



Early Childhood Development (ECD) Literature Review

August 13, 2014

**Prepared for the Trail Area Health & Environment Committee
By Michele Wiens, Human Early Learning Partnership, UBC**

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If you would like more information on this project, please contact us at (250) 368-3256.

EXECUTIVE SUMMARY

Early Childhood Development (ECD) Literature Review

(Factors that influence early childhood development, home visitation and community-based collaborative programs, as well as the features of those programs or interventions that promote health equity)

August 13, 2014

Prepared for the Trail Area Health and Environment Committee (THEC)

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EXECUTIVE SUMMARY: Early Childhood Development (ECD) Literature Review

In 2013, the Trail Area Health and Environment Committee (THEC) contracted the Human Early Learning Partnership at UBC to undertake a scoping review of the literature related to early childhood development. The THEC wanted to ascertain whether more could be done at a family or community level to help improve early childhood development (ECD) and young children's health outcomes in the population and thereby create resilience or protection, or offset in some way the potential negative impacts from their exposure to low levels of lead.

The review identifies and describes evidence-based information about the factors that influence early childhood development, the benefits and effectiveness of in-home visitation and community-based collaborative programs, as well as the features of those programs or interventions that promote health equity. Results are presented with respect to: (i) evidence-based papers on healthy child development, home visiting, and community-based collaboration, and (ii) programs, themselves, featuring home visiting and community-based collaboration. There is no formal assessment of the quality of the literature but the review includes key publications for the topics covered and the majority of articles are systematic reviews.

With respect to **factors that influence ECD**, a bank of literature exists outlining significant ECD factors and providing strong evidence supporting a number of practices and programs. The review highlights ECD influences in eight categories: *health and safety; education; material well-being, equity; family and peer relationships; participation; subjective well-being; behaviours and risks; and environment.*

With respect to **home visitation programs** and their role in ECD, evidence is reported by nine domains in which programs aim to improve outcomes: *general; child development and school readiness; child health; maternal health; positive parenting practices; reductions in child maltreatment; reductions in juvenile delinquency, family violence, and crime; low income, disadvantaged mothers, families; and teen moms, at-risk moms.*

There are a number of home visitation interventions available for which there is strong or reasonable evidence of effectiveness. Generally, programs that are most effective are provided by professionals or well-trained para-professionals; are tailored to local social and cultural conditions; have a comprehensive, intensive, rigorous approach (with a theoretical framework) that can be sustained over time with fidelity; include more frequent visitation (for at-risk families); and demonstrate effective collaboration between program staff, parents, and the community.

With respect to **community-based, collaborative interventions** and their role in ECD, the literature provides support for the development of collaborative partnerships. Multi-strategy approaches, especially those that incorporate community development, coalition building and multi-sectoral collaboration, appear to be more effective than single strategies. There is some evidence that local partnerships delivering environmental interventions result in health gain.

With respect to **features of interventions that may promote health equity or protect against increased inequities**, the common elements of programs that promote aspects of health equity appear to be collaboration, sustained funding, and leadership. There is evidence that program models that build relationships across family, school, and the community can improve outcomes for low income and

socially or culturally marginalized families. Another important feature is for programs to employ a health equity and social determinants of health approach, e.g., focusing on poverty reduction, early environment initiatives, neighbourhood factors, and coordination across sectors.

In addition to compiling the literature on interventions, the review serves to consolidate intervention resources, of which the online searchable portals (repositories) of interventions may be particularly useful to ECD staff involved in program and service development.

To use this document further, the bibliography will serve as an excellent resource for obtaining detail on ECD factors and interventions. As funders and groups plan collaborative ECD initiatives, this document, along with the electronic portals identified, will be an important reference tool to pinpoint relevant models of evidence-based programs, best practices, and “promising practices” for which evidence is growing.

