statistically significantly improved IQ scores in the intervention group at grade 3 compared with the control group, better achievement test scores, fewer placements in special education and fewer grade retentions. It also clearly demonstrated that the programme had little or no effect on children who entered the programme with normal cognitive ability and relatively well-educated parents. Intervention in these children was found to be wasteful.

The Incredible Years Basic Parenting Programme and the Dinosaur Child-Training curriculum for small groups have been well-evaluated and demonstrate some improvements in behavioural problems and social competence in children, and improvements in parenting approaches and skills. The Incredible

Years has been implemented at sites in the UK with positive results but usually only with short-term follow up (less than two years).

Table 3.

Evaluation of early childhood interventions in group C: Adequacy of quality

Group C	Perry	ETP	IDS	CCS	VIP	IY
Study design	RCT	RCT	RCT	QE	QE	QE, RCT
Sample represents population	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Unlikely contamination	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Standardised consistent intervention	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Intermediate follow up	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Long-term follow up	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	х
Low attrition	\checkmark	х	х	х	х	$\sqrt{1}$
Adequate statistical power	х	х	х	х	х	\checkmark
Reliable measurement tools	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Outcome measures	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Total out of 10	9	8	8	7	7	9

¹Some studies did suffer from high attrition but numerous studies conducted RCT=Randomised controlled trial; QE=Quasi-experimental

Summary of early childhood interventions

D. LARGE-SCALE TARGETED INTERVENTION PROJECTS BEGINNING IN PRESCHOOL

Head Start; Chicago Child–Parent Centers; Early Childhood Education and Assistance Program; Home Instructions for Parents of Preschool Youngsters (HIPPY); DARE To Be You

Targeted large-scale early childhood programmes have suffered from: lack of standardisation due to variations in the nature, quality, implementation level and intensity of intervention components over the different sites; high attrition; and poor methodological evaluation designs with bias due to non-randomisation and poor matching. Appendix 2, group D summarises the child outcomes.

The US Head Start is the largest early childhood intervention worldwide but the body of evidence on Head Start was judged in a government official report to be insufficient to make any conclusions about its impact. The Early Childhood Education and Assistance Program suffered from poor evaluation design and high attrition. Home Instructions for Parents of Preschool Youngsters (HIPPY) showed limited evidence of cognitive improvement in one randomised experimental study but no other significant findings.

Out of the targeted, large-scale mixed interventions beginning in preschool, only the Chicago Child– Parent Centers intervention provides us with good evidence of efficacy. In the intervention groups cognitive gains were demonstrated, a significantly higher percentage completed high school and college, significantly fewer dropped out of school, and significantly fewer were placed in special education or experienced grade retention.

Success of the Chicago Child-Parent Centers

When compared with control groups, intervention groups displayed:

- significantly better school readiness
- significantly fewer dropped out of school (46.7% vs 55%) and higher percentage completed high school (49.7% vs 38.5%) and attended college (24% vs 18%)
- significantly fewer were placed in special education (13.5% vs 20.7%) and less time was spent there (0.51 vs 0.87 years)
- significantly fewer experienced grade retention (21.9% vs 32.3%)
- significantly lower proportion of overall (16.9 vs 25.1%) and violent arrests (9% vs 15.3%)
- significantly higher rates of full-time employment (42.7% vs 36.4%)
- 52% fewer cases of child maltreatment or abuse
- more likely to be covered by health insurance (61.5% vs 70.2%; p=0.005) and fewer depressive symptoms (12.8% vs 17.4%; p=0.06).

There were better outcomes in terms of crime and life success with a significantly lower proportion of overall and violent arrests, and higher rates of full-time employment. As adults, the preschool intervention group were more significantly likely to be covered by health insurance and had fewer depressive symptoms (although the latter difference did not reach statistical significance).

Table 4.

Evaluation of early childhood interventions in group D: Adequacy of quality

Group D	HS	ChCPC	ECEAP	HIPPY	DARE
Study design	QE, RCT	QE	RA ¹	QE ²	RCT ³
Sample represents population	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Unlikely contamination	х	\checkmark	\checkmark	\checkmark	\checkmark
Standardised consistent intervention	х	\checkmark	\checkmark	\checkmark	\checkmark
Intermediate follow up	х	\checkmark	\checkmark	\checkmark	\checkmark
Long-term follow up	х	\checkmark	\checkmark	х	х
Low attrition	NA	\checkmark	х	\checkmark	х
Adequate statistical power	\checkmark	\checkmark	\checkmark	х	\checkmark
Reliable measurement tools	\checkmark	\checkmark	х	х	\checkmark
Outcome measures	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Total out of 10	5	9	8	6	8

¹Experimental group randomly assigned, matched controls but poorly matched on SES ²One RCT in New York

³One published RCT

RCT=Randomised controlled trial; QE=Quasi-experimental; RA=Randomised allocation

Summary of early childhood interventions

E. UNIVERSAL INTERVENTIONS FOCUSING ON CHILD DEVELOPMENT AND PARENTING

Parents As Teachers; Triple P (Positive Parenting Program)

Universal interventions focusing on child development and parenting show promising outcomes (Appendix 2, group E) but follow up in the studies has been short-term. The Parents As Teachers intervention had statistically significant but very small effect sizes for cognitive-language and social-emotional outcomes in children.

Despite the numerous randomised controlled trials using the Triple P programme, its effectiveness in parents of under-threes remains uncertain in terms of objectively assessed social-emotional child outcomes. One trial (22) was conducted in families with children aged 2–7 years but the children in that study had disabilities. The one randomised trial (23, 24) for children aged 18–36 months showed statistically significant benefit of self-administered Triple P (compared with no treatment) on maternally reported child behaviour, but not significant benefit on paternally reported child behaviour. The generalisability of the findings to the universal population in Scotland is also questionable since many of the Triple P studies have been conducted where there were specific identified problems such as children with conduct disorders or disabilities, maternal depression, or specific groups such as indigenous Australians or university staff. During the Starting Well National Demonstration Project, providers in Scotland felt that Triple P was more effective in those whose lives were more ordered and not in the most deprived families and that the Triple P videos showing relatively affluent Australian families were difficult to identify with (25). Both PAT and Triple P appear to be effective in reducing child maltreatment and injuries.

Table 5.

Group E	PAT	Triple P
Study design	RA ¹	RCT
Sample represents population	\checkmark	х
Unlikely contamination	\checkmark	\checkmark
Standardised consistent intervention	\checkmark	\checkmark
Intermediate follow up	\checkmark	\checkmark
Long-term follow up	Х	х
Low attrition	Х	х
Adequate statistical power	Х	\checkmark
Reliable measurement tools	\checkmark	X ²
Outcome measures	\checkmark	\checkmark
Total out of 10	6	6

Evaluation of early childhood interventions in group E: Adequacy of quality

¹Random allocation but the first study had no baseline assessment; outcomes were simply compared in Grade 3. Matched controls were used but matching was poor. Second study had no control group; outcomes compared to national norms.

RCT=Randomised controlled trial.

²Most studies parental report.

Summary of early childhood interventions

F. GENERAL EARLY CHILDHOOD EDUCATION

The large (n=14,162) US Early Childhood Longitudinal Study (26) showed that preschool, whilst not eliminating the differences, can help to reduce disadvantage due to social and environmental factors. It can raise early language, pre-reading and maths skills by 10% of a standard deviation on average with children from extremely poor families displaying the strongest gains (double that of the average).

Full-day programmes may be a wise investment for children who are particularly disadvantaged, who gain cognitively from more intensive preschool, but don't seem to show strongly negative behavioural consequences associated with additional hours. Half-day programmes may be sufficient for children of middle or higher SES or income who benefit from 15 to 30 hour weeks, but with whom more than 30 hours shows a taper-off of cognitive benefits and intensification of negative social-emotional effects.

On average, children who start school between two and three years of age appear to enjoy the greatest academic benefit compared with those children starting earlier or later. Negative behavioural effects are greater the younger the start.

Numerous studies, including the UK Effective Provision of Preschool Education (EPPE) Project (27, 28), have shown that quality of the preschool matters. Preschool settings with warm interactive relationships with children, having a trained teacher as a manager, a good proportion of trained teachers on the staff, and which view educational and social development as complementary and equal in importance have better child outcomes. EPPE also demonstrated that disadvantaged children do better in settings with children from mixed social backgrounds than settings with mostly other disadvantaged children.

Both EPPE and the Growing Up in Scotland (GUS) study (29) demonstrated the importance of the home learning environment. GUS showed that the home learning environment is more important for intellectual and social development than parental occupation, education or income. Activities (educational games, visits, events, reading etc.) have an influence on children's cognitive development and can moderate, but not eradicate, the effect of sociodemographic disadvantage. The extent and range of activities that the children partake in is more important than specific or expensive pursuits.

Chapter 4 – Results: Early years policy overview

Summary

Policies:

- International policy strongly supports the rights of the child to health care and education, and places a major emphasis on interventions in the early years, particularly with regard to social-emotional and language-cognitive development.
- For the last decade Scottish health policy acknowledges the profound effects of early influences on lifelong health and numerous policies have been introduced which support the improvement of child health and reducing health inequalities.
- Most policies refer to the body of evidence on the effectiveness of early childhood intervention and the economic argument for taking this approach.
- The most recent relevant policy document, *The Early Years Framework*, calls for a renewed focus on the 0-3 year age group as the period of a child's development that shapes future outcomes. It emphasises the increased need for developing parental skills, antenatal and postnatal support, and centre and community based services for young children.
- Education policy provides standards for early education and child care for children aged 3-5 years and tools for centres to conduct self-evaluation using quality and performance indicators. These indicators do not, however, include any individual measurement of children's progress using standardised tests.
- There does not appear to be any policy or practice of routine standardized monitoring or assessment of cognitive, language or social-emotional ability in children 0-6 years in Scotland.
- The Scottish Government aim to increase preschool entitlement for three and four year olds to 570 hours (equivalent to 38 weeks/year at 15 hours/week) by August 2010.

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Introduction

In this chapter, key international and Scottish policy relevant to early child development is described. Health policy impacting on child health and development over the last decade in Scotland is reviewed, with the most recent and active policy being described in more detail. The main active education policy in Scotland is also briefly described.

Key policies relating to early child development

International policy

The United Nations' 1989 Convention on the Rights of the Child is the first legally binding international instrument to incorporate the full range of human rights — civil, cultural, economic, political and social rights. Its implementation is monitored by the Committee on the Rights of the Child. National governments that ratify it commit themselves to protecting and ensuring children's rights, and agree to hold themselves accountable for this commitment before the international community. It spells out the basic human rights that children everywhere should have: the right to survival; to develop to the fullest; to protection from harmful influences, abuse and exploitation; and to participate fully in family, cultural and social life. The four core principles of the Convention are non-discrimination; devotion to the best interests of the child; the right to life, survival and development; and respect for the views of the child. Standards are set in health care, education and legal, civil and social services.

The WHO's Commission on Social Determinants of Health published its final report *Closing the Gap in a Generation,* in 2008. The group placed a major emphasis on investment during the early years of life, a time they state has the 'greatest potential to reduce health inequities within a generation'. Not only child survival but early child development (including physical and cognitive, and social and emotional) is highlighted. The need for a continuum of care from before pregnancy, through pregnancy and childbirth, to the early days and years of life is emphasised. Children are noted to need safe, healthy, supporting, nurturing, caring and responsive living environments and preschool educational programmes and schools can play a vital part in building children's capabilities. The report calls on governments to commit, not just to child survival programmes but to extend interventions in the early life to include social-emotional and language-cognitive development.

Child policy in Scotland

Child policy in Scotland has developed against a complex political backdrop with Scotland becoming a devolved power in 1999. The Scottish Office (under the UK Government) was thus replaced in 1999 by the Scottish Executive, which was renamed the Scottish Government in 2007 by the new Scottish National Party administration. Under the Scotland Act (1998), certain powers are delegated to the Scottish Parliament, including health, education, social work, and local government and planning, whilst other powers referred to as 'reserved matters' are still dealt with by Westminster. Policy development in the area of child health has hence been incremental and crosscutting, involving many different government departments and delivery mechanisms.

Key child policy in Scotland

Overarching policy:

Getting it Right for Every Child

Health policy:

- 'Hall4'
- Early Years Framework
- Equally Well
- Achieving Our Potential
- Better Health, Better Care

Education policy:

• Curriculum for Excellence

Health policy in Scotland

The White Paper, *Towards a Healthier Scotland (1999)* acknowledged the profound effects of early influences on lifelong health and introduced broad priorities and targets which supported improvement of child health and reducing health inequalities. The Scottish Executive then pledged £15 million to support four national demonstration projects for action and learning. *Starting Well* was the demonstration project for child health. This will be discussed later in this report. *For Scotland's Children (2001)* called for children's services to be considered as a single service system to coordinate assessment of needs and intervention. *Nursing for Health (2001)* and *Nursing for Health Two Years On (2003)* followed. The latter emphasised the targeting of services to the most vulnerable and integration between the NHS and local authority partners.

Improving Health in Scotland: The Challenge (2003) introduced a focused approach to health improvement initiatives with actions relating specifically to the early years including strategies to reach the most vulnerable. The report by the Royal College of Paediatrics and Child Health, Health for All Children Fourth edition 'Hall4' (2003) called for a move away from a wholly medical model of screening for specific disorders, towards greater emphasis on health promotion, prevention and targeting effort on active intervention for those children and families at risk. Evidence was presented which demonstrated that in Scotland the uptake of health promotion advice and child health screening and surveillance contacts was higher amongst parents from more affluent areas. Children from poorer areas were more likely to remain disadvantaged in terms of health and access to health services. The Scottish policy response to Hall4 called for: targeting support to families most in need; the development of a Health Plan for every family with all children receiving a core programme of routine contact for screening, developmental checks, immunisation and health promotion advice; structured additional support for some families and intensive interagency support for those children most in need; more use of the skills of other professionals working with children, such as preschool childcare workers, to promote healthy living messages and observe child development; and a greater emphasis on the promotion of health lifestyles, such as good diet, more exercise and positive mental health. Hall4 is discussed in the section, 'Overview of current core programmes for child health in Scotland'.

The 2003 GP Contract has been accused of not adequately promoting the wellbeing of children or taking into account their requirements (30). Although children frequently use primary health care services, the new contract offers General Practitioners the choice of opting out of provision of childhood immunisation and contributing to the Child Health Promotion Programme. In addition, Wood has argued that the remuneration offered to General Practitioner for providing Child Health Promotion services (points are awarded according to the Quality and Outcomes Framework part of the contract) is not an adequate incentive(30).

The Mental Health of Children and Young People: A Framework for Promotion, Prevention and Care (2005) emphasised that early years services were vital as a frontline in establishing good mental health and wellbeing among the youngest children, since risk factors in infancy and early childhood are associated with mental health problems in children and an increased risk of mental illness in adult life.

Delivering for Health, published in October 2005, builds on the vision and principles of the Kerr Report to set a new policy agenda for NHS Scotland. It calls for a fundamental shift in the way the NHS works, from a hospital-driven service to one that is community based and emphasises the need to reduce the inequalities gap. *Delivering a Healthy Future: An Action Framework for Children's and Young People's Health in Scotland (2006)* highlights the importance of effective interagency working and provision of support which is based on the best available evidence, designed to protect and promote health as well as treating disease, capable of addressing the needs of vulnerable children and delivered consistently and equitably throughout the country.

Getting It Right for Every Child (2006) (GIRFEC) highlights the need for appropriate and timely support for children through integrated multiagency intervention. The approach involves practice change and removal of barriers (though no longer legislative change) to aim to achieve this. The goal is that we want our children to be healthy, achieving, nurtured, active, respected, responsible, included and safe. These
are also called the eight indicators of wellbeing in the GIRFEC policy. GIRFEC is regarded as the pansectoral strategy which will be used to bring about the 'transformational change' needed to implement other policies like the *Early Years Framework, Equally Well, Curriculum for Excellence, Achieving Our Potential and Better Health, Better Care.* The way in which information on individual children is to be collected is through the *Integrated Assessment Framework* which is based on similar models in England and Wales and was introduced to reform the children's support system. Although it applies to all children, it is particularly aimed at those with child protection needs, and under the children's hearing system. The multidisciplinary, intersectoral assessment records all aspects of a child's life and identifies which services or resources are required to benefit the child. Responsibilities are then allocated to individuals and agencies selected to assist. Where two or more agencies are involved in a child's care, a lead professional will be allocated to coordinate activities.

Visible, Accessible, Integrated Care, Report of the Review of Nursing in the Community in Scotland (2006) outlines a new service model for nursing in the community. The review recommends that the disciplines of district nursing, public health nursing (health visiting and school nursing) and family health nursing be absorbed into a new, single community health nursing discipline. The elements common to each of these disciplines would be assumed by the community health nursing discipline. This could have profound implications for maternal and childcare in the community. The policy has faced strong opposition among the nursing profession (31) and following widespread consultation and a pilot of the generic community health nurse in a few areas of Scotland, implementation of this policy is unlikely to see the light of day.

Delivering for Mental Health (2006) developed following a commitment made in Delivering for Health (2005) to 'develop a national mental health delivery plan by the end of 2006 and in doing so, accelerate improvements in mental health services'. Its agenda includes commitments for improving mental health care for children and young people through basic mental health training for those working with looked after and accommodated children and young people. It also focuses on enhancing perinatal services.

Getting it Right for Every Child (GIRFEC): An evaluation in the Highlands

An evaluation of the developmental and early implementation phases of GIRFEC in the Highlands from 2006 to 2009 was conducted on behalf of the Scottish Government. The implementation of GIRFEC has used the 'pathfinder' approach which refers to a strategy which entails a problem-solving, adaptive learning system for bringing about change in complex situations. The 'pathfinder area' included the city of Inverness and its immediate surrounding rural areas. The evaluation used a qualitative design drawing data from: interviews and focus groups discussions with key individuals; surveys of staff; observations of meetings and training sessions; interviews with and case studies of children, young people and their families; and analysis of records and plans. Conclusions were that 'professional practice within the Highland pathfinder is changing in the right directions, training has helped and professionals are clearly reflecting upon and learning from experience' but that '...further structured professional development and quality assurance would help bring all practitioners' skills up to the same level...' and that '... a package of support measures rather than a one-off training package will be needed to accompany the range of changes entailed by the GIRFEC approach'. Ongoing challenges that were identified included that there needed to be a professional cultural shift to think in terms of, not just actions taken and immediate outputs, but importantly outcomes as a result of these. A second pathfinder has also been implemented in four other areas of Scotland to explore how GIRFEC responds to children and families affected by specific concerns, in this case domestic abuse. The report on the evaluation of that pathfinder is due later on in 2010.

Source: http://www.scotland.gov.uk/Publications/2009/11/20094457/0

More recently the Scottish Government has established a clear *Purpose of Government, National Performance Framework and Government Economic Strategy* which outline the broad objectives, targets and outcomes towards which the country should strive. The five strategic objectives describe the kind of Scotland desired for the population: Wealthier and Fairer, Smarter, Healthier, Safer and Stronger and Greener. Of the 15 National Outcomes, many relate directly or indirectly to early childhood development, for example 'our children have the best start in life and are ready to succeed; we have improved the life chances for children, young people and families at risk; our young people are successful learners, confident individuals, effective contributors and responsible citizens; we have tackled the significant inequalities in Scottish society; our public services are high quality, continually improving, efficient and responsive to local people's needs'.

The strategy for building a 'Smarter' Scotland is set out in *Skills for Scotland (2007)*. Again, the importance of young people's education, from the early years of a child's life through their compulsory education, which they note coincides with a period of rapid development and lays the foundations of skills for life and work, is emphasised. The document points out that giving every child a strong start in life is a crucial aim, in order to set them off on a path that results in positive outcomes later in life. Key elements mentioned as supporting positive development in the early years include:

- helping parents and carers to provide a nurturing and stimulating home environment
- providing children with high quality preschool and school education
- helping parents with literacy and numeracy to enhance their ability to support their children's learning
- achieving effective early interventions to improve outcomes for all children but particularly those who face particular disadvantage or a high risk of poor outcomes later in life
- supporting effective transitions between the stages of learning, including the transition from nursery to primary school.

Better Health, Better Care launched in December 2007 aims to be a step towards a 'Healthier' Scotland and its three main components of: health improvement, tackling health inequality and improving the quality of health care. The action plan sets out a programme of action to accelerate progress on each of these components. It sets out the Scottish Government's plans to extend anticipatory care approaches and to develop early intervention programmes which invest in the health of pregnant mothers, babies and young children to break the link between early life adversity and adult disease. There is a particular emphasis on commitments to public participation, improving patient experiences, patient rights and enhanced local democracy and a more participatory approach to healthcare.

The report of the ministerial taskforce on health inequalities, *Equally Well (2008)*, emphasises that the overall goal of the Government, sustainable economic growth, can only be achieved through a reduction in health inequalities. A key priority area mentioned is the early years in children with the following recommendations:

- NHS Boards should improve the capacity of antenatal services to reach higher risk groups and identify and manage risks during pregnancy.
- The Government should lead the development of support services for families with very young children at risk of poor health and other poor outcomes.
- The Government should develop a community-based integrated school health team approach, increasing the nursing staff and other professionals supporting schools.
- The Curriculum for Excellence educational reforms should continue their strong focus on literacy and numeracy and health and wellbeing.
- Physical environments that promote healthy lifestyles for children, including opportunities for play, physical activity and healthy eating, should be a priority for local authorities and other public services.

The Early Years Framework (2008) which focuses on the period from pre-birth to eight years old represents 'a shift in philosophy for the Scottish Government away from a centrally driven, inflexible approach to a locally planned approach tailored for each health authority'. Arguments for the importance of the early years are presented with evidence from economics, neuropsychology and health. Improving the early years is seen as a central element of the strategy to reduce crime, substance abuse and unemployment, thereby regenerating communities. Ten elements of 'transformational change' are identified: a coherent approach; helping children, families and communities to secure outcomes for themselves; breaking cycles of poverty, inequality and poor outcomes in and through early years; a focus on engagement of children, families and communities; using the strength of universal services to deliver prevention and early intervention; putting quality at the heart of service delivery; services that meet the needs of children and families; improving outcomes and children's quality of life through play; simplifying and streamlining delivery; and more effective collaboration. The framework is to be put into practice through single outcome agreements between the 32 local authorities and the Scottish Government. Activities should be planned based on the local needs and the objectives, targets and national outcomes in the National Performance Framework. Guidance would be provided from the Government on indictors which each local authority chooses to measure their performance. Some examples of 'elements to take forward action' presented in the Early Years Framework (2008) are:

- more help to develop parenting skills within antenatal and postnatal care and developing the capacity to deliver this
- a renewed focus on 0–3 years as the period of a child's development that shapes future outcomes
- breaking down the barriers between childcare through a move towards more integrated, flexible services
- improving play opportunities and addressing barriers to play
- more consistent access to intensive family support services in the early years and more help for informal support networks
- nurseries, schools and childcare centres developing their role in family and community learning; adult services such as housing, transport and development planning putting a greater focus on the needs of young children and families
- to provide child-centred, outcome-focused services.

Concerns about the single outcome agreements were expressed in interviews. Although, in general, decentralisation is welcomed, with 32 local authorities choosing their own indicators and services, some questions arise: How will this affect the ability to compare services across the country or to combine outcomes for a full picture of Scotland's performance? Will the availability of services be a 'post code lottery'? How will this affect the principle of equality so dearly held? Would this new approach lead to excessive bureaucracy – with voluntary organisations, for example, having to negotiate with each of 32 local authorities rather than one centralised body? Is it likely that there will be enough staff in each of the areas trained in data collection and analysis to accurately calculate the numerous indicators selected? Will there be quality control mechanisms in place?

Achieving Our Potential, a new framework aimed at tackling poverty and income inequality in Scotland, was launched by the Scottish Government in 2008. Supported by funding of £7.5 million, Achieving Our Potential sets out the joint approach and key actions of the Scottish Government, its partners and COSLA in the fight against poverty. It also calls for the UK Government to transfer responsibility for personal taxation and benefits to Scotland, simplify the tax credits scheme and promote the greater availability of childcare vouchers. Achieving Our Potential is seen as one of three key elements of the Scottish Government's approach to alleviating disadvantage, which also focuses on reducing health inequalities and providing children with the best start in life.

Despite the clear focus on the early years illustrated by the plethora of policies described above, parenting, family support and the social-emotional and cognitive development of children in Scotland hardly feature in the current NHS Scotland objectives reflected in its HEAT targets (box below).

HEAT targets directly relevant to child development 2009/10

HEAT targets are a core set of Ministerial objectives, targets and measures for the NHS which set out an agreement between the Scottish Government Health Department and each NHS board. HEAT targets are set for a three year period and progress towards them is measured through the local delivery plan process.

Health improvement -

H2: 80 per cent of all three to five year old children to be registered with an NHS dentist by 2010/11.

H3: Achieve agreed completion rates for child healthy weight intervention programme (locally defined) by 2010/1.

H7: Increase the proportion of new-born children exclusively breastfed at 6-8 weeks from 26.6 per cent in 2006/07 to 33.3 per cent in 2010/11.

*Efficiency and Governance -*None directly relevant to child development

Access to Services -

A12: Health Boards to deliver faster access to Child and Adolescent Mental Health Services

Treatment -

None directly relevant to child development

Source: http://www.scotland.gov.uk/Publications/2008/11/28081831/10

Education policy in Scotland

The National Care Standards for Early Education and Childcare covers services for children and young people up to the age of 16 years which are regulated under the Regulation of Care (Scotland) Act 2001. They apply to services operating in the public, private and voluntary sectors, and in domestic or non-domestic premises which provide services for over two hours a day and for six days or more each year. The range of services covered include: nursery classes; crèches; childminders; after school clubs; and playgroups. Scottish ministers set up the Scottish Commission for the Regulation of Care to develop national standards. Providers use the standards to find out what is expected of them in offering childcare and early education services. The standards reflect the rights of children and young people, as set down in the UN Convention on the Rights of the Child.

The *Child at the Centre* provides a self evaluation guide for centres providing preschool education and day care to children aged 3–5 years. There are quality indicators and performance indicators used in the inspection of preschool education centres. Centres are expected to evaluate themselves on a performance grid by judging the level that best describes their centre for each key area (figure 2 shows key areas 1–4). For performance indicators there are seven key performance areas: curriculum; children's development and progress; development and learning through play; support for children and families; ethos; resources; and management, leadership and quality assurance.

Figure 2: Performance indicator grid (key areas 1–4) used as a checklist in the inspection of centres for preschool education

No Performance Indicator Themes		Themes	Level			
Key area 1.0	Curriculum		1	2	3	4
1.1	Structure of the curriculum • breadth and balance of the learning opportunities offered to the children					
1.2	Quality of programmes	 links to national and local curriculum guidelines balance and relevance of learning experiences design and evaluation of programmes support and guidance for staff 				
1.3	Quality of planning	 planning of programmes and day-to-day activities effective use of assessment information responsiveness of planning procedures 				
Key area 2.0	Children's Development and Progress					
2.1	Children's progress in their development and learning	• children's progress in the key aspects of their development and learning				
Key area 3.0	Development and Learning through Play					
3.1	Quality of children's development and learning through play	 the learning environment opportunities for choice the motivation of the children and their engagement in learning activities 				
3.2	Staff/child interaction	the quality of staff/child interaction staff understanding and reasons for timing of interactions				
3.3	Meeting children's needs	 choice of activities and resources pace of learning relevance of approaches to learning 				
3.4	Assessment, keeping records and reporting	 assessment methods and arrangements for keeping records and reporting use of assessment information 				
Key area 4.0	Support for Children and Families					
4.1	Care routines	 continuity of care responsiveness of care routines child protection health, nutrition and safety 				
4.2	Coherence of care and education	 pace and balance of the day range of experiences and activities 				
4.3	Effectiveness of support for development and learning	 provision of support for children and families quality of learning support programmes children's progress use of external guidance and support 				
4.4	Support for children with special needs	• appropriateness of placement • effectiveness of planning • procedures for implementing legislation				

Source: The Child at the Centre at http://www.scotland.gov.uk/Resource/Doc/158176/0042806.pdf

In 2002 the process of developing a new school curriculum began, followed by the publication of *A Curriculum for Excellence in 2004*. Since then there has been further development, consultation and refinement and *A Curriculum for Excellence* was finally implemented in schools in 2009. The purpose of *A Curriculum for Excellence* is to ensure that all the children and young people of Scotland develop the attributes, knowledge and skills they will need if they are to flourish in life, learning and work, now and in the future. The aims are that every child and young person should know they are valued and will be supported to become a successful learner, an effective contributor, a confident individual and a responsible citizen. These are the so-called 'four capacities'. There does not, however, appear to be any policy or practice of routine monitoring or assessment of cognitive, language or social-emotional ability in children in Scotland in the period from birth to age six.