SUMMARY

Factors Influencing Early Childhood Development (ECD)

August 13, 2014

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SUMMARY: Factors Influencing Early Childhood Development (ECD)

A bank of literature exists with respect to **factors that influence ECD**, outlining significant factors and providing strong evidence supporting a number of practices and programs.

The Harvard report (2010), “*The foundations of lifelong health are built in early childhood*”, provides a summary of the diverse influences on early childhood development as well as a framework for action.

¹The foundations of lifelong health refer to three domains of influence that establish a context within which the early roots of physical and mental well-being are either nourished or disrupted:

- *A stable and responsive environment of relationships. This domain underscores the extent to which young children need consistent, nurturing, and protective interactions with adults that enhance their learning and behavioural self-regulation as well as help them develop adaptive capacities that promote well-regulated stress response systems.*
- *Safe and supportive physical, chemical, and built environments. This domain highlights the importance of physical and emotional spaces that are free from toxins and fear, allow active exploration without significant risk of harm, and provide supports for families raising young children.*
- *Sound and appropriate nutrition. This domain emphasizes the foundational importance of health-promoting food intake.*

The literature review highlights ECD influences according to eight categories based on a published framework of child and youth health and well-being indicators²: *health and safety; education; material well-being, equity; family and peer relationships; participation; subjective well-being; behaviours and risks; and environment.*

Reviews were not evaluated for quality, however some general statements can be made, although these may be well understood in the field of ECD. Each general statement below relates to the categories listed above, respectively:

1. *Health and safety:* Vital parenting practices include such elements as responsiveness, maternal-infant interaction, breastfeeding, father’s involvement, nutritional food choices, physical activity, and many more.
2. *Education:* Family literacy, language and numeracy interventions have a large impact on children’s learning, health, and development.
3. *Material well-being, equity:* Material circumstances can exert a strong influence on children’s well-being, and elements such as housing and neighbourhood can help build an important foundation for a child’s life.
4. *Family and peer relationships:* Infant-mother/father relationships and children’s relationships with family and peers are key to their well-being.
5. *Participation:* Children’s participation in after-school programs and activities can contribute to healthy development in physical, social, and emotional realms.
6. *Subjective well-being:* Poverty, trauma, and inadequate treatment impact children’s social, emotional and mental health.

¹ Reference 44, SECTION V, REFERENCES (Main Document)

² References 39 and 40, SECTION V, REFERENCES (Main Document)

7. *Behaviours and risks*: Physical activity and healthy eating are examples of healthy behaviours that contribute to children's well-being, while risky behaviours such as substance abuse and aggression can have a negative effect on children's health and well-being.
8. *Environment*: Environmental agents such as exposure to air pollution, persistent organic pollutants, heavy metals, second-hand smoke, etc., are detrimental to children's development. Although relationships between measures of natural space and positive emotional well-being are weak and lack consistency, modest protective effects on health have been observed in small cities.

Some key systematic reviews stood out with regard to their contribution to broadly answering the questions regarding factors that influence healthy ECD. For example, Evangelou et al.'s (2009) summary of the literature pertaining to early years learning and development is a comprehensive review of evidence in respect to the process of development for children and best supportive contexts for children's early learning and development.³

Readers wishing to utilize this literature review to further their understanding of ECD factors are encouraged to consult the main document.

³ Reference 42, SECTION V, REFERENCES (Main Document)

SUMMARY

Benefits and Effectiveness of Early Childhood Development (ECD) Home Visitation Programs

August 13, 2014

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SUMMARY: Benefits and Effectiveness of ECD Home Visitation Programs

Generally, home visiting is one of several service strategies embedded in a comprehensive, high-quality early childhood system that promotes maternal, infant and early childhood health, safety and development; strong parent-child relationships; and responsible parenting among mothers and fathers. In this synthesis of home visiting literature, information has been extracted primarily from systematic reviews. Where the literature is scant with respect to systematic reviews or other evidence reviews, randomized controlled trial evidence is reported where available.

With respect to **home visitation programs** and their role in ECD, evidence is reported by nine domains in which programs aim to improve outcomes: *general; child development and school readiness; child health; maternal health; positive parenting practices; reductions in child maltreatment; reductions in juvenile delinquency, family violence, and crime; low income, disadvantaged mothers, families; and teen moms, at-risk moms.*

There are a number of interventions available for which there is strong or reasonable evidence of effectiveness.

1. *General*: There is some evidence to suggest a beneficial impact of home visiting on measures of intellectual development in children; mental health and physical growth; breastfeeding; children's diets; detection and management of postnatal depression; improvement in maternal employment, education; nutrition and other health habits.
2. *Child development and school readiness*: There is overall benefit of home visiting programs on school readiness and child development outcomes. Home visiting programs that promote high quality parent-child relationships and combined with high-quality early education programs are most likely to result in better school readiness outcomes for children.
3. *Child Health*: Home visiting programs have provided significant improvements in reduced incidence of low birthweight and they can help increase mothers' nutritional knowledge and confidence. There is sufficient evidence that multi-faceted in-home interventions (e.g., home environmental assessment, education) for asthma are effective.
4. *Maternal health*: There is limited evidence that home visiting programs impact maternal depression; some that serve low income pregnant women at-risk for postnatal depression appear promising.
5. *Positive parenting practices*: There is strong evidence that home visiting programs help promote positive parenting practices and mother-infant interaction. Parenting interventions are effective in reducing unintentional child injury, and there is fairly consistent evidence that they also improve home safety. This evidence relates mainly to interventions provided to families from disadvantaged populations.
6. *Reductions in child maltreatment*: There is mixed evidence for the performance of childhood maltreatment programs, although evidence shows the potential for positive results among high-risk families, however not in the context of Aboriginal communities.
7. *Reductions in juvenile delinquency, family violence, and crime*: There is evidence of long-term effects of nurse home visiting on children's criminal and antisocial behavior.
8. *Low income, disadvantaged mothers, families*: Postnatal home-visiting programs show benefits for socially disadvantaged mothers and their children.
9. *Teen moms, at-risk moms*: There is evidence that home visiting for moms of pre-term infants improves parent-infant interaction and pre-natal care, parental knowledge, skill development

and problem solving, and social supports, while there is limited evidence regarding the outcomes of infant development, morbidity, birth weight, gestational age, abuse/neglect, and growth/nutrition. There is insufficient evidence to recommend the routine use of home visits for pregnant or postpartum women with a drug or alcohol problem.

Generally, programs that are most effective are:

- i. provided by professionals or well-trained para-professionals,
- ii. tailored to local social and cultural conditions,
- iii. ones with a comprehensive, intensive, rigorous approach that can be sustained over time with fidelity,
- iv. ones with more frequent visitation (for at-risk families), and
- v. ones where there is effective collaboration between program staff, parents, and the community.

In addition to compiling the literature on home visiting interventions, this review serves to consolidate intervention resources, of which the online searchable portals (repositories) of interventions may be particularly useful to ECD staff involved with home visiting program and service development. The document entitled “Appendices” is also a wealth of information, containing over 400 citations on specific programs and abstracts of key research papers. The program citations are footnoted in the main document in the section (i.e. domain) within which their program aims to achieve outcomes. Users of this document may want to search specific outcome domains to identify programs of interest as well as comments regarding effectiveness.

SUMMARY

Benefits and Effectiveness of Community-based Collaborative Early Childhood Development (ECD) Interventions

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SUMMARY: Benefits and Effectiveness of Community-based Collaborative ECD Interventions

Community-based collaborative interventions involve partnerships between early childhood organizations, practitioners, government (municipalities, regional districts, provincial), parent groups, researchers, etc., in delivering programs to children, parents, and families.

With respect to community-based, collaborative interventions and their role in ECD, the literature provides support for the development of collaborative partnerships.¹ Regarding such programs once established, there tends to be lack of research and limitations in the research methodology to be able to draw strong conclusions.