The Scottish Government made a commitment in the Concordat (see below) to 'substantial progress towards a 50% increase in preschool entitlement for three and four year olds'. In the UK preschool is non-compulsory. The entitlement to preschool provision would be for 475 hours per annum (equivalent to 38 weeks at 12.5 hours per week) in 2008–09 and 2009–10. This would increase to 570 hours (equivalent to 38 weeks at 15 hours per week i.e. half days) in August 2010. In the January 2007 census, 98% (53,050) of children eligible for preschool were in preschool and 96% (96,130) of children eligible for the antepreschool and preschool year were registered (32). These figures are based on a series of estimations and so should be treated with caution since in many areas the percentage exceeds 100.

What is the Concordat?

The Concordat sets out the terms of a 'new relationship' between the Scottish Government and local government following the change of government in May 2007, represented by a package of measures agreed by both parties.

The Scottish Government undertakes not to structurally reform local government, commits to providing specified funding for a period, sets out national outcomes (underpinned by indicators), introduces a new performance reporting system and agrees to work with local government to improve performance management and self-assessment. Local authorities agree to deliver on a specified set of commitments overseen by COSLA and the Scottish Government, based on the National Framework of 15 National Outcomes and 45 National Indicators.

Source: http://www.cosla.gov.uk/attachments/aboutcosla/concordatnov07.pdf

Chapter 5 – Overview of child health and development programmes in Scotland

Summary

- The implementation of Hall4 across Scotland has resulted in a screening and surveillance programme with a reduced core and aims to more effectively target children and families most in need. The aim is to classify children as low, medium or high risk by 6–8 weeks of age after which, for low risk children, there is no routine contact except for immunisation appointments. There is evidence from Glasgow that only half of high risk children are identified by four months.
- A Sure Start Scotland mapping exercise estimated that by 2003/4 15,400 children and 9,600 parents were being supported. Evaluation of the extended preschool provision for vulnerable two year olds pilot programme demonstrated no significant difference between intervention and control groups.
- The qualitative process evaluation findings of phase one of Starting Well found that intensive home visiting encouraged mothers to trust services and care packages were more individualised due to better quality information on needs and life circumstances.
- The quantitative evaluation of phase one of Starting Well used a quasi-experimental study design but at six months only 57% of families were followed up and by 18 months attrition was more than 50% of the original sample. Triple P was used to support the parenting education and practical support part of the Starting Well programme. The study found significantly lower rates of depression among mothers at six months but no difference at 18 months; no significant improvement in the quality of the home environment; higher levels of client satisfaction with health visitor support; and higher levels of dental registration (but no follow up to assess actual attendance).
- The evaluation of phase two of Starting Well has not yet been published.
- Triple P, used in Scotland in families with children under two, covers the ages from 0–16 years but notably has not been adequately evaluated in children under-3 in a controlled trial.
- No evaluations of Starting Well or Triple P in Scotland objectively measured child outcomes.
- Two studies evaluating the Mellow Parenting programme indicated that there were improvements in parent-child interaction, child centredness, mother's mental health and child behaviour problems. The studies did not, however, have a control group or any longer-term follow up.
- The Nurse-Family Partnership is being tested at one site in Scotland and has been implemented at 50 sites in England. England has been testing the programme for 3 years and is conducting an RCT but no results have been published yet.

In this chapter, the universal child health system and selected major programmes for early child development in Scotland are reviewed. Time did not allow a full mapping of child health and development programmes in Scotland. An attempt has been made to briefly describe the major projects highlighted by stakeholders in interviews and discussions, and those known to be evaluated with an experimental study design. Details of additional programmes are provided in Appendix 4.

Table 6.

Child health and development programmes in Scotland

Universal child health programmes The National Health Service Child Health Promotion Progra Level 1 – core programme; Level 2 – core and additional s interagency support	amme support; Level 3 – core and intensive
National programmes Sure Start Scotland	Evaluation with control groups in England but not in Scotland.
National health demonstration projects	
Starting Well »Parents and Children Together (PACT)	Quasi-experimental evaluation but no direct child outcomes measured and >50% attrition by 18 month follow up.
Pilot programmes in Scotland* Nurse-Family Partnership	NFP: 3 large US RCTs; RCT evaluation underway in England; test site in Lothian, RCT may not occur in Lothian.
Play@home	Evaluation planned but not yet started
Parents As (First) Teachers	Evaluation planned (Dumfries).
The Extended Pre-School Provision for Vulnerable Two Year Olds Pilot Programme	Evaluation with control groups#
Other examples of maternal, child, parenting and family programmes*	
Mellow Parenting and Mellow Babies The Child Development Programme and First Parent Health Visitor Scheme The Community Mothers Programme Home-Start First Steps Project Family Project Veritus/Family Caring Trust NCH - Handling Children's Behaviour OK to Ask Parent Information Points Literacy projects – The Early Intervention Project	Evaluation but no control groups. Control group evaluation. Control group evaluation. Small experimental evaluation not published in peer-reviewed journal. No evaluation found. Evaluation but no control groups. No evaluation but no control groups. No evaluation found. Descriptive evaluation. Descriptive evaluation. No control group evaluation.

*Detailed descriptions in Appendix 4.

#The 2008 Evaluation of the (Sure Start) Extended Pre-School Provision for Vulnerable Two Year Olds Pilot Programme was found after the initial rapid review had been completed.

The National Health Service child health promotion programme

The guidance published in 2005 to support the consistent implementation of *Hall4* across Scotland describes a screening and surveillance programme with a reduced core content and more effective targeting of support for children and families most in need. There is an emphasis on health promotion and explicit plans to increase the involvement of parents, and sectors other than health in surveillance activities. The intention is that early in their lives (within the first 6–8 weeks) children are categorised into one of three groups based on health visitor perceived risk: core programme; core and additional support (usually from health visitor); and core and intensive interagency support. This categorisation, called the 'Health Plan Indicator', can in theory be adjusted but is usually made by 2 months of age. In terms of child development therefore the standard package from conception would involve the following:

- Antenatal care with its universal services from GPs and midwives, antenatal classes, parenting classes, resources (like the book Ready Steady Baby) and where available additional universal services such as baby massage classes and breastfeeding workshops.
- Universal newborn hearing test.
- Neonatal examination and Guthrie test around 5 days.
- Public health nurse (usually health visitor) first visit at 10 days.
- 6-8 week physical examination by the GP and visit by the public health nurse.
- Immunisation appointments, generated by a central (letter) system prompting carers, take place at 2, 3, 4 and 13 months and another at between 3 years 4 months and 5 years. During these the health professional is encouraged to review the progress of the child with the parent and identify any social, physical or mental problems. In practice, these appointments are very brief.
- Visual screening in preschool between age 4 and 5 years.
- On school entry (primary 1 review): height and weight measurement; any concerns recorded; Health Plan Indicator reviewed.

Additional contacts **may** be made at 8–12, 24 and 39–42 months, for example for children in the additional support group, but a flexible approach based on needs is encouraged. Thus, in the core programme after four months of age, there is no routine contact till after the age of one year, and between the age of two and four years there is only one routine opportunity for contact with a child. Both of these rely on the primary carer bringing the child for immunisation. The health professional is encouraged during those appointments to promote health by discussing development, safety, nutrition, smoking, oral health, physical activity, parenting skills and ask if there are any concerns. At these visits the family's circumstances and needs in general are to be reviewed. Most children receive their immunisation from the practice nurse at the GP surgery, on whom therefore a heavy burden of responsibility rests to accomplish all these clinical goals during one brief visit punctuated by a painful injection. In addition to the basic primary 1 review, some children (although it is not clear how this is decided) have a 'primary 1 assessment' in which gross motor, fine motor, speech/language and social skills/behaviour are assessed.

A recent retrospective study of health visitor rating of family needs during the Starting Well project in Glasgow demonstrated that only 47% of high need families evident at 12 months of age or older, were correctly identified by age four months (33). The authors did not criticise health visitors but rather pointed out that it was unreasonable to expect all families at risk to be identified in the early weeks of life. Most families in deprived areas, they argued, need continued visitation and other professional contact if all of the most vulnerable families are to be reliably identified.

Additional programmes for early child development

National programmes

Sure Start Scotland

Sure Start Scotland has not been included in the literature review of evidence of effective public health interventions for early child development since no formal evaluation with control groups could be identified. The objectives of Sure Start Scotland were to: improve children's social and emotional development; improve children's health; improve children's ability to learn; and strengthen families and communities. The target of the Scottish Executive was to provide 15,000 vulnerable children age 0–3 years of age with an 'integrated package of care' involving a range of services. We found no formal countrywide evaluation of Sure Start in Scotland, however, two 'mapping exercises' were conducted. The mapping exercise carried out in 2004 reported that Sure Start Scotland was introduced in 1999 with 3,387 children supported at baseline by 1999/2000 (34). By 2003/4 it was estimated that there were 15,400 children and 9,600 parents being supported. The mapping exercise obtained information from 27 out of 32 local authorities who reported on 246 services, although less than a third of local authorities reported back when asked whether they provide an 'integrated package of care'. The 246 services included 126 services offering 'intensive' support (usually meaning home-based support), 166 providing group support (training in groups and crèche facilities) and 43 providing resource-based support (toy library or books). The main service type was centre-based provision followed by outreach support (figure 3).

A wide range of services were thus involved, including Sure Start Midwife Support, 0–3 Intensive Outreach Workers (home visitors), Play@home, family outreach services like Children First, programmes such as Mellow Babies, Parent and Toddler Groups and Adult Learning Groups. Issues raised by the mapping exercise included the probable need for services after the age of three years (especially the transition to school period), and for strengthening of the health focus, the lack of proper monitoring and evaluation, the problem of demand outweighing supply, the challenges of recruitment and retention of staff, and the need for guidelines and sharing of good practice.

With the introduction of the Concordat between the Scottish Government and local government in 2007, Sure Start was no longer regarded as a self-standing programme and ring-fenced funding ceased. Currently, through the single outcome agreements, local authorities can continue any programmes they choose to prioritise for their areas, dependent on perceived need.



Figure 3: Main types of service provided by Sure Start Scotland 1999-2004.

Centre-based provision (family/children's centre)
Playgroup/play initiative
Parent and baby/toddler group
Outreach support
Other Day-Care (not Centre)
Other nursery (not Centre)
Creche (not Centre)
Learning support to child
Learning support to parent
Resource based provision
Staff training/support
Other (service type)

Source: Cunningham-Burley S, Carty A. Sure Start Mapping Exercise 2004. Edinburgh: Scottish Government; 2004.

National health demonstration projects

Starting Well

Shaped by the work of Olds and Kitzman (35), Starting Well was one of four major health demonstration projects designed to foster best practice in health improvement and reduction of health inequalities across Scotland. It does not meet the inclusion criteria for the literature review but nevertheless served a large portion of deprived communities in Scotland and it is therefore described here. Starting Well operated from 2001 to 2005, before the implementation of *Hall4*, in three urban areas of Glasgow with high socioeconomic deprivation and a combined population of almost 65,000. It is not clear how authorities planned to integrate it with Sure Start, which had commenced in 1999. The components of the project were intensive home-based support and the provision of a strengthened network of community-based services for children and their families. All families with new babies (not just first born) were included.

To support the parenting education and practical support part of the Starting Well demonstration programme, the Positive Parenting Programme (Triple P) (36) was utilised. Triple P, discussed in more detail in Appendix 3 cluster E, was designed in Australia. It is particularly aimed at parents of children with conduct disorder in areas of high deprivation and was used in Glasgow for families with children under two years. Although Triple P covers the ages from 0–16 years, there is limited evidence of its effectiveness in children age 0–3 years in a controlled trial. In addition, in Scotland providers felt that it was more effective in those whose lives were more ordered as opposed to in the most deprived families (12). The potential stigma associated with attending Triple P was a concern for providers and parents. The relative affluence of parents in the videos was more of an issue for participants than the fact that they were Australian. Unfortunately, the only child outcome measured in the Starting Well implementation of Triple P was dental registration. Although many practitioners were trained in Triple P during the Starting Well project, few continued to use the programme after the end of the project. Several practitioners trained in both Triple P and an alternative programme, Handling Children's Behaviour, have continued to use Handling Children's Behaviour but not Triple P, according to key informants interviewed.

The independent evaluation of Phase One of Starting Well in 2004 (25) compared two intervention areas (South and East Glasgow) with a sociodemographically similar control area in the North. Process and outcome evaluations were conducted with assessments at birth, six months and 18 months. The qualitative process evaluation findings were complex but broadly found that intensive home visiting encouraged mothers to trust services and care packages were more individualised due to better quality information on needs and life circumstances. For the quantitative outcome measures a quasiexperimental study design was utilised. The sample size was 627 families (367 from the intervention group and 260 from the controls) but in total only 359 families completed the six-month assessment and 294 finished the 18-month assessment. Findings included: significantly lower rates of depression among mothers at six months but no difference at 18 months; no significant improvement in the quality of the home environment; higher levels of client satisfaction with health visitor support; and higher levels of dental registration (but no follow up to assess actual attendance). Further analysis (37) of the Starting Well data identified eight risk factors as predictors of contact rates: most deprived decile (Scottish Index of Multiple Deprivation); South Asian; multiple birth; premature; family unwaged; mother or father in care as child; high score on Edinburgh Postnatal Depression Scale; and involvement with social services or criminal justice.

Methodological problems were that project teams developed very differently in the two intervention sites, particularly the degree to which they advocated integration within GP practices and the extent of dilution of the Starting Well approach. Implementation problems included issues of role clarity, since health visitors, nursery nurses and health support workers (recruited from the local community by a voluntary organisation) had different management structures. These factors, and the increased case load on health visitors due to the intensity of the programme, led to less emphasis on advocating for community change, in the view of the evaluators (25).

In Phase Two (2005–6) the universal service provided in the two geographic areas changed to a targeted approach to reach the most vulnerable across Glasgow. Multiagency teams were created across Glasgow to provide short-term intensive support for highly vulnerable children. The University of Strathclyde Business School was commissioned to conduct the evaluation of this phase but there were delays and to date (July 2009) the results have not yet been published.

Parents and Children Together (PACT)

Starting Well has now evolved into the Parent and Children Together teams in Glasgow which include workers from health and social services. The most vulnerable families are targeted and offered individual work, group parenting work, and practical support. During the first four weeks of contact an assessment takes place followed by a planning meeting. The family is then supported for a further 12 weeks at which point support is reviewed. There is no evaluation available of this programme.

Vulnerable Families Pathway Project

NHS Quality Improvement Scotland is leading the development of a multi-disciplinary and multiagency antenatal, postnatal care and early years (0-3) pathway for vulnerable children and families. This 18 month project, started in May 2009, aims to ensure that vulnerable women and young children (0-3) receive equitable evidence-based care consistently in all parts of Scotland. Specific objectives are to:

- Develop referral criteria and care pathways which will assist maternity and early years services to identify and support potential vulnerability and, where necessary, refer families for appropriate support or intervention within a multi-professional and multiagency context.
- Develop a multiagency pathway for children and families identified as vulnerable and/or in need of additional and intensive interventions (e.g. child protection, domestic violence, parental addictions, literacy, nutrition) building on work already underway in each of these fields.
- Develop a common approach for seamless, ongoing and integrated assessment and care planning, in line with GIRFEC principles and core components, from pregnancy through the early years.
- Develop evidence-based guidance to support an improved approach to the assessment
 of family circumstances and family vulnerability in the antenatal, postnatal and early years
 period. This will include guidance for all professionals on continuing to develop their skills
 by using every contact as an opportunity to assess need, identify and support families at
 risk.

Source: NHS Quality Improvement Scotland. http://www.nhshealthquality.org/ nhsqis/6928.141.1446.html

Pilot and test programmes in Scotland

Nurse-Family Partnership

The Nurse–Family Partnership (NFP) is a licensed programme (see Appendix 3, group B, page 80) developed 30 years ago in the USA by Professor David Olds at the University of Colorado. The programme focuses on improved outcomes across three areas: improving antenatal health; enhancing child development and school readiness; and linking the family to wider social networks and employment. In the US, large scale clinical trials have reported the programme to effect significant and consistent improvements in the health and wellbeing of the most disadvantaged children and their families in both the short and long term. In Scotland the first test of the NFP is taking place in Edinburgh City Community

Health Partnership. If the test is successful, there is an opportunity to test on a larger scale. Although the licensing agreement with David Olds requires a randomised controlled trial, it may not be deemed necessary for Scotland since the outcomes of the randomised controlled trial in England may be regarded as sufficient evidence.

The Glasgow Parenting Support Framework

There are a number of practitioners in Glasgow trained to deliver structured parenting support, but the type and frequency of delivery of these programmes varies across the city and it isn't clear if needs are being met. Furthermore, practitioners from a range of disciplines offer parenting support on an informal basis as part of their everyday work, but how and the extent to which this addresses need is not fully understood.

NHS Greater Glasgow & Clyde and Glasgow City Council published their joint parenting support framework in June 2009, building on existing projects in Glasgow and a broad review of the evidence for effective interventions in parenting support. The main aim was to provide a coordinated approach to parenting support so that all families in Glasgow could benefit from support according to their level of need. Triple P has been adopted as the main intervention and staff from all sectors are being trained to deliver support at a range of levels.



Figure 4: Flow chart for the Glasgow Parenting Support Framework

The role of health visitors as 'case finders' in an active filtering model (see above) is currently being explored in West Glasgow Community Health and Care Partnership (CHCP) through the piloting of universal contacts with families of children at 13 and 30 months of age. At 13 months, parental wellbeing is assessed using the Adult Wellbeing Scale (AWS) (38) and the parent-child relationship assessed using an observation checklist based on key indicators of relationship problems (e.g. no eye contact between parent and child). At 30 months, parental stress (Parenting Daily Hassles Scale) (39), language development (two question language screen) (40), and behaviour problems (Richman Behaviour

Checklist) (41) are assessed. At both contacts health visitors are asked to return a range of demographic and contextual information on the child's family.

Preliminary data show that uptake of these contacts is reasonably high (50–60%), and that they do serve to identify unmet need. For example, some parents were scoring above clinical cut-offs for the depression and anxiety scales of the AWS yet were assigned to a 'core' Health Plan Indicator (HPI), meaning that they would not be receiving any routine contact from the health visiting team beyond immunisation clinics. Linkage to demographic and contextual data gathered at the contacts and by child health surveillance and other services will allow us to assess the extent to which identification of need at this stage leads to uptake of appropriate support, including the uptake of targeted Triple P interventions. The utility and feasibility of these contacts is being assessed based on a 6 month pilot period, and a full report is expected by the end of March 2010.

(Source: Lucy Thompson, Senior Public Health Researcher, Public Health Resource Unit, NHS Greater Glasgow & Clyde)

The Evaluation of the Extended Pre-School Provision for Vulnerable Two year Olds Pilot Programme

In Scotland, the focus of the Sure Start programme was on early (0-3 years) intervention by extending preschool provision for vulnerable two year olds and supporting their parents. Glasgow, Dundee and North Ayrshire local authorities took part in the pilot and were encouraged to develop their own models of delivery within the broad aims of the programme. An evaluation using both quantitative and qualitative methods was conducted by the Department of Psychology, University of Strathclyde, led by Dr Lisa Woolfson. Child outcomes were measured using: Bayley-III Scales of Infant and Toddler Development; Goal Attainment Scaling; and the Adaptive Social Behaviour Inventory. Quantitative tools used to measure parent outcomes were: Parent Daily Hassles Scales; and Ryff Psychological Well-being Scales. Pre- and post- intervention data were collected from 108 children and 89 parents attending pilot programmes, whilst 66 comparison group children and 61 comparison group parents served as matched controls. The quasi-experimental evaluation did not provide evidence that progress in intervention groups was significantly different from controls on child cognitive and language development, or social-emotional outcomes. There were, however, methodological problems with this evaluation in that although intervention group children were matched on age, gender and area in which their homes were situated, local authorities allocated places on the pilot programme to those who were most in need. These circumstances were not in the control of the evaluation team who mention that the short intervention period and the presence of confounding variables that they were unable to control for, may have weakened the findings of the pilot. Parents in the programme, however, did show statistically significant improved parenting capacity, compared to the parents in the control group.

(Source: Woolfson L, King J. Evaluation of the extended preschool provision for vulnerable two year olds pilot programme. Edinburgh: Scottish Government; 2008. Available at http://www.scotland.gov.uk/ Publications/2008/12/16111725/0)



Chapter 6 – Data collection for monitoring early child development

Summary

The current health and education information systems would be inadequate for monitoring the more proximal effects of early childhood interventions, especially in relation to cognitive-language and social-emotional development. For the other sectors, the eCare programme offers promise but there would have to be incentives to encourage all practitioners to enter information completely, accurately and regularly. Data linkage would need to be considered to link early interventions with medium and longer term outcomes.

Introduction

When considering early childhood interventions it is imperative that adequate monitoring systems are in place before commencement. For targeted interventions, the studies reviewed have illustrated that there are a number of risk factors frequently used to determine who should be eligible for the programme. In addition, there's a range of short-, medium- and long-term measures commonly used to determine whether interventions are achieving their goals. Information for this is required not only from the three domains of the health information system, namely determinants of health, health system and health status information (42, 43), but also from other sectors. The education, social services, criminal justice, tax and benefits systems would have to be accessed for many outcome indicators. This chapter briefly examines the current health information available in Scotland which could be utilised for the purpose of monitoring early child development.

Health

Population-based

Census data collected by the General Register Office for Scotland (updated regularly using other sources of data) provides information for the construction of the Scottish Index of Multiple Deprivation (SIMD). The SIMD 2006 combines 37 indicators across seven domains and identifies small area concentrations of multiple deprivation across all of Scotland in a consistent way. The overall index is a weighted sum of the seven domain scores. The weighting for each domain is based on the relative importance of the domain in measuring multiple deprivation, the robustness of the data and the time lag between data collection and the production of the SIMD. The domain weightings used in SIMD 2006, expressed as a percentage of the overall weight are: current income (28%), employment (28%), health (14%), education (14%), geographic access (9%), crime (5%) and housing (2%).

The Scottish Public Health Observatory (ScotPHO) collates information collected from a wide variety of sources across Scotland and constructs 'Community Health and Wellbeing Profiles' for CHPs with 61 indicators. A list of these indicators, their definitions and sources can be found on the website. An example of the way in which it is presented is shown for the Kirkcaldy & Levenmouth CHP in figure 5.

Figure 5: Example (Kirkcaldy & Levenmouth) of the 61 ScotPHO indicators calculated for CHPs in Scotland

Kirkcaldy & Levenmouth CHP Health Summary					h Summary	1	
• St	s chart compares the local value for atistically significantly worse' than Scottish average	each i	noicat	or to	me S	Work Area	/#3
	atistically not significantly different from Scottish av atistically significantly 'better' than Scottish average significance can be calculated	erage :				5th Percentile 25th Percentile 75th Percentile 95th	n Percent
Domei	Indicator	Number	Montere	Type	Book	Worst Scotland Average	13
	1 Population 0-15 years 1	17,469	18.2	5	18.0	in the second	
1	2 Population 16-64 years 1	60.687	63.3	*	65.6		
The second	3 Population 66+	17,665	18.5	5	15.4		
al a	4 Life expectancy - males " 5 Life expectancy - because 1	03	73.5	yrs ws	70.1		
2	4 Live births	1,103	11.8	or2	10.8	1000 (201	
	7 Deatrs all ages 1	3,554	757.6	87	745.6	I ANNOL TOWN	
100	Early deaths from heart disease (< 75s) ²	275	81.4	\$7	80.3	1 mmmar branch	
8	B Early deaths from cancer (< 756) ²	490	145.5	\$f	140.8		
	11 Estimated smokers (15+)	23.950	31.5	5	27.3	11.0	
1.	12 Alcohol related and altributable hospital patients 2	2,672	816.0	87	859.7		
1	13 Alcohol related deaths ⁸	108	20.3	11	27.4	11000	
•	14 Drug related hospital patients	430	179.1	\$7	77.5	• • • • • • • • • • • • • • • • • • • •	
24	19 Patients registered with cancer 1	1,603	409.7	-	420.5		
A.	17 Stroke hospital patients 2	581	124.7	87	126.7	Land State	
4	18 Emergency admission hospital patients 2	20.530	6,462.1	57	6.230.6	1000 C	
1	15 Multiple admission hospital patients aged 66+ ³	2,045	3,622.0	87	4.173.3		
1	20 Patients prescribed statins	17,363	17.8	5	18.2		
121	21 Road traffic accident casuallies - all ages *	242	87.6	67	83.7		
	22 Expected years of Ife is good health - males 3	03	65.8	VS	66.3		
	24 Expected years of ite in good health - females ³	nia	70.5	yrs	70.2		
ē.	25 Patients prescribed drugs for antietydepression/psychosis	6.267	6.3	5	8.1		
19	24 Self-assessed health 'not good'	10,217	10.6	- 5	10.2		
22	27 Psychiatric hospital patients "	729	722.0	6/	791.7		
ž.	29 Adults claiming incapacity benefit lievere disability allowance	6.510	8.3	5	7.4		
	30 Adults with limiting long-term liness	21,580	22.9	5	20.3		
1.	31 Lone pensioner households	7,081	16.6	5	15.0	• • • • • • • • • • • • • • • • • • •	
2.2	32 Providers of unpaid care > 20 hrs per week	3,579	3.8	5	3.5		
and a	33 Older people 65+ receiving free personal care at forme "	3,410	0.7	3	4.0		
10 H	35 Households assessed as homeless 4	2,763	1.8	-	1.8		
10	36 Households in extreme fuel poverty *	8,000	4.8	5	5.9		
	37 Average tariff score of all pupils on the 54 rol	1,167	157.7	mean	171.7	(Cashing Cashing)	
18	38 School children registered for the school meals	2,668	20.3	5	15,8		
	40 Working and adults without adventional qualifications 1	03	10.5	3	13.8		
-	41 Population Income deprived	16,177	17.1	-	13.9	1	
n E	42 Working age population employment deprived	9,567	16.9	5	12.9		
1	43 Working age population claiming Jobseekers allowance	2,820	4.9	5	2.8	• 2000	
E chuc	44 Lone parents claiming income support	1,585	26.1	072	19.0		
	46 People tutos in 15% most deprived areas in Soctand	18,773	18.5	-	15.0		
2	47 Crime	7,679	81.1	er2	53.5	•	
Crie	48 Assaut patients ²	244	96.9	67	112.8	1 10000 - 2001	
Ţ	45 Population writen 500 metres of deretici site	38,074	39.7	5	27.3		
and a	St under seine seine (Es)	3,455	103,950	mean	133,872	Zem num i	
TIM	52 People Iving in 15% most access decrived areas	8,312	8.6	5	15.0		
-	53 Teenage pregnancies ³	297	52.3	cr2	41.0	•	
	54 Mothers smoking during pregnancy ²	931	33.1	5	24.3	• 1000000000000000000000000000000000000	
1	55 Low weight Ive births 2	88	3.4	*	2.5		
	55 Bables exclusively breastled at 6-8 weeks 3	621	23.1	5	27.1		
H H	58 Immunisation uptake at 24 months - all even MAR ²	2,841	96.7	-	96.0		
C.M.	55 Child dertal health in primary 1	439	54.8	3	54.8		
	60 Child obesity in primary 1	73	11.8	5	9.1		
	All strength and the second strength and a	840	11486	01	1 1 2 2 2 4	and the second sec	

ScotPHO are currently reviewing these indicators and requesting stakeholder input into this process. There are nine maternal and child health indicators, some of which could be useful as outcome measures for early childhood interventions, however, there are no measures of cognitive-language or socialemotional development in children (figure 6).