Multi-strategy approaches, especially those that incorporate community development, coalition building and multi-sectoral collaboration, appear to be more effective than single strategies. Enabling factors have been cited as: a powerful shared vision of the problem to be addressed and what success would look like in solving it; strong relationships and an effective mix of partners; leadership; adequate, sustainable and flexible resources; and efficient structures and processes to do the work of collaboration. With respect to the research on the development of multi-sectoral collaborations designed to support early childhood development in rural communities, similar enablers for success were identified: skills, knowledge and resources of internal and external leaders.

Early childhood intervention programs have a greater impact when there is effective collaboration between program staff, parents, and the community. Program models that look to build relationships across the family, the school, and the community can improve outcomes for low income and socially or culturally marginalized families.

Integrated family and child centres are seen as catalysts to facilitate networking of the family literacy environment that can ultimately help create more literate communities. Child and family hubs can strengthen children's social capital in those communities with few social facilities. There is some evidence that local partnerships delivering environmental interventions result in health gain, although more evidence is needed. Children's participation in consultation has become an important element of planning and community development strategies of government and community organizations.

This review has catalogued intervention resources, of which the online searchable portals (repositories) of interventions may be particularly useful to ECD staff involved with community-based collaborative program and service development. The bibliography of the Appendices document is also a wealth of information, containing over 400 citations of specific programs. Key program citations are footnoted in the main document on pages 53 and 54. Users of this document may want to search specific portals² to identify programs of interest as well as comments regarding effectiveness. These resources are useful starting points for someone interested in developing a community-based collaboration, in addition to the factors in Section 1 and the outcome domains in Sections 2 and 3.

¹ For relevant references, see References 188-195, SECTION V, REFERENCES (Abridgement), and References 97, 101, 103, 395-422, SECTION V, REFERENCES (Main Document).

² Key Canadian sources of best-practice programs include the maternal and child health portal of the Public Health Agency of Canada and the Health Innovation Portal of the Health Council of Canada. In the US, the Healthy Communities Institute support several state and county best practices portals which are populated by an impressive number of programs. The Eurochild publication by Williams (2012) is a useful compendium of inspiring practices incorporating initiatives across Europe.

SUMMARY

Features of Early Childhood Development (ECD) Interventions that Promote Health Equity

August 13, 2014

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SUMMARY: Features of ECD Interventions that Promote Health Equity

The theory that family poverty adversely affects children's health, intellectual capabilities, academic achievement, and behaviour is well-documented.¹ Childhood disadvantages have lasting negative impacts on children's health and well-being. Various policies and interventions can attenuate poverty's negative influence on child development.

In considering equity in health, Whitehead and Dahlgren, in a 2006 World Health Report², discussed ten principles for policy action:

1. *Policies should strive to level up, not level down*
2. *The three main approaches to reducing social inequities in health are interdependent and should build on one another: focusing on people in poverty only, narrowing the health divide and reducing social inequities throughout the whole population*
3. *Population health policies should have the dual purpose of promoting health gains in the population as a whole and reducing health inequities*
4. *Actions should be concerned with tackling the social determinants of health inequities*
5. *Stated policy intentions are not enough: the possibility of actions doing harm must be monitored*
6. *Select appropriate tools to measure the extent of inequities and the progress towards goals*
7. *Make concerted efforts to give a voice to the voiceless*
8. *Wherever possible, social inequities in health should be described and analysed separately for men and women*
9. *Relate differences in health by ethnic background or geography to socioeconomic background*
10. *Health systems should be built on equity principles*

In terms of the **features of interventions that may promote health equity or protect against increased inequities**, common elements of programs that promote aspects of health equity appear to be collaboration, sustained funding, and leadership. There is evidence that program models that look to build relationships across the family, the school, and the community can improve outcomes for low income and socially culturally marginalized families. Another important feature is for programs to employ a health equity and social determinants of health approach, e.g., focusing on poverty reduction, early environment initiatives, neighbourhood factors, and coordination across sectors.

To better understand the nature and extent of inequities, 'equity proofing' or health equity audits may serve as tools.³ Health equity tools have been summarized by the Equity Lens for Public Health project at the University of Victoria: <http://www.uvic.ca/research/projects/elph/>.

The information on health equities is distributed throughout the document in the sections for which there is literature related to equity issues. Readers wanting to use this document to obtain details of programs that feature equity components may wish to refer to the intervention topics of interest in Sections 2 and 3.

¹ Reference 187, SECTION V, REFERENCES (Main Document)

² Reference 423, SECTION V, REFERENCES (Main Document)

³ For more on this, please see BC Ministry of Health's Core Programs Evidence Review "Equity Lens" (e.g., The Health Equity Audit and Equity Lens sections p. 28-29, with table) as useful resources. See Reference 424, SECTION V, REFERENCES (Main Document).

ABRIDGEMENT

Early Childhood Development (ECD) Literature Review

(Factors that influence early childhood development, home visitation and community-based collaborative programs, as well as the features of those programs or interventions that promote health equity)

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ABRIDGEMENT: Early Childhood Development Literature Review

PREFACE

This literature review explored the research on requested early child development (ECD) topics, specifically the factors affecting healthy early child development, the benefits and effectiveness of in-home visiting and community-based collaborative initiatives, and the features of ECD interventions that promote equity of outcomes.^a As per the terms of reference, this review does not attempt to speak to, describe, or evaluate programs within Trail or other communities. Some evaluative comments emerge in this review; it should be noted that any such statements come from the literature itself and not from an assessment carried out by the authors of this review. Any evaluative comments should be considered within the context of the section within which they appear and attributed to the researcher(s) of that work.

ABRIDGEMENT

The Trail Area Health and Environment Committee (THEC) has a goal, approved through community consultation in 2010, to reduce the average blood lead level for children 6 to 36 months in Trail to 4 µg/dL by 2015.¹ THEC seeks to ascertain whether more can be done at a family or community level to improve early childhood development (ECD) and children's health outcomes in the population and thereby create resilience or protection, or offset in some way the potential negative impacts from children's exposure to low levels of lead. For this reason, a scoping review of the literature was undertaken to map evidence-based information pertaining to ECD factors, in-home visitation, and interventions aimed at fostering healthy ECD through in-home visits and community-based collaborative programs. Features of community and home visiting programs or interventions that may promote health equity are also of interest. Lead, other heavy metals, and chemical agents are not the focus of this review.

With respect to factors that influence ECD, evidence is grouped by seven categories: health and safety; education; material well-being, equity; family and peer relationships; participation; subjective well-being; behaviours and risks; and environment. In each category, the assembled evidence speaks to the global pool of knowledge and a number of conclusions stand out. For example, in relation to health and safety, responsiveness and appropriate maternal-infant interaction are vital parenting tools with wide-ranging benefits for the child, from better cognitive and psychosocial development to protection from disease and mortality. Interventions are effective in enhancing maternal responsiveness, resulting in better child health and development, especially for the neediest populations.

^a Technically, this literature review could be described as a scoping or mapping review. This type of review provides an assessment of the literature where the aims are to identify the nature and extent of the research evidence and provide an overview of the type, extent, and quantity of research available on a given topic. By 'mapping' or categorizing existing research, this type of literature review can identify themes and trends related to a topic as well as potential research gaps and future research needs. It does not include a formal assessment of the quality of the literature.