Indicator No.	Description	Definition	Time Period	Source
53	Teenage pregnancies	Teenage (<18 years) pregnancies expressed as a number (3-year total) and 3-year average crude rate per 1,000 females aged 15-17 per year. Data not available for all areas."	2003-05	ISD Scotland (SMR02)
54	Smoking during pregnancy	Women recorded as a 'current smoker' at antenatal booking appointment, expressed as a number (3-year total) and percentage of all women attending booking appointments.	2002-04	ISD Scotland (SMR02)
55	Low weight live births	Low weight live full-term singleton births (<2,500g), expressed as a number (3-year total) and percentage of all live singleton births.	2002-04	ISD Scotland (SMR02)
56	Breastfeeding at 6-8 weeks	Babies being exclusively breastfed at 6-8 week review, expressed as a number (3-year total) and percentage of all those seen at 6-8 week review. Data not available for all areas.*	1997-99 to 2004-06	CHSP-PS
57-58	Immunisation uptake	Immunisation uptake at 24 months for Diphtheria, Pertussis, Tetanus, Polio, Hib, and - separately - MMR (measles, mumps and rubella), expressed as a number (3-year total) and percentage of children of this age.	2004-06	SIRS
59	Dental health in P1	Primary 1 children receiving a 'Category C' letter from Basic Inspection ("No obvious decay experience, but child should continue to see the family dentist on a regular basis.") – number and percentage of all primary 1 children.	2006/07 (school year)	NDIP Basic
60	Obesity in P1	Children whose BMI is within the top 5% of the 1990 UK reference range for their age and sex - percentage of the total cohort. Data not available for all areas [*]	2005/06 (school year)	CHSP-S
61	Unintentional injuries in the home - <15s	Number of patients aged under 15 discharged from hospital (annually) after an emergency admission due to an accident in the home: 3- year total number and 3-year average crude	2004-06	ISD Scotland (SMR01)

Figure 6. Maternal and child health indicators currently collected at a community health partnership level.

Source: Scottish Public Health Observatory http://www.scotpho.org.uk/profiles/

Institution-based

A range of information is collected at primary care level and individuals are allocated CHI numbers which could be used for anonymous tracking and linking of data. General practice surgeries electronically record patient demographics, medical histories, appointments (including antenatal), immunisations and any referrals to other services.

Hospital data is recorded through a combination of electronic and paper records. Admissions, discharges, diagnoses, drugs and surgical procedures are recorded electronically whilst day to day recording is paper-based. These records could thus be used to obtain information about childhood hospital encounters, injuries and ingestions. Antenatal and postnatal records carry information about maternal health during pregnancy, maternal smoking, alcohol and drug abuse, baby birth weight and health, newborn screening results and initiation of breastfeeding.

Child health surveillance

There are three child health information systems: Child Health Systems Programme-Preschool; Child Health Systems Programme-School; and the Scottish Immunisation Recall System. A child can be registered on a further system, the Support Needs System, if the general practitioner or health visitor identify a child as having additional needs, for example a child with disabilities. This contains details of the condition the child has, the supports and services required, and the professionals involved.

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The Child Health Systems Programme-Preschool is used by 12 out of 14 NHS health boards (all except Grampian and Orkney) and accounts for 89% of the preschool population in Scotland. Data is recorded on paper forms by health professionals and then an administrator enters it into an electronic system. Problems or diagnoses are 'read' coded and trigger a follow up system. As explained in chapter five, the universal programme consists of: a neonatal hearing test; the public health nurse first visit at 10 days; the 6–8 week combined general practitioner and public health nurse visit; and the orthoptist vision screening at 4–5 years. These contacts are thus recorded electronically. Some health boards choose to return the optional 'birth details' form recorded in the maternity unit before discharge, in which case those details would also be available on the system. By the 6–8 week visit the child would usually have been assigned to either a core, additional or intensive category, called the Health Plan Indicator. Children in the additional and intensive categories will then receive additional reviews such as the two-year review.

The Child Health Systems Programme-School offers one universal contact with children in primary 1 usually by the school nurse called the 'primary 1 review'. At that point height, weight, and any concerns or diagnoses are recorded. The Health Plan Indicator is reviewed. Some children (although it is not clear how this is decided) have a 'primary 1 assessment' in which gross motor, fine motor, speech/language and social skills/behaviour are assessed. The form contains one short line, opposite each of these areas of assessment, for recording any problems. No internationally recognised and validated tools are known to be used or provided on the form. According to the Information Services Division, some NHS boards offer universal primary 7 reviews and 'selective medicals' in primary 7 and secondary 3.

Local authorities

Scotland has gradually moved toward a decentralised model of government with local authorities being given more autonomy and unallocated (i.e. not ring fenced) funding. There are recommendations and guidance from central government and local authorities are expected to implement government policy in their single outcome agreements. An illustration of the variation that may be expected is in the area of local selection, implementation, monitoring and evaluation of programmes. For monitoring local social and economic conditions, the Scottish Government provides a 'menu' of 52 indicators (figure 7) from which local authorities can choose and add their own to, if they wish.

Figure 7. 'Menu' of indicators from which the 32 local authorities in Scotland can choose to monitor their single outcome agreements

1.	Business community satisfaction with local area
2.	Net business formation in council area
3.	Number of claimants in receipt of unemployment related benefits, relative to the Scottish average
4.	Reduction in childhood poverty
5.	School leaver destinations
6.	Vulnerable adults into paid employment
7.	Median weekly earnings relative to the Scottish average
8.	Qualification levels within the local workforce
9.	Deaths per 10,000 population from coronary heart disease and all cancers

10. Number and rate of women breastfeeding at six to eight weeks after the birth of their child averaged over a three-year rolling basis

11.	Proportion	of live	singleton	births	of low	birth	weight
			-				-

12. Number of people with mental ill health relative to the Scottish average

13. Percentage of older people aged 65+ with intensive care needs receiving services at home

 Any patients admitted for any reason two or more times in a year as an emergency to acute specialties per 100,000 population

15. Reduce the rate of alcohol related hospital admissions

16. Pregnancies among 13-15 year olds, per 1000 population

17. Number of suicides and self harm

18. Delayed discharge, per 1000 population admitted to hospital

19. Average number of years of good health as measured by the index of healthy life expectancy

20. Levels of smoking among adults/young people

21. Number and percentage of five year olds requiring no dental work

22. Reduce morbidity due to obesity levels among children and adults

23. Damage to health due to the level of alcohol consumption

24. Damage to health due to the level of problematic drug misuse

25. Percentage and breakdown of the local population taking part in sport/leisure activities

26. Numbers and percentage of children walking or cycling to school

27. Numbers of children taking up nutritious school meals

- 28. The percentage of adult residents stating fear of crime is having a moderate or great effect on the quality of life
- 29. The volume and rate of crimes against property, broken down by burglary and all other propertyrelated crimes

30. The percentage of residents stating they are satisfied with their neighbourhood

31. The incidences of vandalism, malicious damage or malicious mischief

32. The number of people killed or seriously injured in road accidents

33. The incidence of home fires resulting in death and injury

34. The number of persistent offenders

35. The number of violent crimes, including sexual crimes

36. The number of racist incidents

- 37. Rates of domestic abuse incidents per 100,000 of population
- Number of people living in financial exclusion and experiencing multiple deprivation, relative to the Scottish population

 The number and percentage of children attending publicly-funded schools and achieving appropriate qualifications for stages

40. Educational tariff scores for each quintile of S4 school pupils

41. Educational tariff scores for each quintile of S5 & 6 school pupils

42. The percentage of all adults with literacy and numeracy difficulties

43. Tonnage of municipal waste collected
44. Tonnage of municipal waste landfilled
45. Increase the proportion of municipal waste recycled
46. Council area's carbon/ ecological footprint
47. Percentage of kilometres travelled by public transport
48. Reduce the percentage of kilometres travelled by private transport
49. Modal share of adults undertaking active travel to work or education
50. Proportion of public service buildings suitable and accessible to people with disabilities
51. Proportion of the housing stock failing the Scottish Housing Quality Standard
52. The number, quality and variety of affordable homes

Source: SG. Single Outcome Agreements. Guidance, Format and Indicators; 2008.

Again, some of these may serve useful as distal measures of early childhood interventions but there are very few proximal measures of child cognitive-language or social-emotional development. It is not clear if training or expertise will be provided for the collection, processing and analysis of these indicators. Some of these indicators would be difficult to define and calculate (e.g. indicator 4, 'reduction in childhood poverty'), and others seem arbitrarily chosen (e.g. indicator 16, 'pregnancies among 13–15 year olds' – why not include all teenage pregnancies or at least use the same indicator as that already being calculated by ScotPHO?).

Health surveys, research, longitudinal studies and community-based organisations

Longitudinal studies such as Growing Up in Scotland and the Millennium Cohort Study provide information on social and demographic characteristics, nutrition and eating habits, activities, child health and development, parenting styles and main carers' health. Since the samples are intended to be representative of the population as a whole, the information could potentially be used as a mean for the country, or for certain socioeconomic groups.

Education, social services, criminal justice, tax and benefits systems

The information systems of these sectors have not been reviewed, however, interviews with key individuals in the education department confirmed that at present there is no routine data collection of cognitive-language or social-emotional development in children 0–6 years of age. There are also no routine academic achievement tests until age 7–8 years. Until recently pupils in primary school were given tests in reading, writing and maths to ensure that they had reached certain levels of attainment, usually in P4 and P7 or in S1 and S2. Tests were taken when a teacher considered a child ready to move on to the next level, rather than at a set time, and the papers were not externally marked. This system has largely been abandoned but has not yet been replaced. Indeed, there is a suggestion that plans are to stop centrally coordinated and standardised educational achievement testing altogether, leaving the choice of tests and timing to local authorities, thus making cross-authority and pan-Scotland comparisons over time, essentially impossible.

Due to the number of services frequently involved in the care of vulnerable children and the potential fragmentation and lack of coordination, a shared information system was conceptualised for all children in Scotland. The programme, now called eCare, has its origins in earlier Modernising Government Funded

Programmes where public sector agencies involved in both community care and children's services were encouraged to form partnerships around the theme of electronic information sharing (44). In early 2006 a ministerial initiative to deliver a Scotland-wide electronic information sharing framework commenced with the formation of 14 Data Sharing Partnerships based upon NHS Board areas. These local partnerships comprise NHS boards, local authority education, housing and social work services and police constabularies who are primarily engaged in providing care and protection services to Scottish citizens. Once this system is up and running, agencies involved with the care of a child would be expected to access the confidential information system to update it. Other relevant parties can then access this information. There is, however, no guarantee that, (for example) a general practitioner would make time to add relevant information; the system relies on voluntary 'good practice' on the part of the users. It is also not clear at this stage whether any of the information on this system would be available for anonymous population-level research. A major limitation with this data, should it be made available for research, would potentially be lack of completeness.

Information linkage

At present there are very few known links between data systems within and between the different public administration and research sectors related to child health and development, although the benefits of such linkage is demonstrated by the example below.

Linking of child health data

The Information Services Division recently conducted the first linkage undertaken in Scotland between national child health and maternity data. Specifically children's Child Health Surveillance records were linked back to their mothers' SMR02 delivery records. Two cohorts, together representing over 60,000 children born between 2006 and 2008, were included in the linkage. The linkage was highly successful, with 91.2% of children having an informative delivery record identified.

The linkage allowed exploration of the effect of obstetric, neonatal, and wider family factors (such as gestation at delivery, admission to a Special Care Baby Unit, and birth order) on health visitors' subsequent assessment of children's need for ongoing Child Health Surveillance support. It therefore contributed to a wider discussion of how recent policy changes recommending more targeting of Child Health Surveillance support to families with the highest needs have been translated into practice.

Source: Rachael Wood, Information Services Division



Chapter 7 – Discussion and conclusion

Effective interventions in early childhood

The earlier studies on early childhood interventions have shown that the most successful programmes utilise mixed, two-generation approaches, that is, centre- and home-based programmes with child and parent components. Generally, high-risk families and children seem to benefit the most and in some cases providing these interventions to children with educated parents was found to be wasteful. The model, targeted programmes such as the intensive infancy-start Abecedarian project and the Perry Preschool Project showed dramatic results. These had high-quality childcare and education components and were highly resourced. It may be inherently difficult to achieve this with large scale roll-out and thus the latter may not produce the same effects. Evaluation of large-scale programmes has frequently suffered from poor methodology and many, like the US Head Start and UK's Sure Start, did not show much measurable benefit. Exceptions were Early Head Start, the Chicago Child–Parent Centers and the Nurse–Family Partnership which were more robustly evaluated and showed impressive results.

Later programmes, like the Nurse-Family Partnership and the Incredible Years, did not provide early childhood education like the earlier US programmes. The Nurse-Family Partnership is mainly a parenting support programme but does have as an explicit goal the development and school readiness of the child. Teaching on care of the child is provided to mothers and support is provided for the mother's own educational achievement and workforce participation. The Incredible Years provides a three-pronged approach: parent, child and teacher training, with training taking place at home, at a centre or at school. These programmes can thus be seen as addressing problems in two generations. The longer-term effectiveness of Incredible Years, however, has not yet been determined. Doubts remain that implementation of the Nurse-Family Partnership in the UK would yield similar effects since the health visitor system and a universally accessible primary care system are already in place (which US control groups did not have). An alternative to a new, expensive intervention may be the strengthening of the current system in the UK. For high-risk groups, provision of a more intensive midwifery service after delivery, strengthening the transition from midwife to health visitor care, and intensification the health visitor service, could be evaluated alongside any new programme such as the Nurse-Family Partnership. The First Parent Health Visitor Scheme and the related Community Mothers Programme, both implemented in the UK and reviewed in this report, provide models for more intensive support peri- and postnatally. Unfortunately limited peer-reviewed studies (45-47) could be found on these programmes and very few robust statistically significant favourable child outcomes were demonstrated.

In assessing the quality of the evaluations conducted on the interventions, many of the model programmes were of high quality but had small sample sizes, compromising the statistical power and increasing the risk of false positive findings, when numerous outcomes are being used. Evaluations of large-scale programmes were frequently not randomised, had short follow up and high attrition. Standardisation of the intervention groups and contamination of the control groups were also problems.

The majority of programmes included in this review were targeted, however, this does not imply that **only** targeted programmes can 'do good' or that targeted programmes can't 'do harm'. On the contrary, the recent Marmot inequality review (48) states: 'Focusing solely on the most disadvantaged will not reduce health inequalities sufficiently. To reduce the steepness of the social gradient in health, actions must be universal, but with a scale and intensity that is proportionate to the level of disadvantage. We call this 'proportionate universalism'. This concept is also clearly reflected in England's recent policy document, Healthy Child Programme, where a 'progressive universal programme' is referred to and progressive interventions are presented from pregnancy to five years of age (49).

Child health policy and programmes in Scotland

Scottish Government policy demonstrates a clear commitment to early child development and reduction of inequalities. Detail of how this policy will be implemented, which strategies will be employed, and how monitoring and evaluation of inputs, processes and outcomes will occur, are as yet unclear. Recent policy documents suggest that a decentralised approach through the single outcome agreement will be utilised for implementation and monitoring of the *Early Years Framework*. The effects of early childhood interventions are only likely to be known if local staff is given the training and expertise to conduct robust and timely evaluations. Additionally, to monitor the impacts of these interventions across regions and the country as a whole, there will need to be standardisation of a certain minimum number of key indicators, so that valid comparisons across local areas, and over time, can be made.

The 'reduced core' infant screening and surveillance programme used across Scotland aims to more effectively target children and families most in need. This would be extremely important if targeted programmes are adopted. Unfortunately, one study (using Starting Well data) thus far suggests that this system only identifies half of the families in need (33). If, in the context of Starting Well, identification of those most in need was lacking, it is reasonable to extrapolate that this would also apply in real world child health surveillance settings. This needs urgent further investigation.

Recent early childhood intervention programmes implemented in Scotland have unfortunately not provided credible evidence of what works in Scotland. This has been due to poor evaluation designs. More robust designs have been used in the similar contexts of England and Wales, but most robust evidence of the effectiveness of interventions comes from the US.

Child development data collection in Scotland

The current data available from the different sectors relevant to early childhood are insufficient to accurately assess the status of early child development in Scotland, either overall or across different socioeconomic groups or regional populations. This is not surprising since UNICEF, in its report on child wellbeing in rich countries, refers to the lack of adequate and comparable data from OECD countries with regard to child educational wellbeing (2). It would be necessary to at least introduce a holistic measure of school readiness on entry to primary school and some minimum standardised academic achievement tests during the school years to enable monitoring of the more proximal impacts of early childhood interventions. Formalisation and standardisation of midwifery records and expansion of health visitor records after birth could also provide useful measures. For monitoring of more distal impacts data linkage between sectors, for example education and health, or health and the criminal justice systems, is necessary.

The minimal data collection with regard to performance during the school years and the lack of any routine data collection in preschool, or at the transition to school, in Scotland is of concern. Recent one off and longitudinal studies have shown strong associations between socioeconomic status and school performance in Scotland, and worrying levels of underachievement among the disadvantaged.

The Scottish Government commissioned a report from the OECD called *Quality and Equity of Schooling in Scotland*. The report, based on 2003 data and published in 2007 (50) suggested that Scotland was performing at a consistently high average standard in the Programme for International Student Assessment (PISA) for mathematics but less well in reading. Major challenges for Scottish education were identified. There were continuing issues of inequality, with socioeconomic status accounting for about 20% of the total variance in mathematics and reading scores. According to the report, from P1 to P5 the 'percentage of kids that are behind' **decreases** (so they are catching up), but then from P7 to S2 the 'percentage of kids behind' **increases**, so that by S2, 30% of them are the equivalent of two years or more behind in reading. The socioeconomic status gradient is clearly demonstrated when considering underachievement in reading by local authority – in Glasgow city (worst in country), 50% of S2 pupils were underachieving. Exclusions and absences, as well as qualifications of school leavers, display a socioeconomic gradient. The lack of routine testing and absence of career advice and pathways for less academic students to follow (e.g. training in a trade) was criticised.

Some information on Scotland's children in the early years is available from the Millennium Cohort Study (51). Interestingly, in findings published in 2007 this study found that Millennium Cohort Study children living in Scotland (n=1,814) had a slightly small but significantly higher British Ability Scales Vocabulary Score than children in the rest of the UK at age three. This, they said, could not be explained by the gender of the child or the characteristics of the families, but could have been due to differences in early years education provision, in preschool education, activities in the home or in grandparent influence. The apparent advantages of children living in Scotland on the Bracken Basic School Readiness Scale and on the problem behaviour scores (behavioural adjustment was measured with the Strengths and Difficulties Questionnaire) over those in the rest of the UK were both fully explained by the characteristics of Millennium Cohort Study families sampled, namely their parents' education, socioeconomic status and family income. The analysis also revealed that children in Scotland sometimes gained more ability or behaviour advantages than children in the rest of the UK, when they had parents with higher incomes or parents in high-level occupations. It was unclear why this should be the case.

In contrast to the above, the Growing Up in Scotland study (29), which had a considerably larger Scottish sample (n=2,859), suggested that the ability scores for children in Scotland are closer to the UK average than those found in the Scottish Millennium Cohort sample. The Scotland effect in the Millennium Cohort may thus have been due to sampling error. The authors of the Millennium Cohort Study note that the second sweep had been subject to differential non-response bias in Scotland which resulted in an overrepresentation of the least deprived families. The authors of Growing Up in Scotland suggest that although attempts were made to control for this, no statistical model can ever account for all sources of bias. The Millennium Cohort Study and the Growing Up in Scotland study both demonstrate the strong association between socioeconomic status and ability scores in children in Scotland.

A 2009 report commissioned by Scottish Labour (52) on literacy levels in Scotland shows that 18.5% (range 10–26%) of children (approximately 13,000 pupils) leave primary school without being functionally literate. By age 14 years in two local authorities more than 20% of children, and in six local authorities 10–19% of children, failed to achieve expected standards in reading. In two local authorities 50%, and in six local authorities 30%, did not achieve the expected standard in writing. Only in three local authorities did all children achieve the expected writing standard. The Scottish Qualifications Authority who set and mark examinations for third, fourth, fifth and sixth years in secondary school reported that achievement follows social circumstances to an 'alarming degree'.

The Scottish Executive, reporting in 2001 on adult literacy and numeracy in Scotland (53) found that 23% of adults have low literacy and numeracy skills, compared with 16% in England. In 2008 the Scottish Government reported (54) that 39% of men and 36% of women of working age had literacy abilities likely to impact negatively on their employment opportunities and life chances.

Opportunities

Cost-benefit

An economic evaluation of early childhood interventions was not one of the objectives of this work but numerous studies have been conducted on the subject. Nobel Laureate economist, James Heckman, is renowned for his research conducted on work and training programmes and their returns on investment. Having reviewed the early childhood intervention literature, he concluded, 'invest in the very young'. He and colleague, Carneiro, suggest where money should be invested (figure 8) and other research describes where it currently is being spent (figure 9).

The UK is no exception to this mismatch between opportunity and investment as pointed out in the recent Marmot Review of health inequalities, 'Fair Society, Healthy Lives' (48). Sir Michael Marmot refers to a 2009 report by the OECD which compares levels of social spending at different stages of a child's life (55). In the UK, for every £100 spent on early childhood (0 to 5 years), £135 is spent on middle childhood (6 to 11 years) and £148 is spent on late childhood (12 to 17 years).

A report by the US State Early Childhood Policy Technical Assistance Network in 2003 summarised the costs and benefits of four successful early childhood intervention programmes, the Perry Preschool Project, the Chicago Parent–Child Centers, the Elmira Nurse–Family Partnership and the Abecedarian project. These programmes spent between \$6,000 and \$30,000 per child or family. For every dollar spent, however, the return on investment was between \$3 and \$7 dollars (figure 10). Returns were from reductions in government spending as result of reduced use of special education services, reduced involvement in juvenile delinquency, reduced welfare and dependency costs, reduced criminal justice costs, and increases in tax contributions.

Figure 8. Rates of return to investment in human capital as function of age when the investment was initiated.



Source: Knudsen E I *et al.* PNAS 2006; 103:10155–10162.

Figure 9. The Mismatch between Opportunity and Investment.

Framing Policy Context Economics/Burdens/Benefits



Source: Perry B. CIVATAS Initiative Chicago, 1996.

Figure 10. Investments and returns from four famous early childhood intervention programmes.



Source: US State Early Childhood Policy Technical Assistance Network, 2003.

Early development instrument

The Early Development Instrument (EDI) is a teacher-completed instrument which measures children's readiness to learn at school in five domains: physical health and wellbeing; social knowledge and competence; emotional health/maturity; language and cognitive development; and general knowledge and communication skills (56). It can report on populations of children in different communities and monitor their progress over time. It assesses school readiness in populations but is not intended for individual monitoring or clinical diagnosing of children. There are 104 questions grouped into five scales and two indicators of special skills and special problems. The average time for completion by the teacher per student is 20 minutes and it is usually administered at age five years, four months after the children join primary school (P1 in the UK which would be kindergarten in Canada).

The EDI originates in Canada and the Offord Centre for Child Studies is the national repository for EDI data. According to the Offord Centre website, once data has been collected and analysed, each site receives a report consisting of four separate documents: demographic frequency tables and simple comparisons for all students in the sites (e.g. girls vs boys); a descriptive report which puts the site results in perspective; behavioural profiles of children with the highest and lowest scores for each scale; school-level reports, which are one-page summaries of each school EDI data, including frequencies of all demographic variables, means, standard deviations, and percentages of students scoring in various percentile ranges for each scale. Children who fall into the lowest 10th percentile for a given development domain are deemed vulnerable in that area. Children assessed as vulnerable in more than one domain are regarded as vulnerable on entry to school. The EDI was first implemented in British Columbia but is now being used in all provinces in Canada, Seattle (Washington State), two states of Australia and in Chile. Australia adapted the EDI and has called it the Australian Early Development Index. They have committed \$22 million to using the measure nationwide by June 2011.

The advantage of adopting a tool such as the EDI in Scotland would be to enable monitoring of school readiness of populations within the country over time. Improvements could be expected within just a few years, if early childhood interventions are implemented in areas, or resources increased to achieve coverage and quality. Vulnerable neighbourhoods could be prioritised over non-vulnerable neighbourhoods in terms of interventions and resources, although the Sure Start experience in England points out that making such interventions 'locally universal' (rather than targeted to the most deprived and/or high risk families) within deprived zones can lead to the less disadvantaged competing successfully for programme places which would benefit the deprived much more.

The role of broader societal changes: 'Context matters'

This review has focused primarily on evidence of effective interventions in the environment with which families and children come into immediate contact (the microsystem). The literature is dominated by evaluations of micro-level, targeted interventions, probably because these are easiest to robustly evaluate. However, we should not conclude that universal interventions and service provision are not effective. Equally, we should not underestimate the influence of the larger contexts as depicted in the Total Environmental Assessment Model of early child development (figure 11).

The somewhat muted findings of Sure Start in the UK point to a broader consideration regarding the 'necessary ingredients' for any society to substantially shift child development outcomes in an improved direction, while also reducing their socially unequal distribution. While combinations of targeted and universal programmes, based on robust evaluation evidence of effectiveness, are necessary to achieve the larger, long-term objective of better and fairer human development and health over the life-course, they may not be sufficient.

Figure 11. Total Environmental Assessment Model of Early Child Development (TEAM-ECD).



Source: Siddiqi A, Irwin LG, Hertzman C. Total Environmental Assessment Model of Early Child Development. Evidence Report for the WHO's Commission on Social Determinants of Health's Knowledge Network on Early Child Development, June 2007.

Specifically, case-studies of countries with the best track record in this field - many of them in northwestern Europe - strongly suggest that a set of societal preconditions must be created, by a wide range of profoundly redistributive social welfare policies, if specific child development programmes are to have their maximum benefit. The strong association between socioeconomic status and achievement in children is now well-recognised (57, 58) and has already been referred to, in the Scottish context, earlier in this chapter. Countries with the 'flattest gradient' (figure 12), in other words those with the weakest association, when child performance outcomes are plotted against the parents' completed educational level (proxy for socioeconomic status), also frequently perform very well in terms of overall average results in international comparisons of standardised educational-attainment tests. The Netherlands, for example, has one of the flattest gradients (as measured in 1995) and scored third highest out of 30 OECD countries in the 2003 PISA (59). The Netherlands comes first and Sweden second for overall child wellbeing out of 21 OECD countries as rated by UNICEF (2007), taking into account six dimensions of child wellbeing (2), and the two countries earn the same positions out of 29 European countries when assessed on seven child wellbeing dimensions by the Child Poverty Action Group in 2009 (60). In other words, the best national performances, in terms of achieving average human cognitive potential, are characterised by also having the most equitable outcomes as well. In the words of Douglas Willms, Professor and Director of the Canadian Research Institute for Social Policy, 'Quality does not have to be

at the expense of inequality' (61). Part of this remarkable societal success, although not all of it, relates to universal pre-primary child development programmes available in all neighbourhoods, staffed by trained early childhood educators. These professionals, called by a range of names ('pedagogues' in Holland), have a holistic understanding of how to facilitate the development of children in all domains and they work in publicly sponsored childcare settings where frequent contact with both parent and child ensures the capacity to detect delayed development early, and intervene effectively.





Source: Sloat E, Willms JD. The International Adult Literacy Survey.

Another factor in these countries' exemplary educational performance, however, is probably set long before preschool entry. For example, the recent work of Ollie Lundberg (62, 63) demonstrates (figures 13 and 14) that the 'generosity' of social welfare systems to families with young children not only has an effect on child poverty but has a major influence on the most robust and universally collected indicator of the conditions under which infants develop: infant mortality rate (IMR). While the nations included in this econometric study do not have a major influence on the most robust and social welfare systems suggests that the circumstances under which young children are cared for and raised are materially changeable via deliberate policy initiatives. The important point here is that these initiatives are situated far 'upstream' from specific programmes to help infants and toddlers surmount their individual and family challenges to healthy growth and development: they relate to the equitability of labour market policies for women, generosity of parental leave provisions, extent of income supplementation (and/or reduced taxation for poor families with children, etc). In short, these higher-level policies 'set the stage' for conditions in which specific child development intervention programmes can achieve their best results for disadvantaged children.



Figure 13. Family policy generosity and infant mortality.

Source: Lundberg O, 2009.



Figure 14. Family policy generosity and child poverty.

Source: Lundberg O, 2009.

In this respect, the UK and Scotland in particular have a long way to go. As pointed out in chapter one, international comparisons of the quality of children's lives and their wellbeing (a much broader measure than physical health per se), by respected independent bodies, have shown in recent years that UK children are near the bottom of the European and OECD rankings for wellbeing (2, 60). Recent indepth analyses (60) of the reasons why point to two key aspects of children's lives, and those of their families, in the UK:

- Poor 'quality of relationships' in the immediate social environment of young children, encompassing both family life and the neighbourhood around it, and suggestive of frequent social isolation of disadvantaged children, partly related to single parenting and partly to underlying cultural and social values, compounded by a lack of programmatic opportunities for poor parents to have positive social contact with positive role models and generous persons able to reach out to them (2).
- Persistent rates of poverty among children, which has long been established as one of the most important (64) and reversible (65) factors influencing child development. Child poverty rates in the UK, by at least some economic definitions, have improved since their long-term zenith in the early 1990s, when they were sitting at nearly 30 to 35% of children, depending on the measure of poverty used (66). However, despite a modest fall over the next decade the UK rates were still the highest in all of Europe in 1999 (66). By 2006, the UK child poverty rate still ranked twenty-first in the EU, with 24% of children living in poverty, compared to leading countries such as Finland (9%), Denmark (10%) and even the largest states (Germany: 12%; France: 13%) (66).

Case study: The Netherlands

The context

In the Netherlands there is widespread provision of universal services which are accessible to and taken up across all sectors of society. The general standard of living is relatively high and there is less income inequality than in the UK. Multicultural approaches to immigrant communities and integrationist perspectives are adopted encouraging respect for families, while recognising the diversity of family types, attitudes and behaviour. The labour market offers widespread use of flexitime for working parents therefore there is less need for out-of-school care. In 2006, 71% of all Dutch women aged 25-49 had a part-time working arrangement. Good parenting is believed to include a substantial element of parental care, thus parents try to maximise the time at least one parent is able to take care of the children. A positive attitude towards peer support for parents prevails, including, for example, online discussion forums. There is an expectation of shared responsibility for childrearing with parents backed up by good public service provision, a national benefits system and involvement of the voluntary sector.

'Kraamzorg' (maternity nursing care)

This unique universal maternity care service provides a professional maternity nurse (community midwife) to look after a mother and her new born baby for 8-10 days after birth or longer, if required. The service is usually provided 3-6 hours per day during which the nurse shows the mother how to care for a newborn baby, including how to breastfeed properly, and how to bathe him. The nurse will also look after older children and make sure that meals are prepared, take care of laundry and light household cleaning. In addition, the nurse looks after the mother's personal care needs, offers social-emotional support and advice, and even deals with visitors. If a woman has had a home birth, she will also be there after the birth to help clean up. The Netherlands maintains its reputation for safe home deliveries and there is widespread use of the polyclinic where women go to hospital only for the actual birth of the baby and return home in a matter of hours. The emphasis is on childbirth as a part of family life, not a medical condition, unless risks are identified.

The 'Consultatiebureau' (mother and well-baby clinic)

Following on the immediate support after birth, there is a well-established network of clinics where families can have their babies' growth and development monitored, and receive advice on issues around feeding, sleeping, growth and stimulation, or any problems which may arise. The clinic is staffed by doctors and nurses and approximately 97% of families make use of this service.

The 'Brede School' (community school)

The 'Brede School' integrates children's services into a one-stop centre promoting cooperation of agencies with the schools taking the lead. They are based mainly in primary schools and each programme is compiled according to local needs, taking into account the choice of parents and children. The aim is to increase development opportunities for children by partnering with preschools, social welfare agencies, child public health, and sports, arts and music programmes.

Source: Alan Sinclair, the Work Foundation

The long-term trend-line for UK child poverty rates is even more discouraging, showing that the 2006 rate had returned only a small part of the way to the 20-year nadir of just under 15%, which held remarkably steady from 1961 to 1980, when social welfare policies began to be tightened up in order to reduce benefits and public sector expenditures. Indeed, the UK Government's own target, set by Tony Blair in 1999, to halve child poverty by 2010–11 and end it by 2020, is widely regarded as unattainable, in that by 2006–7, 2.9 million children were still poor nationally (compared to 3.4 million in 1998–9), whereas the 2010–11 target is only 1.7 million (66).

Scottish rates of child poverty have largely mirrored UK trends in the earlier part of this three-decade period, but have shown significant improvement between 1998–9 and 2006–7, under various economic definitions of poverty. The number of Scottish children living in 'absolute poverty' (i.e. in families earning less than 60%, before housing costs, of overall median family income at the start of the eight-year period, 1998–9) has declined from 300,000 to 120,000 (i.e. from 28% to 12% of all children) (67), largely because a 'rising tide – of societal income – has lifted all ships'. However, if we take the more liberal definition of relative poverty as 'family income, before housing costs, below 60% of median income in the same year (2006–7)', the number of poor children has only declined to 210,000 during those eight years (i.e. 19% to 16% of all children) (67). Under this more rigorous definition, which reflects the equity-oriented perspective, that is, 'Are families with children getting their fair share of societal shifts in income over time?', then some 60,000 children must be lifted out of poverty by 2010–11 in order to meet the original UK target of halving the 1998–9 tally: a very tall order in the context of the current recession and imminent public sector cutbacks.

Parents in neighbourhoods taking control: The Jeely Piece Club

The Jeely Piece Club was established in Castlemilk in south east Glasgow in 1975 by local parents, initially as a mother and toddler group, to improve opportunities for their children. Recognised as one of the most successful community organisations in Scotland, it has developed a range of services for children and families. They aim to bring all age groups in the community together to: improve opportunities for children; provide high quality services that support children and families and enable them to develop their full potential; and work in collaboration with key partners. They offer a nursery for under-fives with Jeely babies, Jeely tots and Jeely juniors. There is also a PlayZone for P1 to P7s, a training centre for adults, community groups and small medium enterprises, and a cafe. Mothers frequently assist at the nursery one day per week. This allows staff to expose mothers to activities in the nursery which promote child development. Children and parents have key workers. Parents who want to improve themselves can develop a 'development plan' with their key worker and can attend various 8–week courses. The Jeely works in partnership with a range of agencies to tackle issues of poverty and deprivation in the area. It is a registered charity co-located with the Social Work Family Resource Team, to offer integrated support to under-fives and their families.

Sources: www.pilotlight.org.uk/index.php/case-studies/the-jeely-piece-club/

www.ltscotland.org.uk/articles/i/genericcontent_tcm4507013.asp?strReferringChann el=earlyyearsmatters

These findings point to the critical importance of the larger context, and particularly social welfare and labour-market policies that influence the first years of life of children, through economic effects on their parent(s). In the opinion of Clyde Hertzman, founder of the Human Early Learning Partnership in British Columbia, Canada, it is very difficult for even the most impressive community programmes that stimulate early child development to 'shift the social distribution of human development outcomes' unless these

enabling social and economic policies are also in place. In his words, the challenge is much more than just choosing and implementing properly specific infant and toddler care and development programmes, important though these are: it is about 'evidence-based social change' that changes the entire society's views and beliefs about the importance of investing in children, and ensuring that all of them reach their full potential, no matter how disadvantaged the setting they are born into.

Limitations of the environmental scan

Internal validity

Although an attempt was made to identify all relevant reviews of early childhood interventions in the last 15 years, this was by no means a formal systematic review of all primary studies in this field. Furthermore a review of reviews relies on the original reviewers identifying all the relevant primary studies and properly critiquing those. Where reviews were narrative, an attempt was made to find the best-quality primary studies cited and to assess those. Unfortunately, however, time and resources did not allow assessment of all the primary studies cited.

Many evaluations of early childhood interventions are not truly independent. In numerous cases the designer of the intervention is either the main author or co-author and the intervention is available commercially for purchase, introducing potential bias.

The large imbalance in the published literature, already referred to in this chapter, towards evidence on the performance of trialled targeted programmes rather than universal services, understates the importance and probable effectiveness of the latter. Cost-benefit studies comparing programmes targeting children and families with particular identified deficiencies, to strengthening of universal programmes affecting children and families would shed light on which would be the more prudent approach. Calculating the average improvement in 'school readiness on school entry', that quantifies the proportionate reduction in poor outcomes achieved by each approach, would illustrate the real benefit to the population.

With regard to child health and development programmes in Scotland, an attempt has been made to briefly describe the major projects highlighted by stakeholders in interviews and discussions, and those known to be evaluated with an experimental study design. A more comprehensive mapping of these interventions is planned at a later stage.

External validity

The vast majority of social and educational studies have been carried out in the United States and thus caution should be exercised when generalising to other contexts, including Scotland. These interventions may not be appropriate for countries of the OECD with less pronounced inequalities. However, they may be of direct relevance to Scotland with its relatively high levels of inequality. Of interest is the fact that the larger-scale early childhood programmes encountered the same problems in both the USA and the UK suggesting that at least some lessons and experiences must be transferable.

Conclusions

Early childhood intervention programmes

Early childhood intervention programmes can help to reduce disadvantage due to social and environmental factors. Significant improvements in all domains of child development, school achievement, delinquency and crime prevention, and life success have been demonstrated. Successful interventions utilise a mixed, two-generation approach, that is a combination of centre and home-based with child and parenting programmes. The greatest effects are seen in programmes targeting those at highest social risk.

IQ and developmental index effects seem to be greatest earlier on, with differences reducing as children age, but academic achievement differences persist leading to better outcomes in adult life. Although initial financial investments are great, the economic returns can be three to seven times greater.

Model early childhood development programmes have been high quality and intensive with small sample sizes, and replication on a large scale has been difficult. Large-scale interventions have frequently been poorly defined with short-term follow up and numerous methodological problems in their evaluation, making it difficult to assess their true impact. Exceptions are: the Nurse–Family Partnership, the home visitation programme which begins during pregnancy and has shown success in all child development domains; and the Chicago Parent–Child Centers beginning in preschool, which demonstrated significant favourable differences in the cognitive/achievement domain, health, child maltreatment, criminal activity and life success.

Preschool education

High quality preschool experience enhances all-round development in children whilst poor quality may actually lead to worse outcomes than no preschool. Disadvantaged children especially benefit from good quality preschool if the children are from mixed social backgrounds, which has implications for positioning of centres in deprived areas. Quality appears to be higher in settings integrating care and education, where education and social development are viewed equally, and in nursery schools (as opposed to day care and playgroups). Staff with higher qualifications, a trained early childhood teacher as the manager, and good teacher-child relationships are indicators of good quality.

Duration of attendance is important, an earlier start (before 3 years) for those at high risk being associated with better cognitive development. British studies have shown that full-time is no better than part-time attendance whilst larger US studies suggest that the most disadvantaged gain cognitively from more intensive preschool, but don't seem to show strongly negative behavioural consequences associated with additional hours.

The beneficial effects of preschool are still evident at age 6/7 years, but the effect is greater on academic achievement than social-emotional development. High quality preschool is an effective intervention for the reduction of special needs education and grade retention, especially for the most disadvantaged children. Whilst preschool cannot eliminate disadvantage due to social backgrounds, it can ameliorate the effects thereof, and thus reduce social exclusion.

Family characteristics have a greater impact on outcomes for children than preschool factors; however, the effect of attending preschool (versus not) on developmental progress is greater than the effect of social disadvantage.

Home learning environment

The home learning environment is very important to cognitive and social-emotional development, more than parental occupation, education and income, and it continues to have an effect through to age 6/7 years. Activities that children partake in (being read to every day, outdoor and indoor physical, creative and educational activities, and visiting a range of events and places) positively influence cognitive development and can moderate the effect of socioeconomic disadvantage.

Early child development in the Scottish context

Early years policy in Scotland is well-developed and numerous early childhood interventions have been implemented, however, knowledge of which programmes are successful is lacking due to absent or poor evaluation. Despite the existence of early child development measurement tools, very few child development outcomes are monitored routinely in Scotland.

Although the emphasis in the literature review in this report has been on targeted programmes, it is crucial to consider the role of the universal system and the broader context in which people live, if we are to bring about the social change required to reduce inequality in the country.

Chapter 8 – Recommendations

Priority areas for action in Scotland

- There is a need to increase or redirect resources to early years.
- Detailed plans and strategies are required for the implementation of the *Early Years Framework*. If these are left entirely to the discretion of the local authorities, there is a distinct risk that many parts of Scotland will not achieve the Framework's stated goals. Central guidance based on scientific evidence is required in programme design, implementation and evaluation.
- Early childhood development programmes to equitably address cognitive and behavioural development should be adopted. These should be provided through a 'progressive' or 'proportionate' universal child health, education and social services system. The vital role of universal programmes and the untapped potential in strengthening the core children's health and social services, as well as universal preschools, should be better utilised.
- Context **must** be taken into account when considering new interventions which have been shown to be effective in other settings. Alternatives like strengthening or intensifying current systems should be evaluated alongside new programmes otherwise new resource-intensive programmes may undermine quite useful existing programmes simply by drawing heavily on the same limited resource base (e.g. health visitor person-power). Crucially, interventions which may affect the broader context (family, culture, neighbourhood, and economic, labour and welfare policy) and bring about social change must also be considered.
- Programmes should provide a seamless continuum of care and support from pregnancy through to school entry (summary table on page 62). While many Scottish policy documents appeal for this joint working across the social service, health and education sectors, further structural and economic reforms are needed to realise it.
- Robust methods to identify pregnant women and infants at high social and developmental risk are necessary if targeted approaches are to be adopted. The current *Hall4* guidelines focused on health visitor risk assessment by 6–8 weeks of age have been shown to be unable to detect even half of children eventually found to be at risk at age one year (just eight months later). In addition, strategies to improve access for and increase uptake by the most disadvantaged should be employed.
- Data to monitor child development in the Scottish population, and the effectiveness
 of related programmes, are lacking. More early stage measures are needed as well as
 better later stage measures, which would require data linkage. These measures should
 span developmental milestone attainment via standardised assessments (collected in
 the primary health care system, and by nursery staff and teachers) with an overall school
 readiness assessment around school entry. These data need to be collated and analysed
 centrally to reveal patterns of 'unmet need' in child development by geographic, ethnic
 and socioeconomic position.
Early childhood intervention evaluation of specific programmes

- Internationally recognised early childhood assessment tools should be adopted for measurement.
- Experimental designs with control groups and, where practically and ethically possible, randomised allocation should be used. The intervention must be very clearly defined and minimum quality criteria must be stipulated.
- Large-scale roll-out of programmes must include clear and robust process, output, outcome and impact evaluations. These must be standardised across all sites for central analysis and comparison between regions. Results of outcomes must be reported back to sites to motivate them and encourage ongoing improvement.
- Process and qualitative evaluations are important to determine if interventions have been adequately implemented at all sites, and gauge local acceptance of programmes (however, these should not be prioritised above, or done at the expense of, hard outcome data). The level of implementation over time should be recorded and this 'learning effect' should be taken into account when doing subgroup analysis.
- Regular independent quality-control visits should take place to objectively determine whether the programme sites are adhering to the original model and to clearly record any deviations due to local adaptation.
- Staff must be invested in, in order to reduce high turnover and increase motivation. Minimum staff qualifications and training must be determined well in advance and the nature and regularity of continuing professional development must be planned.
- Annual meetings for programme staff should be held to present results, share good practice, raise morale and standardise approaches.

Framework for early childhood interventions

• The framework presented below summarises an approach to provision of services and interventions to promote early child social-emotional and cognitive-language development. A continuum of care is provided over a spectrum of risk, proportionate to the individual need.

Suggested mixed, two-generation approach to universal early childhood social-emotional and cognitive development based on evidence of promising interventions

Deliverv	Population		CONTINUUN	OF CARE	
		Pregnancy	0-12 months	12-36 months	36-48+ months
Highest risk of developmental and/or attachment disorder	Children		Enrichment of home environment e.g. Play@home Nurturing of holistic child development Children's centres with use of multiagency integrated services	Full- or half-day childcare at high quality child development centre (higher risk - higher number of hours up to a max. 30 hrs/wk) Enrichment of home environment	Full-day* high quality preschool Enrichment of home environment Child training e.g. Incredible Years Specialist input as required
	Parent- Child	Intensive midwifery support Nurse-Family Partnership Parents As Teachers	Attachment-based interventions to improve parent sensitivity§ Intensive midwifery and home visiting support Nurse-Family Partnership Parents As Teachers	Intensive home visiting support Nurse-Family Partnership Parents As Teachers	Positive Parenting e.g. Triple P Specialist input as required
	Parents	Maternal education and literacy Parenting preparation Support for addictions	Training to understan nurture Parenting/child mana More intensive suppo adult education for hi support, accessing be	d stages of child develo gement support e.g. Ind rt in accessing services gh school completion, jo mefits, addiction manag	pment and how to credible Years , problem solving, ob/employment jement etc
Medium risk	Children		Enrichment of home of Play@home Nurturing of holistic of Children's centres	environment e.g. child development	Half-day preschool
	Parent- Child	Promotion of sensitive pa	renting with provision	of support as needed	
	Parents	Support for behaviour change Antenatal care according to medical risk	Support for breastfeeding initiation and maintenance	Support in accessing s Problem solving techn Adult education for hig job/employment suppo	services iques gh school completion, ort
Universal	Children		Children's centres e.g and book libraries Resources e.g. Books Enrichment of home	g. drop-in centres, toy start# environment	Half-day preschool
	Parent- Child	Access to information on	positive, sensitive pare	enting	
	Parents	Standard antenatal care Promotion of healthy diet, physical activity, breastfeeding and smoking cessation. Ready Steady Baby#	Information on health Information on availa Core child health pro development reviews	ny child development ble child, parent and far motion programme with	nily services n routine child

Note: At any level of risk, the child/family receives services proportionate to their risk **and** any services below that level. *There is a debate about full vs half-day; British EPPE study says full-day as good as half-day; US National Center for Educational Statistics says full-day for highest risk and half-day for medium and low risk children. §Interventions to prevent/treat attachment disorder fall out with the scope of this review but are mentioned here for completeness. #See Appendix 4 for brief description of these universal resources.

		Studies/reports	Barnett WS 1995 Wise S 2005 Karoly LA 2005	Hertzman C and Wiens M 1996	Barnett WS 1995 Anderson LM 2003 Ramey CT 2004 Wise S 2005 Karoly LA 2005	Hertzman C and Wiens M 1996 Wise S 2005 Karoly LA 2005	Hertzman C and Wiens M 1996 Olds DL 2007
	infancy	Measured outcomes	IQ. Social-emotional. Academic achievement. Criminal activity. Maternal education.	IQ. Academic achievement.Behaviour. Home environment. Mother/child interaction.	IQ. Academic achievement. Home environment. Maternal occupation, employment and education. Child further education employment, offspring.	IQ. Home environment. Parental child rearing attitudes.	IQ. Academic achievement health, behaviour maternal education, employment, birth control home environment mother/child interaction.
ture search	rvention beginning in i	Sample size	108 intervention. 108 control. 15 yr follow up.	90 intervention. 201 controls. 15 yr follow up.	57 intervention. 54 controls. Follow up till 21 yrs.	 17 in intervention group 1. 25 in intervention group 2. 23 controls 	377 intervention. 608 controls. Follow up to 16 yrs.
tified by litera	with mixed inte	Design	Experimental. Matched control group.	RCT.	RCT.	RCT.	RCT.
hild outcomes ident	ntervention projects v	Target group	Pregnancy (home visit) 6 mths (centre) Exit: 5 yrs. Low SES.	Low SES. Entry: 1–3 yrs. Exit: 3–5 yrs.	Low SES. High risk. Entry: 6 wks–3 mths. Exit: 5–8 yrs.	High risk. Entry: home visits 4 wks. Day care 6 wks–3 mths. Exit: 5yrs.	Premature and low birth weight. 0–3 yrs.
d interventions with c	A. Model, targeted i	Description	Home visits. Childcare part day 6–15 mths then full day 15–60 mths. Parenting skills.	Home visits. Childcare part day. Centre-based parent programme. Parenting skills.	Childcare full day till 5 yrs. School-age: parent programme including home visits.	Home visits. Childcare full day (family support alone vs family support and centre-based child care).	Home visits. Childcare full day. Parenting skills.
Early childhoo		Location	Syracuse, NY, US	Houston, TX, US	Carolina, US	Carolina, US	Multiple sites, US
Appendix 1: I		Intervention	Syracuse Family Development Center (1969–1975)	Houston Parent Child Development Center (1970–1980)	Carolina Abecedarian Project (1972–1985)	Project CARE (1978–1984)	Infant Health & Development Program (1985–2000)

		Studies/reports	3oodson B <i>et al.</i> 2000	Hallum A 2008 Emond A <i>et al</i> 2002	Hallum A 2008 Iohnson Z <i>et al</i> 2000	Peters R <i>et al</i> 2000 report)	Casey Family Programs and US Jept of Health and Human Services report)
	ıfancy	Measured outcomes S	Child cognitive/academic. G Child social-emotional. 2 Child health. Education and Family relationships. Parenting. Income security. Adult wellbeing.	Child cognitive (Bayley F Scales). E Child health. Child accidents. Maternal depression. Parenting skills.	Child health and nutrition. H Child accidents. J Parenting skills. 2 Maternal self esteem.	Social-emotional. Health. Cognitive. Parent/family outcomes. Neighbourhood outcomes.	Access to and use of services. P Child social-emotional D and cognitive outcomes. H Parent-child interaction. (I Family functioning.
ure search	le sites beginning in in	Sample size	2,213 intervention. 2,197 control.	205 intervention. 254 control.	141 intervention. 121 control.	Over 3,000.	2,908 in total in intervention groups but not all received all services.
fied by literat	jects at multip	Design	Randomised. Longitudinal prospective.	Natural experiment.	One RCT.	Quasi experimental.	Control groups. No randomisation.
ild outcomes identi	scale intervention pro	Target group	Low SES. Pregnancy to school age.	First-time parents in deprived areas till 8 mths.	First-time parents in disadvantaged areas till 1 yr	Low SES 0–4 yrs, (further part 4–8 yrs).	High risk children 0–5 and their families.
interventions with ch	B. Targeted, large-s	Description	Home visits with case managers biweekly. Child education by home visits or in centre. Parenting education classes. Developmental Screening.	Home visits by 'specially trained' health visitors, one in 3rd trimester, at birth, 3 wks, then then every 5 wks.	Home visits once a month by community mothers. Serves 1,200 parents every year in Dublin.	Varies from site to site. Home visits. Preschool. Parent education and support groups. Community development.	Parenting skills. Family support. Mom and baby classes. Site and home based.
ırly childhood		Location	Multiple Sites, US	¥	Ireland & UK	Ontario, Canada Five communities (3 different communities for age 4–8 yrs part)	Multiple sites, US
Appendix 1: Ea		Intervention	Comprehensive Child Development Program (1990–1995)	First Parent Health Visitor Scheme (1989–1998)	Community Mothers Programme (1983–present)	Better Beginnings Better Futures (1991–1998)	Starting Early Starting Smart (1997–2001)

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	Studies/reports	Early Head Start Research and Evaluation Project 2002 (report) Wise S 2005 Karoly LA 2005	National Evaluation of Sure Start Team 2005 (reports) Melhuish E 2008	0lds 1998 Kitzman and 0lds 1997 Olds 2002, 2004 Wise S 2005 Karoly LA 2005
•	Measured outcomes	Child social-emotional and cognitive outcomes. Parenting and home environment and parent health. Parent employment and Education. Subsequent pregnancies. Child safety.	Children's immunisations. Accidents. Language development. Positive and negative social behavior. Independence. Parenting risk and others.	Child injuries and ingestions first 2 yrs of life. Child behavioural problems. Arrests and convictions mother and child (in the 15 year study). Time on welfare.
5	Sample size	708 programmes serving 61,500 children by 2003. (3,001 families evaluated).	l: 5,883. C: 1,879.	RCT 1: 400 women. RCT 2: 743 African American women. RCT 3: 735 women. Half Hispanic (control groups received no visits).
-	Design	Evaluation in 17 programmes including 3001 families, randomly assigned to I or C group.	2005 and 2008 evaluation. No randomisation. Control group from Millen Cohort Study.	RCTs.
	Target group	Low SES. Prenatal-3.	Low SES. 0-4 yrs.	Low SES, originally for first time mothers.
	Description	Prenatal care. Early education. Home visits. Parent education. Health services. Parent job training and material aid.	Outreach and home visits. Support for families. Childcare. Healthcare advice. Intensity varied from site to site.	Aims: improve antenatal health; enhancing child development and school readiness. Link family to networks. NFP nurses visit family from early pregnancy till child age 2 yrs.
	Location	Multiple sites, US	Multiple sites, UK	US, UK multiple sites
	Intervention	Early Head Start (1995–present)	Sure Start (1999–present) [reshapes and adds value to existing services]	Nurse–Family Partnership (1979–current)

B. Targeted, large-scale intervention projects at multiple sites beginning in infancy

		Studies/reports	Schweinhart L 1993 and 1997 Wise S 2005 Karoly LA 2005	Barnett WS 1995 Gray S <i>et al</i> (Book: As The Twig is Bent, ch2)	Barnett WS 1995 Deutsch M (Book: As The Twig is Bent, ch 12)	Barnett WS 1995 Wise S 2005 Karoly LA 2005	Barnett WS 1995 Schweinhart L 1997
		Measured outcomes	IQ. Academic achievement. Income and assets. Illegitimate children. Marriage. Criminal activity. Academic achievement.	IQ. Teenage pregnancy. Child social-emotional.	Academic achievement (school administered tests).	School adjustment (rated by teachers). Academic achievement. Delinquency. Parental involvement in school.	Academic achievement.
iture search	inning in preschool	Sample size	58 intervention. 65 controls. Follow up to 27 yrs.	43 intervention (2 types). 45 controls. Follow up to 20 yrs.	312 intervention. 91 controls.	684 intervention. 304 control.	244 intervention. 68 controls. Post hoc control group from original pool.
entified by litera	ntion projects begi	Design	RCT.	Experimental with randomisation.	Randomised. High attrition.	Quasi- experimental.	Quasi- experimental. Not randomised.
hild outcomes id	, targeted interver	Target group	Low SES and low IQ 3-4 yrs.	Low SES 4–5 yrs	4 yrs. Exit: 9 yrs.	Low SES. 3–4 yrs. Up to 6 yrs of intervention.	4 yrs. Exit: 5/6 yrs.
l interventions with c	C. Model	Description	Home visits. Preschool programme part day. Parenting skills.	Home visits and part day preschool in summer.	Home visits. Part day preschool. Parent centre school. (K-3)	Preschool programme. Parent participation at least 1 half day/wk at CPC; parent conferences. Parent resource teacher. Home visits.	Part day preschool and kindergarten programme.
Early childhood		Location	Ypsilanti, MI US	TN, US	Harlem NY, US	Chicago, IL, US	SI
Appendix 1:		Intervention	Perry preschool project (1962–1967)	Early Training project (1962–1979)	Institute for Development Studies (1963–1967)	Chicago Child– Parent Center (1965–1977)	Curriculum Comparison Study (1965–1967)

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	Studies/reports	Barnett WS 1995 Hertzman C and Wiens M 1996	Barnett WS 1995	Barnett WS 1995	Barnett WS 1995 Levenstein P 1998	Reid MJ 2001 & 03 Webster-Stratton 01 Hutchings J 2007 Gardner F 2006 Wise S 2005 Karoly LA 2005
	Measured outcomes	Academic achievement. IQ.	Academic achievement.	Academic achievement. IQ.	Academic achievement. IQ.	Parenting skills. Child problem behaviour, child cognitive problem - solving and conflict management. Teacher-peer and teacher- child interaction & classroom management strategies.
inning in preschool	Sample size	244 intervention. 68 controls.	38 intervention. 69 controls.	60 intervention. 53 control.	111 intervention. 51 control.	US: 2001 study. 634 families. 2003 child study. 159 children. Wales: 2007. 153 families . Oxford: 1 44, C 32.
ition projects beg	Design	Randomised.	Not randomised.	Not randomised. Matched control group same school.	Not randomised. Matched control group.	Several studies. Randomised experimental and quasi- experimental.
l, targeted interven	Target group	2–3 yrs. Exit: 4 yrs.	3 yrs. Exit: 5 yrs.	4 yrs. Exit: 5 yrs.	2–3 yrs.	Aimed at families with kids at risk of behavioural problems.
C. Mode	Description	One-to-one tutoring or child-directed play.	Preschool programme.	Home visits. Part day preschool programme.	Home visits.	Basic parenting programme for 12 wks weekly meetings. Child training on social skills 18–22 sessions. Teacher training on child management strategies.
	Location	SU	SN	SU	SU	US UK (Wales)
	Intervention	Harlem* Training Project (1966–1967)	Howard* University Project (1964–1966)	Philadelphia* Project (1967–1972)	Verbal Interaction Project (1967–1972)	Incredible Years (1982–present)

Appendix 1: Early childhood interventions with child outcomes identified by literature search

*These studies were identified during the literature search but not enough published information was freely available to include them in the full description in the text.