With respect to home visitation programs and their role in ECD, evidence is reported by eight domains in which programs aim to improve outcomes: general; child development and school readiness; child health; maternal health; positive parenting practices; reductions in child maltreatment; reductions in juvenile delinquency, family violence, and crime; low income, disadvantaged mothers, families; and teen moms, at-risk moms. Key findings were summarized for each domain. For example, in the domain entitled “low income, disadvantaged mothers”, several systematic reviews conclude that home visiting is considered to be a promising intervention for socially disadvantaged families with young children. Various programs are effective in mitigating various adverse early child experiences, and factors such as parental engagement, agency partnership, etc., play a role in successful program outcomes. Initiatives involving hubs, networks, and coalitions are wide-ranging, and evidence suggests that programs involving collaboration, a good mix of partners, strong leadership, and efficient structures result in better outcomes. Examples of hubs, networks, and collaborative practice from several countries and regions are included.

In contemplating features of home visiting interventions that may promote equity, research has highlighted aspects such as facilitators (e.g., accessibility of courses) and barriers (e.g., parents’ resources, stigma around attending groups, accessibility of venues).

This review summarizes a wealth of information regarding healthy ECD, but to be clear, this review is not intended to be comprehensive in its scope of factors related to healthy ECD, the related evidence base or programs; it is intended to provide an overview of the evidence-based literature and a selection of community-based collaborative programs designed to improve maternal nutrition, breastfeeding attachment, , etc. In this review, evidence is assembled rather than assessed as a way to identify the diverse variety of factors, activities, and programs that contribute to healthy ECD. In addition to presenting a selection of programs tailored to address social, biological, and environmental determinants of children’s health, this review includes evidence-based programs and promising practices related to material well-being, with a focus on low income, socially disadvantaged groups or families at risk. Programs range from home improvement loan programs (Norway), to partnering with bakeries to provide breakfast in schools in low income areas (US), to in-home nutrition interventions on children’s dietary outcomes by relative social disadvantage (US), to toddler fairs for children’s dental and hearing screening for hard-to-reach families (Canada).

Ideally, best practice programs designed for small communities that can be implemented through feasible, collaborative agency are of particular interest in this review. These programs serve to illustrate the benefits of community collaborative initiatives, including in-home visits towards the promotion of healthy ECD. Specific programs are described that could be developed to further promote healthy ECD. Other programs rated as “promising” or “good ideas” and/or implemented at a broader scale (e.g., regionally-administered) are also considered. Generally, home visiting is one of several service strategies embedded in a comprehensive, high-quality early childhood system that promotes maternal, infant and early childhood health, safety and development; strong parent-child relationships; and responsible parenting among mothers and fathers.

For this review, the scientific literature was scoped using select databases available through the University of British Columbia; grey literature was scoped mainly using online portals, resource libraries, and annotated lists. The majority of programs were identified through portals of best practices such as the Public Health Agency of Canada’s Best Practices site² along with a variety of other peer reviewed or scholarly resources.

Synthesis of Findings

Section III

- (1) *Factors that influence children's healthy development (excluding blood lead/heavy metals and chemical agents)*

1A. Health and Safety

With regard to the evidence pertaining to the influence of factors on early childhood health and safety, responsiveness and appropriate maternal-infant interaction foster wide-ranging benefits for the child, and interventions are effective in enhancing maternal responsiveness, resulting in better child health and development especially for the neediest populations.³ Breastfeeding seems to have a small but consistent protective effect for children, e.g., against obesity⁴ and asthma, but not for allergic reaction.^{5,6,7} Breastfeeding education has a positive impact on exclusive breastfeeding rates,⁸ but breastfeeding up to two years of age or beyond does not appear to have an influence on child growth and development.⁹

Improving dental health may benefit child academic achievement and cognitive and psychosocial development,¹⁰⁻¹³ and home visiting components can improve dental literacy.^{14, 15}

Prenatal distress can adversely affect cognitive, behavioural, and psychomotor development^{16,17}; postpartum distress can affect cognitive and socioemotional development.¹⁸ Early intervention with young children and caregivers living with violence provides a significant buffer and appears to be effective in enhancing children's attachment quality.¹⁹ Sensitive parenting is important for positive development in the preschool years and can decrease internalizing problems.²⁰ Father's involvement has an impact on their children's social, behavioural and psychological outcomes.²¹ Paternal depression may have a significant and deleterious effect on parenting behaviors. Maternal employment may have variable effects on pre-school children's health.²² There is preliminary support for the efficacy of strength and resilience based interventions for understanding and promoting positive development in children and adolescents. The Infant Health and Development Program (IHDP) is noted as a proven practice for cognitive development at 24 and 36 months.²³