		Studies/reports	National Head Start Impact Study 2003 (report) Barnett WS 1995	Reynolds A 2001,'07 (Chicago Longitudinal Study) Barnett WS 1995 Wise S 2005 Karoly LA 2005	Northwest Regional Educational Laboratory 1999 (report) Promising Practices Network (online).
	in preschool	Measured outcomes	Cognitive outcomes. Social-emotional outcomes. Motor skills. Communication skills. Health. Academic skills. Family outcomes.	Academic achievement. Criminal activity. Parental involvement in school. Grade retention. Special education placement.	Academic achievement. Cognitive development. Physical development. Behaviour. Family relationships. Income and welfare use.
ature search	ntervention beginning i	Sample size	National Head Start Impact study 5,000– 6,000 children.	1,150 intervention 389 controls. Follow up to 14 yrs. External review.	1,358 intervention. 322 control.
dentified by liter	jects with mixed in	Design	Experimental Design.	Quasi- Experimental. Intervention group attended 20 CPCs; controls attend government full- day kindergarten.	Quasi- experimental longitudinal study. Comparison group recruited post hoc.
child outcomes ic	e intervention pro	Target group	Low SES. 3–5 yrs.	Low SES. 3-4 yrs.	Low SES. 3-4 yrs.
l interventions with (). Targeted, large-scal	Description	Home visits. Preschool programme (full or part day).	Home visits. Teacher in-service training. Full-time parent resource teacher. Parent educational activities.	Prekindergarten, comprehensive, family- centred Four components: education, health and nutrition; parent involvement; family support.
Early childhood		Location	Multiple sites, US	Chicago, IL, US	Washington State, US
Appendix 1:		Intervention	Head Start (1965–present)	Chicago Child- Parent Centers (1983–present)	Early Childhood Education & Assistance program (1985–present)

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	Studies/reports	Wise S 2005 Karoly LA 2005 The California Evidence-Based Clearinghouse for Child Welfare	Karoly LA 2005 Miller-Heyl J <i>et al</i> 1998
preschool	Measured outcomes	Academic achievement. Cognitive development. Teacher ratings.	Child 'developmental levels'. Problem and oppositional behaviours in children. Parent sense of positive relationships with children. Satisfaction in parent role. Parent external locus of control. Parenting styles (nurturing, management).
ervention beginning in	Sample size	NY was only RCT: I: 84. C: 98.	496 Intervention.301 control selected from4 sites with sites with different demographics
ects with mixed int	Design	Quasi- experimental studies in NY, US; New Zealand; Netherlands; Arkansas, US	RCT.
intervention proje	Target group	Low SES. 4–5 yrs. Parents with limited formal Education.	High risk families.
. Targeted, large-scale	Description	Parent training to assist with learning. Lesson plans. Home visits. Group meetings (children in preschool).	Family programme (parent classes, child workshops for 10–12 weekly sessions) parents- child activity (15–30 mins as part of above) preschool teacher and day care provider training community training.
Ω	Location	Multiple sites (1969–present)	Multiple sites
	Intervention	Home Instruction for Parents of Preschool Youngsters (HIPPY)	DARE To Be You

Appendix 1: Early childhood interventions with child outcomes identified by literature search

		Studies/reports	Pfannenstiel J 1989 Parents as Teachers evaluations 2004 Olds DL 2007	Hallum A 2008 Wise S 2005 Sanders M 2003 Sanders, Markie- Dadds, Turner '03 Turner <i>et al</i> 2004 Zubrick <i>et al</i> 2005	
		Measured outcomes	Child development. Academic achievement. Child health. Parent knowledge. Home environment. Parenting. Maternal wellbeing.	Child behaviour. Parenting competence. Satisfaction, confidence and self-efficacy as a parent. Parent-child interactions. Parent relationship satisfaction. Parent emotional status. Child mealtime behaviour.	
ature search	lopment and parenting	Sample size	75 intervention extra 18 'high risk' families selected. 69 matched comparison in same areas.	Many studies sample sizes from 16 to 806.	
entified by litera	sed on child deve	Design	Two main waves: 1st randomly selected intervention and matched control group.	RCTs	
hild outcomes id	interventions focu	Target group	Antenatal, infancy and toddlers.	Parents of 0–12 yrs children. Universal but intensity tailored to need.	
d interventions with c	E. Universal	Description	Home visits. Parent groups. Child screenings. Referrals.	Develops parenting skills; 5 intensity levels: mass media, tip sheets, parent groups, self- directed, one to one	
Early childhoo		Location	Mass., US; pilot in Dumfries & Galloway, Scotland	Multiple sites Aus, UK	
Appendix 1:		Intervention	Parents as Teachers (PAT)	Triple P (Positive Parenting Program) 1970s–current	

Appendix 2: Child outcomes in early childhood intervention programmes

Outcome areas	Cognitive/ language	Social/ emotional	School achievement	Health	Child neglect/ maltreatment	Criminal activity	Future success
Group A - Model targeted interventio	on projects with mixed	1 intervention beginnin	ig in infancy				
Houston PCDC	Bayley mental scale	Behaviour: Boys - 1-4; girls and boys 5-8 yrs	Reading, language and vocab tests				
Carolina Abecedarian Project	Numerous development scores and IQ		Test scores; special education; grade retention			No significant difference in crime	Less marijuana use; fewer smokers
Project CARE with education component	Development scores and IQ		Test scores				Less marijuana use
Infant Health & Development Project	Ø	Behaviour, no difference by age 5	Test scores - Heavier birth weight babies				
Syracuse FDRP	IQ till age 5	Behaviour; self perception; perception of school	Girls scored better			Lower rates delinquency; crime severity; fewer probation records	

Significant difference between the experimental and control groups No significant difference between the experimental and control groups

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Outcome areas	Cognitive/ language	Social/ emotional	School achievement	Health	Child neglect/ maltreatment	Criminal activity	Future success
Group B - Large-scale targeted interv	vention projects at m	ultiple sites beginning	in infancy				
Comprehensive Child Development Program	No significant differences	No significant differences	No significant differences				
First Parent Health Visitor Scheme (prospective study)	No difference on Bayley Scales	No significant differences		No significant difference in breastfeeding, growth or diet	Significantly fewer accidents in past 12 months		
Community Mothers Programme	Signif more visits to library but signifantly less reading to child at home			No significant difference in immunisation, dental checks, diet or breastfeeding	No significant difference in accidents requiring visit to hospital		
Better Beginnings Better Futures	One site - auditory attention, memory and school readiness	Teacher rated emotional problems and social skills		Immunisations			
Starting Early Starting Smart	Language	Behaviour - teacher rated					
Early Head Start	Developmental tests	Behaviour		No difference in general health			
Sure Start (England)	No difference in language	Independence and social behaviour		No difference in immunisations	No difference in accidents		
Nurse-Family Partnership	Development tests	Behaviour	Reading and maths test scores	Fewer sexual partners, less smoking and drinking	Injuries, ingestions, abuse, neglect	Arrests Convictions	

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Outcome areas	Cognitive/ language	Social/ emotional	School achievement	Health	Child neglect/ maltreatment	Criminal activity	Future success
Group C - Model targeted interventio	n projects beginning	in preschool					
Perry Preschool Project	Q		Test scores; special education; high school completion	Physical health no difference but fewer behavioural risk factors		Arrests - adult and lifetime; drug making and dealing crimes	Teenage pregn; illegitimate children; earnings; home ownership; soc services
Early Training Project	IQ		Special education; no diff in test scores and grade retention				Fewer teenage pregnancies
Institute for Development Studies				No difference in special education and grade retention			
Curriculum Comparison Study	IQ					High/Scope model better than others	High/Scope model better than others
Verbal Interaction Project	IQ		Test scores; special education; grade retention; graduation				
Incredible Years		Behaviour and social competence					

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Outcome areas	Cognitive/ language	Social/ emotional	School achievement	Health	Child neglect/ maltreatment	Criminal activity	Future success
Group D - Large-scale targeted interv	rention projects with	mixed intervention be	ginning in preschoo		-		
Head Start	Q	Social skills and behaviour no significant difference	Test scores; grade retention; high school completion (whites)	Immunisations	Improvements but not significant	Fewer charged with crime (only significant in African-Americans)	College attendance (whites)
Chicago CPC	School readiness		Test scores; special education; grade retention; graduation	Fewer depressive symptoms; more likely to have health insurance	Less child maltreatment or abuse	Arrests; violent arrests	College attendance and completion; years of education; full- time employment
ECEAP	No significant differences	School adjustment; classroom behaviour; perceptions of school	No significant differences				
HPPY			NY cohort 1: test scores; no significant difference in NY cohort 2				
DARE to be You	Developmental levels	Behaviour					
Group E - Universal interventions foc	using on child develo	opment and parenting					
Parents As Teachers	Cognitive and language scores - small effects sizes	Behaviour - small effect sizes	Test scores - small effect sizes		Less child maltreatment, abuse and injuries		
Triple P		Behaviour - mostly by parental report			Less child maltreatment, abuse and injuries		

Appendix 3: Early childhood interventions with child outcomes identified by literature search

A. MODEL TARGETED INTERVENTION PROJECTS WITH MIXED INTERVENTION BEGINNING IN INFANCY

Houston Parent Child Development Center Review (15, 16, 68)

Description

Parent Child Development Centers started in 1970 at three US sites (Birmingham, Houston and New Orleans). Families with low SES were targeted and were predominantly from Mexican-American cultures in Houston and African-American cultures in Birmingham and New Orleans. The Houston programme is discussed here. Early childhood preventative interventions were provided at three sites, home-based, centre-based and workshops at different venues. Home visits were by paraprofessional educators who provided parental education on infant social, emotional, behavioural, and health issues. To include fathers, the programme included weekend workshops for the whole family. During the second year of the programme, mothers attended centre-based classes for four mornings a week for instruction on child rearing topics (cognitive and language development, health and safety, child management etc). Fathers were also offered monthly evening meetings on general family matters and mothers were offered English classes. Families entered the programme when their children were age one and exited when they were three. Full day childcare was offered.

Intensity and duration of interventions

This was a very intensive programme averaging 400 contact hours per family over two years. During the first year there were 25–30 weekly home visits for 60–90 minutes duration, four weekend workshops for the whole family, and weekly English classes for the mothers. During the second year there were centrebased three hour sessions four times per week for eight months, and evening meetings twice a month for both parents.

Evaluations

Potential participants were recruited using various methods including door-to-door canvassing in low income neighbourhoods, referrals from community agencies, screening of hospital birth records and self-referral, thus the sampling frame was unclear. Participants were randomly selected from these and randomly assigned to either the intervention or control groups. Cohorts were enrolled in waves and authors acknowledged that the later waves received a much better intervention when the programme was better established. During the early waves staff members were not trained and many aspects of the programme were under development or not yet offered. There were roughly 97 families in the intervention and 119 in the control groups. Attrition was high, between 38% and 50%, depending on the outcome and follow up time. Follow ups were done up to eight years after the programme started.

Measured outcomes and findings

Cognitive/achievement. After one year in the programme (age two) the treatment group showed significant improvements on the Bayley Mental Scale of Infant Development. At follow up at 5–8 years after the programme started, the intervention group had higher scores in reading, language, vocabulary and composite scores. There were no differences in special education or grade retention between the intervention and control groups.

Social/emotional. Significantly reduced behavioural problems one to four years into the programme were reported in boys (by maternal report) and five to eight years into the programme in both boys and girls of the intervention group compared to controls (by teacher report).

Carolina Abecedarian Project Review (15, 16, 68, 69). Primary (70, 71)

Description

The Carolina Abecedarian Study began in 1972 in North Carolina and was an experiment in the provision of intensive preschool services to children from low-income families beginning in infancy (before six months of age) to five years of age, with a subgroup continuing to age eight. Most children were from very disadvantaged backgrounds often raised by single mothers with less than a high school education, reporting no income and 98% of whom were African-American. It was predominantly a centre-based programme for children but did include home visits, and at school age there was a parent programme. Medical and nutritional services were also provided to the children at the centres (including free unlimited supplies of formula – this was in the seventies; no mother chose to breastfeed).

Intensity and duration of interventions

The preschool programme operated in centres full day (7.30 am–5.30 pm), five days a week, fifty weeks a year and free transport was provided to the centres. The curriculum called 'Partners in Learning' or 'Learningames curriculum' emphasised language and cognitive development but addressed the needs of children in all developmental domains. Teachers were trained in teaching the curriculum and could individualise the programme to each child so that they were continually challenged to progress to next levels. The teacher-child ratio was low, ranging from 1:3 in infancy to 1:6 for five year olds. Some of the participating children also received a three year school-age programme in which a home-school resource teacher served as a liaison between the child's home and public school, and encouraged parents to work with their children each day on individualised curriculum 'packets'.

Evaluations

Evaluation was by a randomised controlled trial involving 111 children born between 1972 and 1977 randomly allocated to intervention (n=57) or control (n=54) groups. Eligible participants were those regarded to be at risk of retarded intellectual and social development. A high risk index was used to determine risk for retarded cognitive development and was constructed based on factors such as household income, parental education, school histories of family members, welfare payments, parental intelligence scores, and parental occupations. The intervention group contained two subgroups: those who received eight years of the programme (preschool and school age=EE group); and those who received just five years of preschool (called EC). The control group also contained two subgroups: those receiving three years of school age phase only (called CE group) and those receiving no Abecedarian programme input (called the CC group). Attrition was low. By 1978 104 participants remained in the study. At age 21 follow up all of these were still in the study.

In order to avoid the potential confounding effects of the medical and nutritional services on intellectual development, these were also provided to control children. Thus both the intervention and control groups were provided with adequate nutrition, social services for the family and referrals as needed (housing, job training, mental health and substance abuse services, high quality free or reduced medical care for the first five years).

Measured outcomes and findings

Cognitive/achievement. [Bayley Scale Mental and Motor Development Indexes, Wechsler Preschool and Primary Scale of Intelligence, McCarthy Scales of Children's Abilities, Stanford-Binet Intelligence Scale used for infant mental and motor tests; Wechsler scales used for IQ; Peabody Individual Achievement tests, Woodcock-Johnson tests, official school records and teachers reports on the Classroom Behaviour Inventory for academic abilities age 8 onwards.]

Age 18 months – preschool: significantly higher scores on intellectual measures; end of school age 'treatment' (end of primary 3): reading and maths scores increased as a linear function of the number of treatment years; age 12–15: significantly higher academic achievement; age 0–15: significantly higher IQ scores, effect sizes showed decreasing difference over years till no significant difference at age 15; significantly fewer placements in special education (24% vs 48% at age 15) and retentions in grade (39% vs 59% age 15); age 21: intervention group more likely to have completed four years of college (36% vs 13%); programme teenage mothers more likely to have completed high school and participated in post-secondary training.

Crime/life outcomes. No significant difference in crime between any of the groups. At age 21 there was less marijuana use among intervention group (18% vs 39%) and fewer regular smokers (39% vs 55%). No difference in other drug use or alcohol. Teenage mothers more likely to be self-supportive, more likely to be employed and have jobs that were skilled or semi-skilled, and less likely to have subsequent children.

The preschool programme was found to be more effective than the school age only programme. The school age only programme did not have any independent influences on outcomes.

Project CARE

Review (16, 72). Primary (71)

Description

The Carolina Approach to Responsive Education (Project CARE) provided either centre-based childcare together with a family education component, or just a family education component without any childcare option. Project CARE was closely related to the Abecedarian project and the same high risk index was used to screen prospective participants. For children in the CARE centre-based programme plus family education component, the latter consisted of home visits to the family from the child's teacher. For the families in the family-education-alone group home visits were by other trained personnel. Home visits were to encourage parents to engage their children in the learning activities at home, learn a problem-solving approach to everyday concerns and consultation was offered on child management.

Intensity and duration of interventions

The intensity and curriculum were the same as for the Abecedarian project.

Evaluations

Participants were randomly assigned to either of the above groups or a control group. There were 17 in intervention group 1, 25 in intervention group 2, and 23 in the control group. Children in the family-education-alone group may or may not have attended another childcare facility. Attrition was low with two losses from each of the three groups, however, with these small sample sizes, the study lacked power.

Measured outcomes and findings

Cognitive/achievement. Project CARE without the centre-based childcare component showed no significant differences in any child outcomes. Project CARE with the child education component showed results similar to the Abecedarian project for early childhood and primary school findings, that is centre-based early educational intervention significantly enhanced children's early intellectual test performance.

Crime/life outcomes. Project CARE (with child education) also found a significantly less marijuana use but not the positive teenage findings of the Abecedarian study.

Infant Health and Development Project

Review (72, 73).

Description

The Infant Health and Development Project operated in the 1980s at eight sites in the US and differed noticeably from all the other interventions discussed here. It targeted low birth weight infants and was not restricted to low-income families. Intervention began in infancy with home visiting for the first year and centre-based care combined with home visiting in the second and third years. Parent groups also began at one year. Treatment ended when children reached the age of three. Intervention and control groups received paediatric medical, developmental and social follow up and referral as needed. Home visits provided health and developmental information, emotional, social and practical support and implementation of two curricula, a programme of games and activities that encouraged cognitive, language and social development of the children, and a programme to help parents identify and solve their own problems. Childcare at the child development centres was individualised to meet the needs of three. Parent groups provided information on child rearing, health and safety and other parent concerns. Childcare during meetings, meals and transport were provided.

Intensity and duration of interventions

The programme began after the child was discharged from hospital and continued until the child turned three. Home visits were weekly in the first year and fortnightly thereafter. Attendance at the child development centres was full day, five days per week and year round from age one. Parent group meetings were every second month in the second and third years.

Evaluations

The evaluation was a randomised clinical trial during which 4,551 low birth weight infants were screened but 3,249 were excluded for geographic reasons, study criteria or refusal to participate. Eventually 985 infants remained of whom 362 were heavier (2,100–2,500g) and 632 were lighter (<2,000g). They were randomised and 377 assigned to the intervention and 608 to the control groups. Attrition was quite low with 93% available at age 3 and 90% at age 8 follow up.

Measured outcomes and findings

Cognitive/achievement. By the end of the intervention, children from the intervention group had significantly higher IQ scores and higher scores on language, cognitive development, visual-motor skills and spatial skills. The differences were most significant in infants from high-risk families and heavier babies (i.e. lower risk at birth). Differences had largely diminished by age 8, except for some cognitive assessments in the heavier babies. At age 8 the heavier-birth-weight intervention subgroup also had significantly higher scores on maths and vocabulary scores. One interpretation of these results may be that the lower-birth-weight premature babies were less able to benefit from the programme due to higher levels of irreversible cognitive impairment. This may no longer be the case since neonatal intensive care for such babies has improved greatly.

Social/emotional. Children in the intervention group (primarily the heavier weight babies) had significantly fewer behavioural problems by age 3. This difference was not significant for children of mothers with a college education. By age 5 these differences were no longer there.

Review (16, 68).

Description

Syracuse operated at a single site in Syracuse, New York from 1969 to 1975 and targeted young, African-American, single parent, low-income families in the early stages of their last trimester of pregnancy (usually first or second pregnancies). The intervention consisted of home visits, full-day childcare and parent training. Home visits were conducted by paraprofessionals and focused on increasing family interaction, cohesiveness and nurturing of child development. Positive support to mothers, problem solving techniques and other assistance were also offered. A toy and book library was available. Parents participated in a parent organisation and case conferences were held between staff and parents.

Intensity and duration of interventions

The programme was for five years and the childcare was based at the Syracuse University Children's Center. From 6 to 15 months, infants received half-day care with a staff to child ratio of 1:4. From 15 months onwards children attended full-day childcare. Ongoing training (at least two weeks per year for all staff members) took place. The experiences and activities for the children were carefully planned for comprehensive child development and according to their stages of development. Formal parent organisation meetings were held monthly and case conferences weekly.

Evaluations

Evaluation was by a longitudinal controlled study with a matched control group which was selected at 36 months (i.e. delayed matched control design). At the single site, 108 children started the programme with 74 controls. Of the intervention group 82 completed the programme. Follow up assessments were done at age 3, age 5 and age 14–15. Attrition was high, with 79% of the intervention group and 73% of the control group supplying consent but only 49/108 intervention children, 51/108 intervention parents, 39/74 control children and 42/74 control parents provided information for data collection.

Measured outcomes and findings

Cognitive/achievement. Significantly better IQ scores were seen in the intervention group at age 3/4 and kindergarten but no difference at age 5. Girls achieved significantly better academically at age 14/15 and attended better. No differences were demonstrated in grade retention or special education and more programme mothers completed high school.

Social/emotional. Better outcomes at age 3 and age 5 using the Emmerich Observer ratings of Personal-Social Behaviors; mixed outcomes after that age; at 10-year follow up boys and girls in the intervention group displayed higher levels of family functioning, more positive self-perception and more positive perceptions of school than the control children.

Crime/delinquency. Significantly lower rates of delinquency at age 15; crimes of the control group were much more severe with no violent crimes in the intervention groups; fewer probation records (6% vs 22%); lower criminal justice costs per child (\$186 vs \$1,985).

B. TARGETED, LARGE-SCALE INTERVENTION PROJECTS AT MULTIPLE SITES BEGINNING IN INFANCY

Comprehensive Child Development Program (CCDP) Review (15, 16).

Description

This programme was implemented between 1988 and 1995 at 24 sites throughout the US and evaluated at 21 sites. The Comprehensive Child Development Program (CCDP) targeted families of low SES with pregnant women or infants less than one year of age and provided core services to families as well as a 'family case manager'. Potential brokered services included adult literacy, language classes, vocational counselling, job training and placement, substance abuse and health care services. Parenting education was provided through workshops and classes. Childcare and transportation costs were offered to facilitate parents' attendance. Children received 'developmentally appropriate' early childhood education in centres or during home visits by an educator. Developmental screening was conducted on all children under school age with more comprehensive testing for those with signs of delay. Approximately \$75 million was provided for six years of the programme.

Intensity and duration of interventions

A needs assessment of the family took place within the first three months and reassessed every six months after that. During those visits services were planned and where necessary counselling was directly provided and/or referral to other services. Case managers then visited the families twice weekly for at least 30 minutes and provided crisis management where necessary. Service intensity and duration varied greatly according to the needs of families.

Evaluations

A number of studies report on this programme which used random assignment of participating families. There were 2,213 intervention and 2,197 control families. There were a number of methodological concerns. Firstly, the random assignment was done independently at each site and 18 sites used their own methods. Secondly, although there were core services provided to the intervention group, these were not standardised and could have varied greatly in nature and intensity since many different providers were used. In addition, the control group participants were able to access any services they wished. Thirdly, control group families were paid \$100 per year to stay in the evaluation whilst intervention groups were not. Programme families were expected to participate for five years but only 33% managed this while 18% managed less than one year, 34% one to three years and 15% managed to stay enrolled for four years. Despite this, studies reported that there were no statistical differences in demographic characteristics of the intervention and control groups which stayed in the study. Child outcomes were measured by direct assessment and interview.

Measured outcomes and findings

Cognitive/achievement. No significant differences found between intervention and control groups.

Social/emotional. No significant differences found between intervention and control groups.

Health/developmental screening. A significant difference found on the developmental checklist but effect size was very small (0.06) and not considered clinically significant.

(Parenting outcomes also showed no significant differences.)

Description

The Child Development Programme (CDP) was developed in 1979 by Dr Walter Barker at the School of Applied Social Studies, University of Bristol, and the programme covers 26 areas of Britain, including one in Lanarkshire. The First Parent Health Visitor Scheme is offered to first time parents from deprived areas, under the CDP. The difference from the standard health visiting programme is that more intensive support is provided with 'specially trained' health visitors targeting first time mothers, 'emphasising empowerment, and using appropriate written material, including cartoons' (47).

Intensity and duration of interventions

Visits are provided at home in the third trimester, after birth, three weeks postnatally, and then every five weeks till the child is eight months old. For most families the programme ends here but for 20% of families (those with particular difficulties) support continues until the child is two years old.

Evaluations

Evaluations of the original programme by Barker (in 1992 and 1994) are available for purchase on the CDP website but fall out with the time period for the literature review. No version of these internal evaluations could be found in journal publications or any other freely available reports. They claimed improvements in child health, and reductions in physical abuse and registration on the child protection register.

One primary study published in a journal was found which evaluated the First Parent Health Visitor Scheme (47). Emond et al compared three sites in Bristol where the scheme was being offered, to four comparison areas elsewhere. The comparison areas were similar in social, economic and demographic profiles and contained approximately the same under five population size. Any remaining differences and clustering effects were controlled for. There were two parts to this study, a retrospective and prospective part. The retrospective study compared all children who received the programme from the beginning of 1989 till the end of 1992, with first born children in the same period from the comparison areas. Outcomes were immunisation coverage, uptake of child health surveillance, weight and height measurements, attendance at accident and emergency and outpatient departments, and admissions to hospitals. This part of the study thus had a retrospective cohort design. The initial number of participants included in the cohort consisted of 1,280 in the exposed group and 1,159 in the unexposed group. Four years later, 216 (17%) were lost from the exposed group and 110 (9.4%) from the unexposed group.

The prospective study resembled a natural experiment in that 325 families who were in First Parent Health Visitor Scheme intervention areas were contacted and invited to enrol in the study. The control group consisted of 408 families from demographically matched areas who were invited and received the standard health visitor programme. There was no randomisation in the study. Out of the total of 733 children, 475 agreed to participate in the study but by the time the study began this had reduced to 459. Attrition at year one was 7% and by year two it was 20%. If one considers the attrition out of those who initially agreed to participate (n=475), then after one year attrition is 10% and after two years it is 23%. Multiple logistic regression was used to control for confounders which may have arisen due to differences between the intervention and comparison areas, but the study does not state which potential confounders were controlled for. Adjustments were also made for clustering. Follow up continued till two years of age.

Cognitive/achievement. Prospective study: After controlling for confounders and adjusting for clustering, there were no significant differences between the intervention and control groups as regards Bayley Scales. When the children were two years of age intervention mothers had fewer books in the house.

Social-emotional. Prospective study: Intervention mothers reported smacking their children less than control mothers (this is really a parental outcome).

Child health. Retrospective study: After controlling for the effects of clustering and confounders, the retrospective study found no significant difference in immunisation coverage, uptake of surveillance, use of hospital services or height and weight scores between the intervention and control groups. Out of all the families in the intervention area, 6% had a child on the child protection register, whilst out of the families in the comparison area 3% were on the child protection register.

Prospective study: After controlling for confounders and adjusting for clustering, there were no significant differences between the intervention and control groups with respect to breastfeeding at six weeks, mean height and weight, or infant's diet. The 'use of a dummy' was significantly higher whilst 'accidents in past 12 months' was significantly lower in the intervention sites. 'Use of socket covers', and 'mother provides fruit drinks' were significantly higher in the intervention sites.

Community Mothers Programme

Review (12). Primary (46).

Description

The Community Mothers Programme was initiated in Dublin in 1983 and has been implemented in different parts of Ireland and the UK. The programme uses experienced volunteer mothers to give support to first-time parents in rearing their children during the first year. Potential community mothers are identified by the local public health nurse and usually live in the same areas as the parents who they support. They are guided by a 'family development nurse' and they receive training for a month prior to beginning their work. The programme focuses on health, nutrition and overall child development by developing the skills and confidence. The principles and methods are the same as the Child Development Programme (above) out of which it grew, emphasising empowerment, parent capacity building, behavioural approaches and using materials such as cartoon sequences to illustrate alternatives in coping with child-rearing problems.

Intensity and duration of interventions

Each community mother supports 5–15 first-time parents whom she visits once a month. Support usually continues until the child is one year of age.

Evaluations

The initial evaluation in 1990 used a randomised controlled trial to compare the intervention group (n=141) with the control group (n=121). Attrition was fairly low with 90% of the intervention and 87% of the control group completing the trial. Significant child outcome differences between the two groups were found for immunisation, cognitive development and nutrition (45). A follow up study (46) was conducted seven years after the original trial. The study which consisted of face-to-face interviews with those mothers that could be traced took place in 1997. Despite great efforts (which are described in the study) to trace all of the participants only about one-third (n=77) of the original sample were located and agreed to interview. The intervention and control groups were very similar demographically and there were also no significant differences between those traced at seven years and those not traced. Nevertheless attrition was 67%.

Cognitive/achievement. Significantly more children in the intervention group visited the library on a weekly basis but there was no significant difference in mothers reading to children.

Child health. There were no significant differences between the two groups in terms of: uptake of MMR and school boosters, dental check-ups, accidents requiring a visit to the hospital, or diets. Significantly more children in the **intervention** group than in the control group were admitted to hospital because of illness. A significantly higher proportion of subsequent children in the intervention group had received Haemophilus influenza B and polio vaccinations. No significant difference in breastfeeding.

Social-emotional. There was no significant difference between the two groups as regards being bullied in school.

Parenting. Intervention mothers were significantly more likely to check homework every night and more likely to disagree with the statement 'children should be smacked for persistently bad behaviour'. There was no significant difference in limiting television watching or any indicators of maternal self esteem.

Better Beginnings Better Futures

Review (15). Primary (74, 75).

Description

This programme was implemented from 1991 to 1998 in eight communities in Ontario, Canada. Low income communities at risk of poor development were targeted for the implementation of two programme models. The first integrates prenatal and infant development programmes with preschool programmes for children from conception through to age four. This was implemented at five sites. The second model integrates the preschool programmes with grade school programmes for children between the ages of four and eight. It was implemented at three sites. Goals include: preventing serious social, emotional, behavioural, physical and cognitive problems in young children; promoting the development of children in high risk neighbourhoods; and improving the ability of socioeconomically disadvantaged families and communities to provide for their children. It began as a demonstration project which was later given permanent funding. A range of programmes were offered including home visits, preschool programmes (like playgroups, drop-in centres, books for birthdays, kindergarten readiness and a toy library), antenatal and postnatal support, infant groups, parenting workshops and information, community activities, advocacy, various food programmes, community clean-ups, social groups, family resource centres and many others. The different communities provided combinations of these at differing intensity but there were five dimensions to each programme: focused programmes, creating partnerships, empowering resident participation, community development and 'building a project organisation'.

Intensity and duration of interventions

The home visits were provided from birth to three years and preschool at ages three and four. Services were not always seamless for the five years.

Evaluations

Quasi-experimental evaluation designs were utilised, one of which included 700 intervention children from each of the five sites born in 1994 with control groups from three non-programme sites (74). Outcomes were measured at 3, 18, 33 and 48 months of age but the report did not give significance levels.

A 2003 study (75) of families originally recruited in 1993 into the second model when children were enrolled in the province-wide half-day junior kindergarten, and followed up till the children were in grade 3. Sample attrition during the period was 7.8%, although the number of cases available for analyses varied for the different outcome variables. The sample was taken from three sites in Ontario with 255 in total in intervention sites and 299 in two comparison sites selected based on similar demographic characteristics.

2000 report on first model (younger cohort):

At one site, Kingston, there was home visiting, informal playgroups, extensive investment in programme resources (enriching local day care centres and providing a range of informal childcare experiences). The following results were found; however, it is not clear from the report whether or not these findings were statistically significant:

Cognitive/achievement. Improved auditory attention and memory and an increase in school readiness.

Social/emotional. Decreased emotional problems as rated by teachers in the intervention groups compared with controls.

Health/developmental screening. Intervention groups displayed more timely 18 month immunisations.

2003 report on second model (older cohort) at three sites (Cornwall, Highfield and Sudbury) (75):

Cognitive/achievement. No statistically significant cognitive improvements were reported at any of the sites. No effect sizes were provided for child cognitive functioning outcomes. A statistically significant favourable difference in percentage of special education students was reported at the Cornwall and Highfield sites, but an unfavourable difference at the Sudbury site. Effect sizes for this measure were small (0.10 to 0.30).

Social/emotional. Improvements in teacher-rated child social emotional and behavioural problems over a range of measures. Out of 15 different measures, statistically significant improvements with moderate effect sizes were observed in passive victimisation and over anxious behaviour at the Cornwall site and small to moderate effect size improvements in increased self-control, cooperation and assertiveness at the Highfield site.

Health/developmental screening. A statistically significant difference in general health at the Highfield site is reported with non-significant difference at two sites, however, the baseline difference is not reported for child health. A statistically significant difference in children being immunised on time at the Cornwall site is reported but again no baseline data (of timeous immunisations prior to the intervention) is given. Statistically significant differences in intervention and control sites are reported for parent sense of control over child health at two sites, with moderate effect sizes and no baseline comparison data.

Prevention of Injuries. At two sites a statistically significant difference in greater parental encouragement of bicycle helmet use and at one site less parental encouragement of bicycle helmet use is reported. Effect sizes were small to moderate.

Starting Early Starting Smart Review (15).

Description

Starting Early Starting Smart (SESS), implemented at multiple sites in the US from 1997–2001, targeted families with children aged 0–5 years at risk of developmental delay due to factors such as poverty, parental substance abuse and immigrant backgrounds. There were 12 projects with approximately 3,000 children, just over half of whom were African-American. The programme was run in primary healthcare centres and early childhood service settings. The main package consisted of: (1) services for children such as learning stimulation, opportunities to promote social-emotional development and cognitive development; (2) behavioural health services for parents such as parenting skills and substance abuse

treatment; (3) family services such as positive interaction skills, conflict and stress reduction and family therapy; and (4) family support, advocacy and care coordination. Programmes were adapted to suit local contexts and individual families were involved in identifying their own needs and developing potential solutions. Each family was allocated a care coordinator who was a paraprofessional and assisted families in identifying their needs and then arranging service provision. Care coordinators stayed in frequent contact with families by telephone or in person. Part of the programme involved strengthening of the capacities of existing primary health care centres and early childhood centres and developing strong links between families and centres.

Intensity and duration of interventions

This varied according to the needs of families.

Evaluations

An evaluation, designed and overseen by the SESS steering committee, had 1,598 families in the intervention and 1,309 families in the control groups at 12 sites. At six of the sites assignment was random whilst at the remaining six a quasi-experimental design was used. Control groups were said to receive the standard service. Attrition was fair at 28% and unfortunately statistical significance levels were not always reported. There were three or four follow ups over an 18 month period.

Measured outcomes and findings

Cognitive/achievement. There were statistically significant gains in language of preschoolers using the Clinical Evaluation of Language Fundamentals for Preschoolers (CELF-P).

Social/emotional. Teachers rated children age three and older as demonstrating a sustained decrease in externalising and internalising classroom behaviours. There was no difference as rated by parents.

Parenting and home environment. Using the Parental Discipline Methods Index and the Home Observation for Measurement of the Environment (HOME) score, use of appropriate discipline methods and positive reinforcement increased for the intervention group between baseline and first follow up compared with controls, however, the effects were not sustained after leaving the programme. There was also an increase in learning stimulation in the home environment at first follow up, which was not sustained.

Early Head Start Review (15, 16, 73). Primary (76).

Description

Early Head Start, a federally funded early childhood development programme, began in 1995 at multiple sites in the US and by 2004 it served 62,000 families. It targeted low-income families with children 0–3 years and provided centre-based services supplemented by home visits by teachers and other staff. As with many large-scale targeted programmes, there is not a defined programme model but core elements have to be present. In Early Head Start these are: child development; family development (tailored family development plans); community building (resources in the community assessed and upgraded to provide a network of support services); and staff development (training, supervision and mentoring). A community resources and needs assessment is conducted after which a programme model is chosen – home-based, centre-based or a mixed approach. Child services can have any of these approaches with certified childcare providers.

Intensity and duration of interventions

Centre-based programmes involve comprehensive early child development services at the centre with a minimum of two home visits per year. Home-based programmes consist of weekly home visits and group socialising twice per month. Other services include parenting education, comprehensive health and mental health services for mothers and children, nutrition education and family support services. Complete involvement in the programme is intensive but families can choose how much of the programme they want to participate in. All programmes are required to follow the Head Start Programs Performance Standards which stipulate the provision of high quality, comprehensive child development services delivered through home visits, childcare, case management, parenting education, health care and referrals, and family support. Federal monitors visit once every three years to assess adherence to the performance standards.

Evaluations

The evaluation research for this programme was planned and implemented from the beginning. The National Evaluation Project was conducted on 3,001 families representing the range of diversity in race-ethnicity, language and other characteristics (1,513 intervention and 1,488 control group) at 17 purposefully selected sites. Families were randomly assigned to intervention or control groups at each site. Families were enrolled during pregnancy or up to 12 months of age of the child. Children of all birth orders were accepted, not just firstborn children. Control groups could access community services which were not Early Head Start services. Four sites were centre-based, seven were home-based and six used mixed approaches. Extensive subgroup analysis was conducted to take into account which programme approach the family had been offered (centre-based, mixed or home-based) and differing implementation patterns. For the latter there were three classifications: early (implemented in two years), later (implemented between year two and year four) or incomplete (not fully implemented after four years) implementers. The mean duration of enrolment in the centre-based programmes was 20 months, in the home-based programmes it was 22 months, and in the mixed programmes it was 23 months.

Measured outcomes and findings

Cognitive/achievement. There was a positive effect on cognitive development at age two and on language development from age two to three using the Mental Development Index and the Peabody Picture Vocabulary Test. There was also more sustained attention in intervention groups than in controls.

Social/emotional. The Child Behaviour Checklist showed better social-emotional development in the intervention groups and by independent observation, there was higher emotional engagement with the parent in play and higher sustained attention with play objects. They also displayed lower aggressive behaviour than control groups.

Child health. Results showed that there was no difference in intervention groups and controls in child health, even with subgroup analysis. Health was very good for both.

Parenting and home environment. (HOME score, supportiveness in play, detachment in play, reads to child daily, spanked child last week). Compared with controls, Early Head Start parents were more emotionally supportive, provided more language and learning stimulation, read to their children more, and spanked less. On subgroup analysis, these findings were significant for mixed approach programmes and for the outcomes engagement of the parent in play and parent supportiveness in play they were also significant in the home-based programmes. No statistically significant impacts were found among families in centre-based programmes.

General. Analysis of impacts by implementation pattern within the programme approach demonstrated that sites where the programme had been implemented earliest (and thus longest with time to become established) showed a stronger pattern of impacts across several domains of child development and parenting behaviour than did the later and incomplete implementers.

Sure Start (England)

Review (15). Primary (19, 77, 78).

Description

Sure Start Local Programmes (SSLPS) have been set up as a cornerstone of the UK Government's drive to tackle child poverty and social exclusion. SSLPs were expected to provide five core services: outreach and home visiting; support for families and parents; good quality play, learning and childcare; primary and community healthcare including advice about child and family health; and support for children with specialised needs. Existing services would thus be streamlined and coordinated and facilities could be extended or refurbished to allow for expansion and improvement. Tunstill et al (77) estimated that by the time of their third operational year, an average of $\pounds1,000$ (range $\pounds400$ to $\pounds3,000$) per child under four living in the area had been spent.

Intensity and duration of interventions

This varied according to the needs of families.

Evaluations

A number of studies have evaluated Sure Start in England. Rutter's overview (19) published in 2006 highlights many of the constraints of the intervention. SSLPs did not have a prescribed curriculum. It was left up to each area implementing it to decide for itself what it wanted to provide as long as it was evidence-based. As a result the SSLPs were highly varied, creating problems with comparison across areas. The areas were also not required to specify precisely what they were doing. It was not possible therefore to assess the extent to which what was happening on the ground showed fidelity to the intended model. The idea behind this was to avoid rigidity and create a feeling of ownership for those implementing the intervention, since it was believed that the success and maintenance of the programme depended on this.

Probably the most serious design flaw of all, according to Rutter, was the decision not to use randomisation for sample selection. The rationale for the universal area-based intervention for all families living in a programme-eligible area was presumably that the lack of targeting should reduce stigmatisation of those selected. In addition, areas chosen were ones with a high rate of deprivation. Rutter points out that most areas in the UK are quite heterogeneous and therefore many seriously disadvantaged families would inevitably be left out because they lived in an area which was slightly less deprived overall. Rutter speculates that the Government may have been so convinced that Sure Start would (or had to) work that they saw randomising as unethical. This reasoning of the Government would be flawed, though, because they did not have strong evidence that the intervention would work.

A series of reports published by the National Evaluation of Sure Start Team (79, 80) illustrated that there were concerns about bias and confounding in trying to determine whether the intervention was effective. Attempts were made to control for these problems where possible. There was a significant tendency for comparison areas families to be more deprived than intervention families. As regards mothers' ratings of the area, SSLPs led by health agencies and local authorities did better than those led by voluntary agencies. With respect to whether impact of SSLPs varied according to family characteristics, significant interaction was found in the families of the three year olds. There was a consistent (though relatively small) tendency for SSLPs to have adverse effects in the case of more disadvantaged families (mothers who were teenagers when the child was born, lone parents and workless households). It has been suggested that the utilisation of services by those with greater human capital left others with less access to services than would have been the case if they had not lived in SSLP areas.

In 2008, Melhuish et al and the National Evaluation of Sure Start Research Team undertook a second part of the evaluation of the SSLPs in England (78). The rationale was that the first evaluations assessed children who had not been exposed to SSLP for their entire lives whilst the second would entail follow up at three years of age of the 9-month old infants originally enrolled. In addition, the programme would have had a chance to be properly established. They compared 47% (5,883/12,575) of the original Sure Start participants from 93 (out of 150) areas with 1,879 three year old children and their families from the Millennium Cohort Study. Unfortunately the most disadvantaged SSLP areas had to be excluded because there were no similarly deprived areas in the Millennium Cohort sample. Outcome data were gathered in the controls two years before those in the SSLP areas and by different research teams.

Measured outcomes and findings

2005 evaluation. Overall, the 2005 reports demonstrated very meagre evidence of efficacy but in Rutter's view the benefits in the less deprived were probably real. His view was that it was too early to evaluate the outcomes because although it was three years since the intervention, implementation had taken so long in many of the areas that the programmes were only just establishing themselves. As Rutter points out, the problem with asking if Sure Start works is that 'there is no such thing as Sure Start in the sense that it is a defined intervention strategy'. It is a large family of programmes that involve as much diversity as commonality. It is therefore impossible to evaluate in a manner that gives answers on what key elements bring benefits.

2008 evaluation. The 14 outcomes measured were children's immunisations, accidents, language development, positive and negative social behaviour, independence, parenting risk, home-learning environment, father's involvement, maternal smoking, body mass index, life satisfaction, family's service use and mother's rating of area.

Social/emotional (2008). Results showed that effects in children were more independence and more positive social behaviour; although additional analyses demonstrated that the latter was partly mediated by the effects of SSLPs on parents.

Parenting and home environment (2008). As regards parenting, findings showed less risk of negative parenting and a better home-learning environment in the SSLP families.

Other (2008). The other nine outcomes showed no significant difference.

Nurse–Family Partnership Review (15, 16, 73).

Description

This programme was originally designed to provide nurse home visits to women with no previous live births, during pregnancy and after. Visits provide teaching on care of children, family planning, positive health related behaviour and support for mothers' own educational achievement and workforce participation.

Intensity and duration of interventions

During the first month of enrolment visits are weekly, then fortnightly till birth after which they are weekly again till the baby is six weeks old. From 2 to 21 months visits are twice a month and from 21 to 24 months visits are once a month.

Evaluations

There were three well-implemented RCTs conducted in the US, the first of which is discussed in more detail. In all of the published studies on these trials David Olds, the designer of the programme, was

either the main author or a collaborator. The first RCT (20, 21) was of 400 women in Elmira, a semirural community in New York, of whom 90% were white, 60% low-income and 60% unmarried, with an average age of 19 years. The programme ran from 1978 to 1982 and follow up was long (15 years) with a low attrition of approximately 20%. Women were stratified by marital status, race and seven geographic regions and then randomly assigned to one of four conditions: (1) sensory and developmental screening for the child at 12 and 24 months with referrals provided as necessary (n=94); (2) screening and free transport to antenatal and child health care appointments to age two years (n=90); (3) screening and transportation plus nurse visits during pregnancy (n=100); and (4) screening, transport and nurse visits antenatally and until age two years (n=116). Groups one and two were later combined into a single control group since there were no differences on use of antenatal and child health care. Results discussed mainly compared this control group to group four, that is a total sample of 300.

The second RCT (81, 82) was of 743 women in Memphis, Tennessee of whom 90% were African-American, 85% were low-income and almost all were unmarried with an average age of 18 years. Again follow up was long (9 years) with fairly low attrition (10–23% depending on the outcome measured).

The third RCT (83, 84) was of 490 low-income women in Denver, Colorado of whom 84% were single, 46% were Mexican-American, 36% were white and 15% were African-American, their average age being 20 years. The follow up was for four years with an attrition of between 14 and 18%.

Measured outcomes and findings

Cognitive/achievement. The Colorado study analysed a subsample of children at four year follow up whose mothers had low intelligence and/or poor mental health prior to programme participation. The intervention children gained in language development (standardised effect size 0.31) and executive functioning which included capacity for sustained attention and fine and gross motor skills (standardised effect size of 0.47) compared with the control children. In the Memphis study at 9 year follow up the subsample of intervention children with mothers of low intelligence and/or poor mental health prior to participation scored 9 percentile points higher on Tennessee state reading and maths achievement tests and scored 10% higher in reading and maths grade point averages, in grades one to three compared with similar control children.

Social/emotional. The subsample of children in the Colorado study above also showed gains in behavioural adaptation which included attention, impulse control and sociability (standardised effect size of 0.38) compared with similar control group children.

Child maltreatment/injury. At the 15 year follow up the Elmira study showed 48% fewer officially-verified incidents of child abuse and neglect in the intervention versus the control groups. At age two in the Memphis study there were 23% fewer health care encounters and 78% fewer days hospitalised, for children's injuries or ingestions in the intervention group.

Criminal and risky activity. At the 15 year follow up the Elmira study showed 59% fewer self-reported arrests. In the higher risk subgroup (poor unmarried mothers) their adolescents displayed 54% fewer arrests, 69% fewer convictions, 59% fewer sexual partners, 28% fewer smokers and 51% fewer days drinking over the time period.

C. MODEL TARGETED INTERVENTION PROJECTS BEGINNING IN PRESCHOOL

High/Scope Perry Preschool project Review (15, 16, 68, 85). Primary (86, 87).

Description

Between 1962 and 1967 the High/Scope Perry Preschool project was developed by the Division of Special Services of the Ypsilanti School District, Michigan in the US. The project was aimed to improve the academic success of low-income children by offering them settings and activities that their home environments did not provide. The Ypsilanti project placed more emphasis on education than the Head Start programmes. It served 58 African-American children, 3–4 years of age from low SES backgrounds and those with low IQs (between 70 to 85 on the Stanford-Binet).

Intensity and duration of interventions

The programme ran for two years, with four year olds receiving input for one year and three year-olds for two years. A mixed approach was used with defined classroom activities, weekly home visits by the teachers and monthly group meetings with parents. The programme had very specific components based on the work of Jean Piaget and views the child as an active learner. Teachers qualified to teach in public schools were additionally trained in child development and all teachers had a master's degree. Teacher to child ratio was 1:6. Elements of the programme were at least 12.5 hours per week of well-defined classroom time, a curriculum encouraging child-initiated learning with an emphasis on language and literacy, social relations and initiative, movement, music, classification, numbers, space and time, a low child-staff ratio, and highly trained staff who were consistently supervised and trained. The October to May weekly home visits lasted for 90 minutes, and were designed to support and supervise parents in following the curriculum at home.

Evaluations

This programme and the studies by Lawrence Schweinhart are the most famous and frequently quoted of the model targeted early childhood intervention projects. In the Perry Preschool Project 123 three and four year-old African-American children were randomly assigned to the programme or control groups. The very well-conducted longitudinal studies tracked participants and control group members until age 40 years. Contact was maintained with 95% of the initial group at the age 27 follow up. Of the original 123 original respondents, four could not be located for the age 40 survey (two in each group) and seven had died (two in the intervention and five in the control group). Face-to-face interviews were conducted when the participants were age 27 and 40 years to collect data on a range of health outcomes and behavioural risk factors.

Measured outcomes and findings

Cognitive/achievement. On earlier follow ups participants showed significantly higher: scores on the Adult Performance Level Survey at age 19; school achievement at age 14 as measured by the California Achievement Tests; and performance on the Stanford-Binet Intelligence Scale from age 4 through to 7 (effect size 0.97 with p<0.01). Academic achievement results included: Age 14 – better test scores (p=0.001; effect size=0.68); Age 19 – higher literacy scores (p=0.025; effect size=0.43). By age 27 there was more high school completion (71% vs 54%; p=0.055; effect size=0.35) and higher mean years of schooling (p=0.016; effect size=0.43). Fewer girls participated in special education compared with controls.

Criminal activity/future success. Key significant findings at the age 27 follow up in the intervention group as compared with the control group were: higher monthly earnings; higher percentages of home ownership and second car ownership; higher levels of schooling completed; lower percentage receiving social services at some time between ages 18 and 27; and fewer lifetime arrests (2.3 vs 4.6 arrests) –

12% of men who had participated in the programme had been arrested five or more times, compared to 49% of men who had not participated in the programme – and fewer adult criminal arrests (1.8 vs 4.0), including crimes of drug making or dealing (arrests 7% vs 25%).

Women had significantly fewer teenage pregnancies and illegitimate children, more programme –receiving women were married at age 27 years.

Health. At 37 year follow up (age 40) the intervention group displayed reductions in behavioural risk factors but no overall improvement in physical health outcomes (87). The reductions in behavioural risk factors were found to be mediated by enhanced educational attainment, health insurance coverage, income, and family environments.

Economic. The average cost of the programme per participant was \$12,356 (in 1992 American dollars) and the average amount of economic benefits was estimated at \$88,433 per participant. These savings were made on special education services, welfare assistance and the criminal justice system, while higher taxes were paid by participants due to higher earnings.

Early Training Project Review (16, 68).

Description

The Early Training Project was an educational intervention that involved 65 African-American three to four year-old children from low-income families in two small southern cities. The cohort of children were born in 1958 and resided in Murfreesboro, Tennessee. The programme which operated from 1962–1967 emphasised both affective and cognitive development, and aimed to impact attitudes relating to achievement and school performance.

Intensity and duration of interventions

The project placed intervention children in a 10-week summer preschool programme for the two or three summers prior to the first grade, and the families of these children also received weekly home visits during the remainder of the year. The other children were in control groups.

Evaluations

Participants were randomised to intervention or control groups and outcome measurements were in IQ and school-administered tests. The initial sample was of 44 in the intervention group and 21 in the control group with the follow up sample size reduced to 36 in the intervention and 16 in the control groups. The sample size in this study is thought to be too small to detect, as statistically significant, important findings.

Measured outcomes and findings

Cognitive/achievement. Intervention groups had initial significant improvements in IQ but at age 17 there was no difference in IQ. There were no significant differences in achievement test scores and grade retention but significantly fewer were placed in special education (4.9% vs 33.3%; effect size=0.79; p<0.001). A higher percentage graduated from high school but this finding was not statistically significant.

Future success. There were significantly fewer teenage pregnancies in the intervention groups.

Institute for Development Studies

Review (68).

Description

The Institute for Development Studies was established in 1961 and implemented in New York's Harlem community between 1963 and 1967. It was an early childhood enrichment programme and was the model or forerunner of what later became known as Head Start. It served children aged four to nine years of age and their parents and teachers, aiming to address the cognitive growth and social-emotional adjustment of minority children from poverty backgrounds.

Intensity and duration of interventions

The programme offered home visits, part-day preschool and a parent centre for parents of children in kindergarten to grade three.

Evaluations

Participants were randomised to intervention or control groups. Initially there were 312 in the intervention group and 191 in the control groups but attrition was high and at follow up in grade seven, the intervention group had only 63 and the controls 34.

Measured outcomes and findings

Cognitive/achievement. Due to the high attrition and resulting low numbers at follow up, no significant differences were found in special education (I=0%; C=13%) or grade retention (I=23%; C=43%).

Curriculum Comparison Study Primary (68, 88).

Description

The High/Scope Preschool Curriculum Comparison Study compared three curriculum models: High/ Scope, Direct Instruction and traditional. The programme ran from 1967 to 1970. The Direct Instruction programme involved teacher initiated activities to which children were to respond and a script of academic objectives to follow. The High/Scope curriculum was as for the Perry Preschool Program described above. Teachers and children initiated developmentally appropriate activities and daily routines were such that children planned, did and reviewed their own activities. The traditional model involved activities initiated by children to which teachers responded and there was minimal structure.

Intensity and duration of interventions

Hours and pupil to teacher ratios were the same as for the Perry Preschool Program and there were also home visits for all three models.

Evaluations

There were 244 children in the intervention and 68 children in the control groups. Stratified random assignment was used to form three groups in each of three cohorts but groups were then reassigned to match on different characteristics (race, gender and IQ). Follow up was annually from age 3 to 8, age 10, age 15 and age 23. After high school attrition in the intervention group was 31% and in the control group it was 25%.

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Cognitive/achievement. For all programmes there was an initial improvement in IQ, followed by a slow decrease.

Criminal activity/future success. The High/Scope model was significantly better at reducing delinquency than the Direct Instruction model. At the last measurement the High/Scope and traditional groups did significantly better than the Direct Instruction model on outcomes relating to delinquency, personal attributes, education and employment.

Verbal Interaction Project (Mother–Child Home Program) Review (68). Primary (89).

Description

The original model study was conducted from 1967–1972. It was a home-based, literacy-focused intervention targeting at-risk families with toddlers aiming to increase the amount and quality of the verbal interaction between mother and child. Toy demonstrators showed mothers playful techniques of positive verbal interaction.

Intensity and duration of interventions

The intervention consisted of 46 biweekly, half hour home sessions spread over seven months in each of two years. Entry to the programme was at 2 to 3 years and exit at 4 years. The curriculum created by the Verbal Interaction Project led by Levenstein in 1965 was based on broad theoretical and empirical foundations drawn from various fields. The materials included guide sheets, a child social-emotional behaviour curriculum, a parenting curriculum, and books and toys.

Evaluations

The initial non-randomised study consisted of six groups with three matched comparison groups. There were 111 in the intervention and 51 in the control groups and at follow up in grade 3, 79 remained in the intervention group and 49 in the control groups. After the initial pilot demonstrated short-term success there were a number of further randomised experimental studies replicating and evaluating the Mother-Child Home Program.

The Pittsfield Parent-Child Home Program replicated the Verbal Interaction Project with 123 toddlers in 1976. Eligibility depended on the presence of at least five of eight stipulated risk factors.

Measured outcomes and findings

Cognitive/achievement. The initial study found significantly improved IQ scores in the intervention group at grade 3 compared with the control group. The intervention group also scored better on achievement tests and had fewer placements in special education and fewer grade retentions. Later studies showed similar outcomes and also clearly demonstrated that the programme had little or no effect on children who entered the programme with normal cognitive ability and relatively well-educated parents. This finding was replicated in a number of studies. A report on a study in Bermuda commented on '...the futility and even wastefulness of using replication of the Verbal Interaction Project's MCHP to prevent educational disadvantage in children who are not in fact at risk for such disadvantage'.

The Pittsfield Parent-Child Home Program did a follow up at age 17–22 years and found that participants were significantly less likely than randomised controls to drop out of school and more likely to have graduated.

Incredible Years

Review (15, 16, 90, 91).

Description

This programme, developed in 1982 by Professor Carolyn Webster-Stratton, has been used widely in the US Head Start programmes and in the Sure Start programme in Wales. The programme is aimed at parents of children aged 2–10 years with early indications of conduct disorder. It is a behavioural-humanistic programme which addresses problematic child behaviour and the parent-child relationship. The intervention site can either be clinic, preschool or school and there are several versions of the programme, depending on the age and needs of the child and location of treatment. The Incredible Years programme became established in North Wales since 2001 and provided training, consultation and support. Eleven Sure Start areas in Wales began using the programme with evaluation starting in 2002.

Intensity and duration of interventions

Parent training. The core is the Basic Incredible Years Behavioural Parenting Programme, which aims to teach parents effective parenting strategies and includes instruction in discipline, effective parenting, strategies for coping with stress, and ways to strengthen children's social skills. The core programme runs for 12 weeks and consists of weekly parent meeting groups. It usually is offered when the child is four years old and four booster sessions are offered in the kindergarten year.

The booster components, BASIC Parent Training Program-School-Age (BASIC-School Age), Advance Parent Training Program-School Age (ADVANCE), Supporting Your Child's Education–School Age, and the school readiness supplements Child-Directed Play and Interactive Reading may be offered as supplements to the early childhood BASIC component. ADVANCE targets school-age children 4 to 10 years old and includes eight to ten two-hour sessions that emphasise parents' interpersonal skills, such as effective communication, anger management, problem-solving between adults, and ways to give and receive support. The BASIC–School Age programme is similar to the early childhood programme but emphasises strategies for older children, including logical consequences, monitoring, helping children learn to problem solve with children age 5 to 10 involves four two-hour sessions and highlights approaches to parenting to promote children's academic skills, including nurturing reading skills, setting up homework routines, and building collaborative relationships with teachers. The school readiness supplements may be used with parents of 3– to 5–year-olds, and includes an emphasis on building children's social, emotional and academic skills, as well as fostering pre-reading and reading skills using the interactive reading approach.

Child training. There are two separate child-training components in the Incredible Years series. The first is the classroom programme for children age 4 to 8 years. This uses the Dina Dinosaur curriculum which has more than 60 lesson plans (with preschool, kindergarten and grade one and two curricula), and may be offered over multiple years from preschool to grade two. The programme seeks to improve peer relationships and reduce aggression both at home and at school. The curriculum is delivered to the entire classroom by regular teachers, two to three times a week through 20–30 minute group discussions followed by small-group practice activities. Home activity manuals encourage parents' involvement in teaching their children school rules, social skills, and problem-solving.

The second child-focused program is the Dinosaur Child-Training curriculum, a clinic-based treatment programme for small groups of children age 4 to 8 years who are exhibiting conduct problems (defined as high rates of aggression, defiance, and oppositional and impulsive behaviours). The curriculum emphasises communicating feelings, empathy for others, friendship development, anger management, interpersonal problem-solving, and obeying school rules. This programme is offered to groups of five to

six children in two-hour sessions held weekly for 18 to 22 weeks. It can be delivered by counsellors or therapists to treat conduct-disordered children in small groups, or can be used by schools as a pullout programme for children with special behavioural and emotional needs.

Teacher training. The Incredible Years Teacher-Training Curriculum focuses on teaching behaviour management strategies for use in the classroom, including discipline strategies, and positive management. Training can be provided through either four to six full-day workshops or 14 to 20 two-hour sessions. Videotaped modelling is used to train teachers in classroom behaviour management followed by discussion groups.

Evaluations

Several peer-reviewed evaluations have been conducted using experimental designs with randomisation. The Basic Parenting Programme and the Dinosaur Child-Training curriculum for small groups have been adequately evaluated. The rest of the programme still requires further evaluation. Most studies show that the programme was delivered with a high degree of integrity with trainers receiving supervision to ensure that the content of the manual is adhered to, trained therapists following strict guidelines, standardisation of programme delivery across sites and reliability checks.

In the 1980s and 1990s Webster-Stratton led numerous studies (90). In 2001 a study with 634 lowincome families across 23 Head Start centres was conducted (92). A further 2001 study of 99 children used the Incredible Years Dinosaur Social Skills and Problem Solving Program with a one year follow up (93).

A 2002 study (94) of 116 parents of children age 2–8 years old in Oxford, England, were assigned to one of two groups with similar background characteristics. The groups were randomly assigned to BASIC Parent-Training (60 parents) or to a control group (56 parents). Attrition in the control group of this study was 18% whilst in the intervention group, after the initial questionnaire, only 56% attended the programme and at six months only 43% of the original intervention group had attended and completed the questionnaire.

A 2003 study (95) of 264 low-income parents of 2–3 year old children were randomly assigned to one of four conditions: parent training only (75 parents); teacher training using the BASIC Parent Training program (52 parents); parent training delivered to both parents and teachers in separate groups (78 parents); no intervention waiting-list control group (59 parents). Another 2003 study was conducted based on 159 children with oppositional defiant disorder (96).

An independent 2005 systematic review (91) of group-based parent-training programmes to improve emotional and behavioural adjustment in children 0–3 years included two randomised studies (95, 97) of the Incredible Years parenting programme which used videotaped modelling. Most of the children were 2–3 years of age. Follow up was at one year in the one study and at three months in the other. Outcomes were improvements in child behaviour from parent-report, teacher-report of classroom behaviour and independent report.

A small 2006 study was conducted in the Oxford area where the charity Family Nurturing Network served up to 200 families per year and offered the Incredible Years Basic Parenting intervention (98). The randomised controlled trial included 76 families with children aged 2–9 years with 44 in the intervention and 32 in the control groups.

A limiting factor with the above studies is that Webster-Stratton who devised the programme has collaborated with the research thus introducing potential bias. Follow up of participants was only for a maximum of two years and some studies had high attrition.

Evaluation of the eleven Sure Start areas in Wales started in 2002. Participating families were randomised to intervention and waiting-list control groups. A 2007 study (99) of 153 families with children 3–5 years of age in North and mid-Wales was conducted with the intervention group receiving the Basic Parenting Programme. There were 104 families in the intervention group and 49 in the control group.

In 2001 a North West Wales primary school piloted the Teacher Training Programme and the Dinosaur Child Training Programme. The results were positive but the sample size was very small (seven children) and the evaluation (before and after design) did not have a control group (100).

Measured outcomes and findings

Social/emotional. The Webster-Stratton studies found on independent observations of children's behaviour that treatment group children showed significantly fewer submissive behaviours (e.g. approval-seeking) and negative behaviours (e.g. pouting, ridicule) and higher rates of positive-affect behaviours (e.g. smiling, expressions of affection) than control group children. There were no significant differences between the groups in the frequency of non-acceptance behaviours (e.g. frustration, ignoring) and dominance behaviours (e.g. criticising, refusing to comply). Home observations of children with their fathers showed lower rates of child deviance (i.e. whining, crying, smart talk, and noncompliance) for treatment group children than for control group children.

The 2001 study with 634 low-income families across 23 Head Start centres study showed that at the one year follow up children exhibited fewer behaviour problems. The 2001 study of 99 children using the Incredible Years Dinosaur Social Skills and Problem Solving Program found significant improvement in aggression and non-compliant behaviour, with a one year follow up showing that most of these changes had been maintained. The 2003 study based on 159 children with oppositional defiant disorder demonstrated that after two years 75% of the children were functioning within the normal range.

The 2005 systematic review of group-based parent-training programmes to improve emotional and behavioural adjustment in children 0–3 years showed no significant difference in parent-report of child behaviour but did show significant improvement on teacher-report of classroom behaviour and independent report of behaviour. The changes were maintained at follow up (although this was no more than one year later) in the teacher's report but not the independent observer report.

The 2006 Oxford study showed improvements in: child problem behaviour by parent report (effect size (ES) 0.48, p=0.05) and direct observation (ES 0.78, p=0.02); and child independent play (ES 0.77, p=0.003) at six month follow up. The 2007 study of 153 families with children 3–5 years of age in North and mid-Wales with the intervention group receiving the Basic Parenting Programme demonstrated significantly reduced antisocial and hyperactive behaviour and increased self control in the children at six month follow up.

Parental outcomes. The 2001 study showed that at the one year follow up the intervention mothers were more positive, less critical, and more consistent in their parenting than the control groups. The 2006 Oxford study showed improvements in observed negative (ES 0.74, p=0.003) and positive (ES 0.38, p=0.04) parenting and parent reported confidence (ES 0.40, p=0.03) and skill (ES 0.65, p=0.01), at six month follow up. The 2007 Wales study demonstrated positive parenting behaviours in the intervention parents at six month follow up.
D. TARGETED, LARGE-SCALE INTERVENTION PROJECTS WITH MIXED INTERVENTION BEGINNING IN PRESCHOOL

Head Start Review (15, 16, 68, 85).

Description

Head Start was launched in 1965 and formed part of the then US president's war on poverty. It provides low-income children aged 3–5 years, and their parents with schooling, health, nutrition and social welfare services. It has grown over time and currently serves nearly one million children each year at a cost of about \$7 billion. It has served over 20 million children in the past at 19,000 sites. Head Start programmes have four components: social services (material aid for families, community outreach, referrals, emergency services and crisis intervention); health care (child nutrition, dental, mental health, immunisations and hot meals); parental involvement (engaging parents in the classroom and at home, parent representation on councils, job training, literacy, language classes, and services aiming to achieve income stability); and child education (childcare and preschool). The child education curriculum is not specified or standardised but is required to meet certain performance criteria that are designed to guide teachers and ensure that children develop skills required for school readiness (literacy, vocabulary and numeracy skills).

Intensity and duration of interventions

The school programme operates throughout the school year and the majority of Head Start programmes for children are part-day, however 42% of children receive full-day childcare for the full year. This is provided through a Head Start programme alone or in collaboration with other providers.

Evaluations

Head Start evaluations appear to suffer from the same problems as the British Sure Start programme. Variations in the nature, quality, implementation level and intensity of intervention components over the different sites means that evaluations are not of a single intervention, rather a group of differing interventions in different measures. Vast literature exists on Head Start. A 1985 meta-analysis commissioned by the Office of Head Start concluded that Head Start resulted in cognitive, social-emotional and health gains but that these reduced over time (101). Effect sizes are not available. The US General Accounting Office, after reviewing more than 600 citations, manuscripts, and studies, stated in 1997 that the body of evidence on Head Start was insufficient to make any conclusions about its impact. Much scepticism about the value of the programme exists (102, 103) although some studies do suggest that overall Head Start passes the cost-benefit test (104).

Measured outcomes and findings

Cognitive/achievement. Intervention groups scored significantly higher on IQ tests and various school achievement tests. Greatest improvement was found in children with lower initial skills. Significantly fewer experienced grade retention and a significantly higher proportion of white participants graduated from high school and attended college.

Social/emotional. There was growth in social skills, a reduction in hyperactive behaviour and more cooperative classroom behaviour, however, these findings did not reach the statistically significant level.

Health. Significant improvement in immunisations and some other positive health behaviours were found.

Child maltreatment/abuse. There were improvements but not significant.

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Criminal activity/future success. Significantly lower percentage of intervention group were 'booked' or charged with crime (this was only significant for African-American participants). There were improvements in employment and earnings in the intervention group relative to the controls but these were not significant.

Chicago Child-Parent Center (1967-present)

Review (15, 16, 68, 85). Primary (105, 106).

Description

This programme which has been operating since 1967 in high-poverty neighbourhoods of Chicago provides centre-based preschool education. It is based in public elementary schools and operates through the public school system. It is offered to children aged three to four years of age and emphasises a child-centred, individualised approach to social and cognitive development. The curriculum focused on school readiness (developing reading and language skills) and is not as structured as the Abecedarian project. All teachers were degree educated and certified. A related service continues after kindergarten entry and through grades 1–3. Child-to-staff ratios were low in preschool (17:2), kindergarten (25:2) and the primary grades (25:2). Over 100,000 children have been served through the programme at 25 sites. Parenting activities are provided in parent resource centres and parents are required to participate for half a day each week. Activities involve parenting classes, providing clerical assistance, developing resources for other parents, coordinating school projects, work training and literacy programmes. There are also health and nutrition services, screening and diagnostic services, meal services and referral by programme nurses. Although not routine, home visits are offered.

Intensity and duration of interventions

A structured part-day programme, five days a week, for three and four year olds is offered during the school year. The kindergarten programme runs for six hours per day, five days a week. Children can be involved up to age six.

Evaluations

Trials were non-randomised, quasi-experimental in design and externally reviewed. The Chicago Longitudinal Study involved 1,539 participants, with 989 in the intervention group and 550 in the control group. The intervention group included children that had been in the CPC preschool (1983–1985) and/ or kindergarten (1985–1986). The control group had attended another full-day kindergarten programme. Intervention and control groups were found to have similar sociodemographic characteristics. By fifth grade attrition was 19% and by grade eight (age 14) it was 25%. At 15 year follow up at age 20, approximately 85% of the intervention and 81% of the control group were followed up. This varied for different outcomes since different sources were used.

Measured outcomes and findings

Cognitive/achievement. The intervention group scored higher on school readiness on entry to school and scored higher in reading and maths based on standard school tests. According to the 2001 study (106), a significantly higher percentage of the preschool intervention group were likely to complete high school (49.7% vs 38.5%), and significantly fewer dropped out of school (46.7% vs 55%), were placed in special education (13.5% vs 20.7%) or experienced grade retention (21.9% vs 32.3%). Time spent in special education was significantly less (0.51 vs 0.87 years). A 2007 study (105) assessed college attendance by age 23 years. CPC preschool intervention group participants had higher rates of 4–year college attendance and more years of education.

Criminal activity/future success. Using juvenile court records, by age 20 there was a lower proportion

of overall arrests (16.9 vs 25.1%) and a lower percentage of violent arrests (9% vs 15.3%). Participants in both the preschool and school-age intervention relative to the control group had significantly higher rates of full-time employment (42.7% vs 36.4%).

Child maltreatment/abuse. The intervention group were 52% less likely to have been subject to child maltreatment or abuse by age 20 than the control group.

Health. As adults, the preschool intervention group were more likely to be covered by health insurance (61.5% vs 70.2%; p=0.005) and had fewer depressive symptoms (12.8% vs 17.4% although p=0.06 for this).

Early Childhood Education and Assistance Program (ECEAP) Review (15, 90).

Description

This programme, designed for three and four year old children and their families living in poverty, began in 1985 and is based in Washington State in the US. It operates at 260 sites and has served over 90,000 children. Early Childhood Education and Assistance Program (ECEAP) emphasises a holistic approach and has four components: education, health and nutrition, parental involvement and family support. The education component consists of a centre-based prekindergarten programme. Problems that may interfere with learning are identified early and the goal is to facilitate the transition to kindergarten. As regards health and nutrition, children receive a meal every day at preschool, receive health screening (medical, dental, mental and nutritional) within three months of enrolling, referrals are made if appropriate, immunisations are available, fluoride treatment and nutrition information if needed. Parental involvement constitutes encouraging parents to volunteer in the classroom and participate in decision-making through parent-run councils. Parent skills training and support groups are provided as necessary. Family needs are assessed and families are assisted in identifying community resources. Skills development training in parenting, leadership and self-sufficiency is available.

Intensity and duration of interventions

The intervention is offered for half-days for part of the year (a minimum of three weeks per year). Often the half-day programme was integrated into full day childcare. Typically children received one year of services.

Evaluations

The Washington State Early Childhood Assistance Act of 1985 mandated an external evaluation of ECEAP. The Northwest Regional Educational Laboratory (NREL) conducted a longitudinal study from 1988 to 2000 to measure outcomes of enrolled children and families. The study completed 12 years of data collection and evaluation, in which it followed 1,358 children drawn from groups selected over three consecutive years beginning in 1988. A comparison group of 322 children who were eligible but not served by the programme was also established. The control group was not randomly selected, but matched the ECEAP children on age, gender, ethnicity, and primary language. However, a much larger percentage of the ECEAP group was at or below the poverty level at the start of the study than was in the comparison group (95% vs 53%). Attrition in the intervention group was no longer providing significant information, and it was ended in favour of developing a yearly outcomes evaluation for enrolled children and families.

Measured outcomes and findings

Cognitive/achievement. In terms of adjustment to school, attendance, progress and child perceptions of school, intervention children showed steady progress. There were no significant improvements in cognitive development, however.

Social/emotional. Intervention children consistently scored higher than controls on positive classroom behaviours. No other significant findings.

Parental outcomes. Intervention parents were significantly more involved in their children's outside school activities. The fraction of ECEAP families above the poverty level grew from 5% at enrolment to 47%. The fraction of control group families above the poverty level grew more modestly over the same period from 47% to 61%. There was an increase in families who earned wages at years 9 and 10 and a decrease in receipt of public assistance in the intervention relative to the control groups. There were, however, more deprived families in the intervention group than the control group when the study commenced.

Home Instruction for Parents of Preschool Youngsters (HIPPY) Review (15, 16, 107).

Description

Home Instruction for Parents of Preschool Youngsters (HIPPY) was developed in 1969 in Israel and is an early education programme designed to assist parents in preparing their children aged three and five for entry into primary school. Home visits by paraprofessionals and parent group meetings led by professional programme coordinators take place. Meetings are geared toward problems with the curriculum, concerns, and discussion about child-rearing and enrichment activities. HIPPY is run at multiple sites across many countries and there are over 120 sites in the US alone. An organisation called HIPPY International has developed. Countries do adapt the programme to suit the local context.

Intensity and duration of interventions

HIPPY is a two-year programme with set lesson plans and a structured approach. Home visitors usually live in the same neighbourhood as the families and parents are taught how to use the HIPPY materials through role-play where the paraprofessional takes the role of the parent and the parent takes the role of the child. HIPPY materials are provided to parents and include a series of books and activity packs designed to develop age-appropriate language, sensory and perceptual discrimination, visual skills, motor skills and problem solving. Parents teach their children by using the materials (one book and one set of activities every day) and engaging the child in educational activities for 15 minutes per day, five days per week. Home visitors do not work directly with the child. Home visits are bimonthly in the school year lasting for 30 to 60 minutes. Group meetings usually occur during alternate weeks.

Evaluations

There were 17 available evaluations of HIPPY. Seven were experimental, the best being two randomised trials in New York. In the New York studies, there were 247 participating families assigned either to intervention or control groups. Unfortunately the study did not utilise intention-to-treat analysis and within the first month of the start of the programme, 31% of the intervention families were lost to follow up, compared to 22% of control families. The intervention families remaining in the study were likely therefore to be the more motivated ones which could potentially account for the differences found in the two groups. Cohort one (entered in 1990) eventually had just 37 intervention and 32 control families and cohort two (entered in 1991) had 47 intervention and 66 control families.

Measured outcomes and findings

Cognitive/achievement. NY Cohort 1: At the end of kindergarten intervention outperformed control groups using the Cooperative Preschool Inventory. They also performed better in classroom adaptation at first and second grade and on a standardised reading test in grade one. These findings were significant. NY Cohort 2: No significant findings. Intervention parents were found to be more involved in their children's education.

Review (16). Primary (108).

Description

This US programme was originally designed for children and adolescents ages 5–17 to reduce drug and alcohol abuse; improve parenting skills; enhance children's self esteem, their communication and their problem-solving skills; provide training for childcare personnel and other care givers; and involve community teenagers as peer educators and support systems for youth. The programme was modified for high risk children of ages 2–5 and their families. There are three main components: the family programme; preschool teacher and day care provider workshops; and community training. The family programme consists of classes for parents and workshops for focus children and their siblings. There are also parent-child activity sessions for parents to interact with their children in a nurturing environment. The programme now operates in 35 states and has been implemented in all major cultures in the US.

Intensity and duration of interventions

The parent curriculum consists of a series of 10–12 weekly family classes to help parents improve their sense of self esteem and efficiency, learn stress management techniques, increase empathy, provide positive role models, learn developmental norms for children, and establish a peer support group. Sessions last two-and-a-quarter hours and include a meal and a 15-minute parent-child activity. The children's programme consists of 10–12 workshops, and is held simultaneously with the parent workshops. Reinforcing workshops (four two-hour sessions each year) are available and incentives are provided for parents to attend. There is also a quarterly voluntary support group called After–DARE.

Evaluations

For a different demographic composition families were drawn from four different sites. The first was a Native American community (75% of high school students had substance abuse problems and 78% unemployment in the community), the second a rural agricultural site (43% Hispanic, 24% unemployment, low income, low education, high teenage pregnancy and child abuse), the third was a mainly white semirural community (12% unemployment and 7.8% poverty), and the fourth site was an urban area (ethnically mixed area with very high levels of child abuse and teenage pregnancy). To be eligible for the study, families had to have a child in the age group and meet the criteria for family risk factors. Recruitment from the sites was as follows: site 1–168; site 2–222, site 3–215, and site 4–192 families. Of the families, 45% received some form of welfare benefit. Incentives were provided for participation. To test the effect on non-target families, a small percentage of families with no risk factors were recruited. Families were randomised to either the intervention group (n=496) or the waiting list control group (n=301). Assessments were pretest, post-test and yearly after completion of the intervention.

Measured outcomes and findings

Cognitive/achievement. Target children's developmental levels were enhanced.

Social-emotional. Target children's oppositional behaviour declined.

Parenting. Intervention parents had higher self-rated parenting competence, parenting satisfaction, improved limit-setting behaviour and communication with children, lower self-reported use of harsh punishment, and attribution of negative events to chance.

E. UNIVERSAL INTERVENTIONS FOCUSING ON CHILD DEVELOPMENT AND PARENTING

Parents As Teachers Reviews (15, 16, 73, 107).

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Description

Parents As Teachers (PAT) which operates in over 2000 sites in the US and internationally started in 1984. It is a universal voluntary early childhood parent education and family support programme that begins at or before the birth of the child and continues until school entry. Parent education occurs during home visits and group sessions at a centre. The goal of the PAT programme is to increase parent knowledge of early child development, improve parenting practices, prevent child abuse and neglect, increase children's school readiness, and detect developmental delays and health problems. Services also include child development screenings, a drop in and play session, and referral to resources.

Intensity and duration of interventions

Services must be offered for a minimum of eight months and must include four home visits and four groups. Intensive services are provided from the third trimester to age three with home visits a minimum of four per year and group sessions four times per year. Limited services are provided from age three to five years with a minimum of two contacts.

Evaluations

Wagner and Clayton report the findings of two randomised controlled trials of PAT with samples of 497 and 704 families respectively (109). Attrition for the first study was 27% at age two follow up and for the second study 48%. Weak or no statistically significant effects were found for parent knowledge, attitudes and behaviours, child development and child health outcomes. Authors concluded that the overall effects for PAT were not large: 'neither demonstration achieved consistent positive effects on parenting knowledge, attitudes and behaviours. Some benefits to children in the area of child development were identified in both demonstrations although they were very small and not consistent across developmental domains'.

A randomised controlled trial by Wagner, Spiker and Linn in 2002 (110) was a multi-site trial with 665 families assigned to PAT or a control group. Families were selected only from PAT sites which had been running for at least two years, had at least 100 families, had high rates of low-income families, and had monthly home visits. 60% of participating families had income of less than \$15,000 per annum and 18% received Temporary Assistance for Needy Families incentives. The control group received free annual assessments and free children's books several times a year. Attrition in this study was 60% at age two follow up. PAT treatment groups performed only slightly significantly better than control groups in parenting knowledge, attitudes and behaviours and there were no significant effects as regards child developmental outcomes.

A figure from the 2005 review by Karoly, Kilburn and Cannon shows the cognitive outcome effect sizes near or in primary school of 20 programmes reviewed by them. The small and not statistically significant effect size (0.06) for PAT is displayed as the third on the list.

Measured outcomes and findings

Cognitive/achievement. The intervention group scored significantly higher than controls at age three in cognitive skills (Kaufman Assessment Battery for Children), language (Zimmerman preschool Language Scale) and school achievement (grade 1 standardised maths and reading). Small effect sizes were found.

Social/emotional. No difference on psychometric tests at age three. On parent ratings at age three intervention group were slightly better rated on 13 out of 44 items with control group better on one item. Intervention group children were also rated better on ability to distinguish self-identity, positive adult relationships, coping abilities and engagement in social play. No difference was found in expression of feelings and peer relations. Again effect sizes were small.

Child maltreatment/injuries. In the second wave PAT evaluation, significantly fewer cases of child abuse and injury were found when compared with the state average.

Positive Parenting Programme–Triple P Reviews (15, 18, 107).

Description

The Positive Parenting Programme is a Behavioural Family Intervention programme based on social learning principles and originating in Australia in the 1970s. Designed by Professor Matt Sanders of the University of Queensland, it has been used widely internationally and in the UK (used in Starting Well) and has standardised training and accreditation processes. It is particularly aimed at parents of children with conduct disorder in areas of high deprivation and can be delivered by health visitors. Triple P incorporates combinations of parenting seminars, skills-training sessions, telephone consultations and in some cases home visits (although this is not primarily a home-visiting programme). Video modelling is frequently used.

Intensity and duration of interventions

It is delivered to parents (not children) and has five delivery levels of increasing intensity ranging from universal population level with promotion of parenting style through media and parent tip sheets, to individually tailored intensive input for families with persistent childhood behavioural problems and other sources of family stress. The levels are as follows:

Level 1. Information provided about parenting through a media and promotional campaign using print and electronic media. This level aims to increase community awareness of parenting resources, to encourage parents to participate in programmes, and to create a sense of optimism by depicting solutions to common behavioural and developmental concerns.

Level 2. Brief, individual or seminar-based consultation with parents and caregivers by providing topic specific guidance to parents of children with mild behavioural difficulties, with the aid of parenting tip sheets and videotapes.

Level 3. A 4–session intervention targeting children with mild to moderate behavioural difficulties and includes skills training for parents.

Level 4. Intervention of 8 to 10–sessions with individual parents, groups of parents or guiding parents who are working from a Triple P self-help parenting book – for parents of children with more severe behavioural difficulties.

Level 5. Intensive family intervention programme.

Evaluations

This programme has been evaluated in at least 11 accessible randomised controlled trials. There are, however, methodological and other issues regarding some of these studies. Sanders who devised the programme was a collaborator in most of the effectiveness studies thus potentially introducing bias. Only three of the trials of Triple P (two of them very small) appear to have been conducted independently (111-113).

Additional concerns are regarding control group selection and length of follow up. Almost all of the trials of Triple P compare the intervention with no intervention (or in a few cases an unspecified type of care as usual) whilst in the UK control families in young age groups would receive health visitor intervention. One randomised controlled trial found lower levels of parent-reported disruptive behaviour, lower levels of dysfunctional parenting and parental sense of competence but the one year outcomes were compared only to pre-test levels, not to the wait-list controls (114). Follow up in the randomised controlled trials has been mainly short-term (between two and twelve months after random assignment). One large study (1,610 participants) with a two-year follow up did report significant reductions in parent-reported levels of child behavioural problems and self-reported levels of dysfunctional parenting but there were significant differences in the intervention and control groups in terms of age, family-types, mother's education and levels of behavioural problems on entering the study (115).

Furthermore the age of the children, the groups targeted and how samples were selected in the trials needs to be considered. Triple P covers the ages from 0–16 years but notably has not been adequately evaluated in the children age 0–3 years in a controlled trial. One trial was conducted in families with children aged 2–7 years but the children in that study had disabilities (22). The one randomised trial for children aged 18–36 months showed benefit of self-administered Triple P (compared with no treatment) on maternally reported, but not on paternally reported child behaviour (23). In a separate report on the same trial (24), the presence of an observer who did not provide therapeutic input was shown to have a beneficial effect, suggesting that simple professional interest in the family may have positive impact. Benefit to siblings has also not been assessed. As regards selection, one randomised controlled trial was conducted in only indigenous Australian families, one targeted children with confirmed disabilities, and one study was among University staff and their families. The results of these would clearly not be transferable to the Scottish context where the application would be particularly to deprived families.

The most recent study was a large randomised controlled trial in 18 counties in South Carolina where Triple P was universally implemented (116). Families with at least one child under eight years old were included and all 18 counties remained in the study for two years. Outcomes were measured through official administrative data. There was a significant reduction in substantiated child maltreatment cases, out-of-home placements and child maltreatment injuries in the hospital and emergency rooms.

Measured outcomes and findings

Social/emotional. Measures used were the Eyberg Child Behaviour Inventory, Parent Daily Report, the Strength and Difficulties questionnaire and Direct Observer Ratings. In most studies parent report was used. Intervention groups displayed a significant reduction in the intensity and number of behavioural problems and the percentage of children in the clinical range with effects maintained in the short-term. No differences found in anxiety reduction or self esteem improvement. Stronger effects were found with the more intensive levels of the programme.

Child maltreatment/injuries. There was a significant reduction in substantiated child maltreatment cases, out-of-home placements and child maltreatment injuries in the hospital and emergency rooms.

F. GENERAL EARLY CHILDHOOD EDUCATION

Although general early childhood education as provided in most western countries through voluntary preschool is usually not regarded as an intervention, it is considered here since a very large proportion of 3–5 year olds now attend this education. As mentioned earlier, it is the policy of the Scottish Government to encourage attendance for all eligible children and to increase the hours per week to 15 by 2010. There has not yet been a formal controlled evaluation of the effect of the preschool on early child development in Scotland and this is unlikely since uptake is so high and thus finding a control group would present difficulty. A study of this nature has been conducted in England, the results of which are presented first. Some of the findings of the Growing Up in Scotland study relevant to preschool are then presented. Finally the results of some international reviews on outcomes of early childhood education are summarised.

The Effective Provision of Pre-School Education (EPPE) project

The Effective Provision of Preschool Education (EPPE) project investigated the effects of preschool education and care on children's development for children aged 3–7 years old in England. This longitudinal study (27, 28) funded by the DfES (1997–2004) was led by a team of academics and educational experts from Oxford, Birkbeck, Nottingham and London Universities. Approximately 3,000 children of age 3+ years were recruited and followed till age 6/7 years. Children attending a range of providers were included as well as 'home' children for comparison. EPPE explored five questions.

- What is the impact of preschool on children's intellectual and social/behavioural development? Findings were that preschool experience, compared to none, enhances all-round development in children. Duration of attendance in months is important and an earlier start (under 3 years) is related to better intellectual development. Full-time has no advantage over part-time provision. Disadvantaged children benefit significantly from good quality preschool experiences, especially where they are with a mixture of children from different social backgrounds. Overall disadvantaged children tend to attend for shorter periods of time than more advantaged groups (4–6 months less). At the start of preschool 1 in 3 children were at risk of developing learning difficulties but this fell to 1 in 5 by the time they started school. Preschool thus can be an effective intervention for the reduction of special educational needs especially for the most disadvantaged children.
- Are some preschools more effective than others in promoting children's development? Good quality was found across all types of preschool settings but those that combined care and education, and formal nursery schools were found to be of better quality.
- What are the characteristics of an effective preschool setting? Settings with staff with higher qualifications have higher quality scores and their children make more progress. Quality indicators were warm interactive relationships with children, having a trained teacher as a manager and a good proportion of trained teachers on the staff. Children in settings which viewed educational and social development as complementary and equal in importance were found to make better all-round progress.
- What is the impact of the home and childcare history on children's development? The home learning environment was found to be of more importance for intellectual and social development than parental occupation, education or income. The EPPE project developed an index to measure the quality of the home learning environment. Activities such as reading with the child, teaching songs and nursery rhymes, painting and drawing, playing with letters and numbers, visiting the library, teaching the alphabet and numbers, taking children on visits and creating regular opportunities for them to play with their friends at home, were all associated with higher intellectual and social/behavioural scores. These activities could be viewed as 'protective' factors in reducing the incidence of special

education needs. Multiple disadvantage continued to have a negative effect on intellectual and social development throughout the period, and home learning activities were also evident in children's developmental profiles till age 6/7 years.

As regards childcare history before entering the study, high levels of group care before the age of three (and particularly before the age of two) were associated with slightly higher levels of antisocial behaviour for a small group of children when assessed at age 3 years. The effect was largely restricted to children attending local authority and private day nurseries where substantial numbers attended from infancy onwards. Children with higher antisocial behaviour who attended high quality settings between 3 and 5 years, had a decrease in their antisocial behaviour. Moderate levels of childminder care were not associated with increased antisocial behaviour but extremely high levels were. A substantial level of care from a relative was associated with less antisocial behaviour.

• Do the effects of preschool continue through to ages 6 and 7 years? The beneficial effects of preschool remained evident through to age 6 and 7 years, although some outcomes were not as strong as they had been at school entry. The number of months that a child attended a preschool had a stronger effect on their academic skills than on social and emotional development. Preschool quality was significantly related to children's scores on standardised tests of reading and mathematics at age 6 years. At age 7 the relationship between quality and academic attainment was weaker but still evident, and the effect of quality on social and behavioural development was no longer significant. High quality preschool provision combined with longer duration had the strongest effect on development.

This study shows that there is a strong relationship between a child's development and performance and family background characteristics at entry to preschool but this reduces (though is still strong) by the time a child enters primary school. Preschool therefore, whilst not eliminating the differences, can help to reduce disadvantage due to social and environmental factors.

Growing Up in Scotland study

In the Growing Up in Scotland (GUS) birth cohort cognitive development was measured at age 34 months via two assessments; the naming vocabulary and picture similarities subtests of the British Ability Scales Second edition (BAS II). These assessments measure language development and problem solving skills.

- What effect does non-parental childcare provision have on child outcomes? This part of the GUS study looked particularly at the use of multiple childcare providers. The data suggests that in Scotland the use of multiple providers is fairly common as is the use of combinations of formal and informal childcare. The study shows that multiple provision does not have any positive or negative impact on child cognitive or behavioural outcomes at 34 and 58 months. Only weekly duration of non-parental care had any statistically significant association with the child's cognitive ability at age 34 months after controlling for key family, socioeconomic and demographic factors. Non-parental care of between 17 and 40 hours per week was found to have a significant positive effect on a child's knowledge of vocabulary. The effect was larger among girls than boys. Experiencing more than 40 hours of non-parental curcomes. This was especially true for girls and for children whose mothers were under 25 at the birth of the child.
- Do children's early activities have an influence on cognitive development in addition to sociodemographic factors? At age 34 months there were large variations in cognitive scores with children from more affluent families outperforming their counterparts from less advantaged families. As expected, children with degree-educated mothers, older mothers (30 years or older), fewer than

four or no siblings, higher household incomes and parents employed/higher working hours performed better. Children who were read to often, and those who had visited the library by the time they were 10 months old, scored higher on both assessments than children who had less experience with these activities. At age 22 months the number of days in the past week children had played educational games, their overall daily activity levels and the number of places or events they had visited in the past year were all associated with cognitive ability. The more activities children had experienced the higher their ability scores.

• Do children's early activities moderate the effect of sociodemographic factors on cognitive development? When controlled for sociodemographic factors, for the naming vocabulary assessment, three activity measures were independently and significantly associated with ability: being read to every day at age 10 months, being in the most active group at age 22 month for daily activities, and visiting a wide range of events/places at age 22 months. For the picture similarities assessment, two activity measures were independently associated with ability when all factors were considered: being in the most active group at age 22 months for daily activities and visiting a wide range of events/places at age 22 months for daily activities and visiting a wide range of events/places at age 22 months for daily activities and visiting a wide range of events/places at age 22 months.

These findings therefore suggest that activities do have an influence on children's cognitive development and that they can moderate, but by no means eradicate, the effect of sociodemographic disadvantage. The extent and range of activities that the children partake in is more important than specific or expensive pursuits.

International and other local studies on the effects of early childhood education

The British Child Health and Education Study, a longitudinal study of all children born in Britain in a particular week in April 1970, found a significant difference between children who attended an early childhood programme prior to school entry and those who did not (117). When controlling for socioeconomic status and maternal education, those attending preschool had superior scores on measures of cognitive function. More recent analysis of this data (118, 119) and that from the British National Child Development study, a similar study following a birth cohort from a week in March 1958, found that the effects of attending preschool for the 1958 birth cohort were positive whilst they were negative for the 1970 birth cohort. Unfortunately neither study collected enough information on the nature of the actual preschools and thus few conclusions can be drawn from these.

Findings from Canada have been mixed. Jacobs, Selig and White (120) found in a 1992 study that in Quebec 6-year-old children with preschool experience did not do better than those without, but children with higher quality preschool experience had better language development than those with lower quality preschool experience. A 2003 study (121) analysing data from the National Longitudinal Survey of Children and Youth in Canada found that after controlling for potential confounders, junior kindergarten (preschool year before Primary 1) did not seem to decrease behavioural problems in children but did not increase the likelihood of later behavioural problems. The sample comprised 4,828 children from 3,837 Canadian households. Results were controlled for sex, age, region, SES, family functioning, family configuration, education and family size. Children from disadvantaged backgrounds exhibited more behaviour problems and attending junior kindergarten did not reduce the risk gap between those from lower and higher SES backgrounds. Unsurprisingly there was a social-class and income-related gradient. Recommendations are that components of successful early childhood programmes be extracted and integrated into the junior kindergarten curriculum. A social skills programme for children accompanied by a parent-training programme is suggested. Early educational enrichment programmes must find ways to stimulate parents too. Authors concluded that the 'strategy thus is to start early by getting parents to take care of themselves in pregnancy, breastfeed, and read to their infants and preschoolers daily, thus helping their children's cognitive ability and concentration prior to commencing junior kindergarten'.

Another Canadian study (122) examined the effect of a provincial policy in Quebec of offering low fee day care places for 4 and 5 year olds to parents to encourage return to the workplace of mothers. The study used six cycles of data from the National Longitudinal Survey of Children and Youth and quasi-experimental estimation methods to provide evidence that the policy had substantial negative effects on preschool children's Peabody Picture Vocabulary Test scores. The negative effects were found to be stronger with mothers with lower levels of education. Unfortunately, it was not possible to take into account whether mothers who chose to stay at home with their children (and not take the low fee day care option) had better relationships with their children and better home learning environments which could have confounded this study.

The 2004 review by Melhuish found that results for studies conducted in the US and Sweden were similar, most suggesting short-term cognitive gains from preschool attendance but not any significant difference as regards social-emotional development. The US Early Childhood Longitudinal Study (called the ECLS-K) found that children who attended preschool performed significantly better in both maths and reading in the autumn of their kindergarten (primary 1) year compared to children cared for by their parents. These effects are greater in children with disadvantage. Over the first two years of primary school, however, those gains faded out. As pointed out by Kauerz (123) this fade-out effect is not surprising since most early intervention studies show that there is no magic bullet and that children's learning experiences need to be expanded beyond preschool through to at least the first four years of primary school. In fact the fade-out effect found in many studies strengthens the call for universal preschool programmes. The theory being that if children who have attended preschool enter primary school with better school readiness than those who did not attend preschool, teachers inevitably have to concentrate on those who have the least developed cognitive and social skills. This can have the effect of holding back or hindering the learning of children who entered primary school well-prepared which would lead to fading out of the gains made. With the majority of children in the class at the school readiness level, this is less likely to occur. It goes without saying that a poor quality primary school can also cause fade-out to occur.

Data from the US gathered from 14,162 kindergartners, their parents and their teachers by the National Center for Educational Statistics and analysed by Stanford University and the University of California (26), to compare children exposed to preschool centres to those cared for at home, found that: in 2005 64% of American children attended preschool in the year prior to kindergarten; attending preschool raised early language and pre-reading, and maths skills by 10% of a standard deviation on average; children from extremely poor families displayed the strongest gains, particularly in pre-reading and maths skills whilst those from low-income families (not the poorest) showed significant gains in maths but not statistically significant gains in pre-reading and early language skills; and children from middle- and upper-income families showed modest gains in pre-reading and maths skills. Thus whilst preschool did not appear to close the early learning gaps between children from low income and middle/upper income families (since these moved up as well), it did reduce the gap for those from the very poorest homes.

The same study (26) found that attendance in preschool centres, even for short periods of time each week, hindered the rate at which young children developed social skills and displayed the motivation to engage classroom tasks, as reported by their kindergarten teachers. This slowing of social-emotional growth was strongest for those children who were most disadvantaged. These findings were consistent with those of the National Institute of Child Health and Development (NICHD) study of early childcare and children's development prior to school entry in the US (124). That study compared any type of care to remaining in parental care. The NICHD study highlights the strength and relative independence of quantity, quality and type of childcare as well as the importance of parenting and the home environment, as did the British EPPE study described earlier.

Cognitive development in pre-reading and maths skills is stronger when children enter preschool between the ages of two and three years with the benefits overall being greater than for those entering before two or after three years of age. The pace of social development, however, on average is slower the earlier a child enters preschool. Children who for example enter non-parental centre-based care before the age of one display a marked lag in social development (0.29 SD) but this is still smaller than that of children of a depressed parent (0.35 to 0.70 SD).

Findings suggest that full-day programmes may be a wise investment for children who are particularly disadvantaged 'who gain cognitively from more intensive preschool but don't seem to show strongly negative behavioural consequences associated with additional hours' (26). For children of middle or higher SES or income half-day programmes may suffice since 15 to 30 hours per week appears to be of benefit whilst more than 30 hours shows a taper-off of cognitive benefits and intensification of negative social-emotional effects.



Appendix 4: Selected examples of local programmes providing child and/or parenting education and support

A review of the effectiveness of interventions to address health inequalities in the early years commissioned by the Scottish Government and published in July 2008 (12) contains a section on parenting education and support. The information in this section draws on that review and on the review carried out by a team from Greater Glasgow Health Board in 2004 (125). It also includes information gathered during key informant interviews in mid to late 2009.

A range of parent education initiatives is available in Scotland with the central belt being better served than the rural areas. Delivery is by a variety of methods, with group work being the most common. Services are delivered by professional groups including health visitors and midwives, and also by parents and volunteers. Besides the standard health visitor support, the major programmes operating in local areas in Scotland are discussed below.

Mellow Parenting

Mellow Parenting is a 14 week, one day a week group designed to support families who have relationship problems with their infants and young children. Personal support for the parents is combined with direct work with parents and children on their own parenting problems. The programme was devised to meet the needs of 'hard to reach' families, especially where behavioural problems are compounded by family difficulties such as parental mental illness, social isolation, domestic violence, and parental literacy problems. In an unpublished review of the evidence base of parenting education programmes in Glasgow, two studies evaluating the Mellow Parenting programme indicated that there were improvements in parent-child interaction, parental child centredness, mother's mental health and child behaviour problems. Unfortunately the research design did not include a control group and, like many of the parenting education and support studies, lacked longer term follow up. Christine Puckering, responsible for developing the programme, was also the lead author on both studies which may have introduced bias. On the positive side, this programme was developed for and applied in deprived communities in Scotland.

The Child Development Programme

The Child Development Programme (CDP) was developed in 1979 by Dr Walter Barker at the School of Applied Social Studies, University of Bristol, and the programme covers 26 areas of Britain, including one in Lanarkshire, Scotland. Evaluations of the original programme by Barker (in 1992 and 1994) are available for purchase on the CDP website but fall out with the time period for the literature review. No version of these internal evaluations could be found in journal publications or any other freely available reports. They claimed improvements in child health, and reductions in physical abuse and registration on the child protection register. The **First Parent Health Visitor Scheme** is offered to first time parents from deprived areas, under the CDP. An external evaluation (47) of this scheme is included in the literature review.

The Community Mothers Programme

The Community Mothers Programme which was initiated in Dublin in 1983 is now operational throughout Ireland and some parts of the UK. The Scottish version, Community Mums Scotland, is a registered charity operating in Levenmouth and other areas of Fife. The programme utilises experienced volunteer mothers to provide support to mainly first-time parents in child rearing. The Community Mothers Programme is also included in the literature review (46).

Home-Start

Home-Start is a volunteer home visiting programme initiated in 1973 and operational in England, Wales, Northern Ireland and Scotland. Trained volunteers who must have experience of being parents offer regular support, friendship and practical assistance to families under stress in their homes. Descriptive evaluations of this programme are available and summarised in the Scottish Government review (12) on effectiveness of interventions in the early years. No evaluation with control groups could be found in any published journal. One evaluation with a control group is published on the Joseph Rowntree Foundation (which supports the project) website (126). One child outcome, the maternal-report Brief Infant-Toddler Social and Emotional Assessment scale (called the BITSEA), was measured at baseline and follow up but the sample sizes were small with only 30 in the intervention and 19 in the control groups at the elevenmonth follow up (hence not meeting the inclusion criteria for the literature review). The improvement found in the intervention group was not statistically significant.

First Steps Project

Part of the Family Change Project in South Lanarkshire, this service provides intensive support to young first time mothers in their own homes. No controlled evaluations of this intervention could be found.

Family Project

This programme, currently operating in Fife and funded by Fairer Fife, offers intensive midwife support to 'looked after young people' from 10 weeks pregnancy through to 28 days after delivery. The targeted intervention is nested within the mainstream service and women in need of the service are identified when booking for routine antenatal care. This programme has been subject to an evaluation without control groups but outcomes were compared to baseline statistics. There are encouraging results with breastfeeding increasing from 2% to 18%, increased referrals for smoking cessation and appropriate partner agencies, support and training of teenagers, and use of resources for healthy infant development (127).

Veritus/Family Caring Trust and NCH

Although studies do exist which have evaluated these programmes, there is insufficient information on what the programmes actually entail and longer term follow up is lacking. **Handling Children's Behaviour** is a course run by the NCH which has been widely used in Glasgow. The course is an 8-week positive parenting programme aimed at parents of children age 2–8 years for whom behaviour is seen as a problem. The course has been available to parents in and outside of the Sure Start areas. No evaluations conducted on this course or its application, were identified.

Other services which exist are **OK to Ask** and **Parent Information Points.** OK to Ask is a telephone helpline for parents which provides an initial listening ear and then, as necessary, can make referrals to participating partners. An evaluation of the pilot was done in 2006–7 which indicated that the service was welcome but its nature and purpose had not been clarified. Parent Information Points are single two hour sessions in schools designed to provide parents with information about local support agencies for them and their children. Parents who came were satisfied with the information received but attendance was poor.

Literacy projects

The Early Intervention Project launched in 1997 under the previous administration with funding of over £50 million allowed authorities to improve services and purchase resources aimed at improving literacy and numeracy in Scotland. West Pilton, Craigmillar and Wester Hailes were some of the areas where targeted reading projects were implemented. It was not possible to identify any experimental or quasi-experimental evaluations of these projects or any comparative results after the additional investment.

PILOT PROGRAMMES IN SCOTLAND

Nurse-Family Partnership

The Nurse-Family Partnership (NFP) is a licensed programme developed 30 years ago in the USA by Professor David Olds at the University of Colorado. The programme focuses on improved outcomes across three areas: improving antenatal health; enhancing child development and school readiness; and linking the family to wider social networks and employment. In the US, large scale clinical trials have reported the programme to effect significant and consistent improvements in the health and wellbeing of the most disadvantaged children and their families in both the short and long term. Benefits include: improved school readiness; fewer subsequent pregnancies; better prenatal health; reductions of between 50% and 70% in child injuries, neglect and abuse; and increases in father's involvement.

In England the NFP is the focus of a joint Department of Health/Department for Children, Schools and Families project that is testing a model of intensive, nurse-led home visiting for vulnerable, first time, young parents. NFP-trained nurses visit parents up to fifty times, from early pregnancy until the child is two years old, aiming to build a close, supportive relationship with the whole family and guiding mothers to adopt healthier lifestyles, improve their parenting skills, and become self-sufficient. The programme, initially piloted at ten sites, is now running at 50 sites, across a third of the Primary Care Trusts in England, with a £30 million investment. The programme is voluntary and has been taken up by 90% of the families that have been offered it. The delivery of the NFP programme is being evaluated by Birkbeck College, London. The evaluation, due to be completed in 2009, will focus on implementation, deliverability, take-up and costs while looking at the short-term impact on mothers' and children's health.

In Scotland the first test of the NFP is in Edinburgh City Community Health Partnership. There are currently six nurses who will have a caseload of up to 25 clients, since this is the maximum number per nurse stipulated by the programme. There is one supervisor who has a minimum caseload too. The test will be evaluated, looking at quantitative data (similar to that in the formative evaluation of the first 10 sites in England which is also a requirement of the licensing agreement), and wider qualitative data looking at what makes this programme different for nurses and clients, and how any learning can be shared more widely with universal services. As this site is being fully funded by Scottish Government, the nurses and supervisor are in addition to the existing workforce. If the test is successful, there is an opportunity to test on a larger scale. Although the licensing agreement with David Olds requires a randomised controlled trial, it may not be deemed necessary for Scotland since the outcomes of the randomised controlled trial in England may be regarded as sufficient evidence to justify further expansion.

It is not clear whether, should the NFP eventually be rolled out, the minimised caseload will be maintained (which would require a substantial increase in staff) or if this will only occur for nurses (or health visitors) with high risk case loads. If it is the latter, then the eventual net programme effect of minimising the caseload of certain nurses/health visitors (to remain true to the NFP) on the remaining nurses/health visitors and their workload would need to be measured.

The 2008 review of the effectiveness of interventions to address health inequalities in the early years commissioned by the Scottish Government (12) reviewed three randomised controlled trials of the FNP described in six peer-reviewed, published studies(21, 81-84, 128) which showed a major impact on life outcomes for socioeconomically deprived mothers and their children in the US. Children of intervention mothers were less likely to receive health care for injuries and accidental ingestions in the first two years of life. Although there was no significant effect on children's behavioural problems at age two years, a lower percentage of children of nurse-visited mothers exhibited severe behavioural problems at the age six follow up. The US study that included a 15 year follow up found the children from the intervention group experienced fewer arrests and incidents of child abuse and neglect. Intervention mothers experienced

fewer arrests and convictions, spent less time on welfare and had fewer subsequent births. Visits from trained paraprofessionals did not achieve the same effects as the nurse-visiting programme with its intensively trained nurses. These results are likely not directly transferrable to the UK since the control groups in the US (who received no visits) would be quite different to the control groups in the UK where health visiting occurs routinely and there is universal free access to the National Health Service, including GPs. Olds either conducted or was involved in all of the above randomised controlled trials, and remains closely involved in the current UK pilots.

Parents As (First) Teachers

This programme, which originated in the US and discussed in Appendix 3 (cluster E), is currently being piloted at the Lochside Children's Services Centre in Dumfries and Galloway. An evaluation is planned but no details of the timing or nature of the evaluation are available yet.

Play@home

Play@home originated in the Waikato region, New Zealand and was adapted for use in Fife through a partnership between Fife Council Education Service and NHS Fife. It consists of three books; the baby book for children from birth to one year, the toddler book for children from one to three years, and the preschool book for children from three to five years. Parents of all new babies are offered the first book by their health visitor, the second book is posted directly to the parents' home around the child's first birthday and the third book is issued when the child enrols in nursery. Parents moving from another area have to request copies from their local health visitor. The programme aims to strengthen the relationship between parents and children to develop their self esteem and give them confidence to try new activities. It encourages parents to serve as role models and establish daily exercise routines early in childhood, thus encouraging children's enjoyment of physical activity.

The Scottish Government is supporting a three-year pilot project of play@home across the whole of Scotland funded by NHS Health Scotland. The programme has been introduced to Ayrshire, Highland, Orkney, Shetland, Argyll and Bute, Renfrewshire, Moray, Perth and Kinross, as well as parts of Glasgow, Edinburgh, Falkirk and Midlothian. The roll-out of this programme took place before an evaluation was done. The evaluation, which has not yet commenced, is only due to be completed in March 2011.

UNIVERSAL RESOURCES

Ready Steady Baby

This publication is provided to all pregnant women in Scotland and gives information on pregnancy, labour, delivery and childcare. The online version of this book can be found at www.readysteadybaby.org.uk

Bookstart

Bookstart in Scotland is funded by the Scottish Government and sponsored by 25 publishers and Red House Books to provide free packs of books to children aged birth to three. Working through locallybased organisations, Bookstart gives the gift of free books to all Scottish children at around eight weeks, 18 months and three years old, along with guidance materials for parents and carers, aiming to foster a love of books and make suggestions for a range of fun activities. Information on Bookstart can be found at http://www.bookstart.org.uk/show/feature/Home/Bookstart-Scotland.

Websites

Encyclopedia on Early Childhood Development

http://www.child-encyclopedia.com/en-ca/home.html

The California Evidence-based Clearinghouse for Child Welfare http://www.cachildwelfareclearinghouse.org/

http://cochrane.co.uk/en/clib.html

The Cochrane Library

Coalition for Evidence-Based Policy

http://coalition4evidence.org/wordpress/?page_id=18

Scottish Public Health Observatory

http://www.scotpho.org.uk/profiles/

The Campbell Collaboration

http://www.campbellcollaboration.org



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