Childhood injuries have significant impact on child health and interventions to provide information, advice or education about the prevention of unintentional injuries to children have provided mixed results.²⁴ Some evidence suggests that more extensive educational programs (such as health fairs and media campaigns) increase use of protective equipment to prevent childhood injury.^{24, 25} Traffic calming and presence of playgrounds/recreation areas have been consistently associated with more walking and less pedestrian injury.²⁶ The Nurse-Family Partnership is a widely-known evidence-based program designed to address a variety of child health outcomes and it includes an injury prevention component.²⁷ It is listed as a best practice program within the Public Health Agency of Canada portal²⁷ and the HomVEE review.²⁸

Interventions may improve dietary intake and parental attitudes and knowledge about nutrition for children. There is strong evidence in favor of multi-component interventions to increase fruit and vegetable consumption in children.²⁹ Computer-based interventions have been effective in increasing fruit and vegetable consumption; multicomponent interventions and free/subsidized fruit and vegetable

interventions appear to moderately improve fruit intake but have minimal impact on vegetable intake.³⁰ Interventions that target an increase in children's dairy food or calcium intake could potentially increase children's dairy food intake by about one serving daily.³¹

Parents are believed to have a strong influence on children's eating behaviours, but the resemblance appears weak and variable across studies, nutrients, foods and parent–child pairs.³² Few studies have characterized the diets of children under five years of age and linked diet with health.³³

Educational workshops to promote healthy food choices in early childhood education appear to be effective.³⁴ Community-based interventions that provide activities to engage parents may provide added benefit by improving the home food environment.³⁵ Evidence for the effectiveness of food subsidy programs on the health and nutrition of children is lacking.³⁶ Food subsidy programs for pregnant women and children should aim to focus on improving nutritional status in the longer term. In British Columbia, the B.C. Farmers' Market Nutrition Coupon Project is a program involving partnering of farmers' markets with a community agency that works to provide nutrition, cooking, or healthy lifestyle skills building programs to lower income British Columbians.³⁷

There appears to be evidence for prenatal programming of childhood overweight and obesity.³⁸ There is no clear association between the age of introduction of solid foods and obesity.³⁹ Sedentary behaviors have been positively associated with weight status. Interventions to promote physical activity in children show some promise, although the amount of physical activity needed for healthy growth and development is not clear.⁴⁰

Home-based early intervention delivered by trained community nurses has been effective in reducing mean BMI for children at age two.⁴¹ Longer interventions that include parental participation in physical activity seem to have greater success.⁴² There is a moderate level of evidence that a combined diet and physical activity intervention conducted in the community with a school component is effective at preventing obesity or overweight.⁴³

Limited evidence suggests that after-school programs can improve physical activity levels and other health-related aspects.⁴⁴ Single-behaviour interventions may be most effective during these hours.⁴⁵ Active school commuters tend to be more physically active, however, evidence for the impact of active school transport in promoting healthy body weights for children and youth is not compelling.⁴⁶ As for the association of the primary school built environment (e.g., playground availability) and childhood weight, results are inconclusive.⁴⁷ The literature does not show major differences in the physical activity levels between children from rural or urban areas.⁴⁸ Where studied, the suburban built environment appears most conducive to promoting physical activity.⁴⁸ Regarding social network structure and physical activity behaviors, friendship plays an important role in shaping physical activity behaviors.⁴⁹

Active video games increase physical activity levels in children in the short term, but whether they lead to increases in habitual physical activity or decreases in sedentary behavior, the evidence is less clear.⁵⁰ There is not sufficient evidence to recommend them as a means of increasing daily physical activity.⁵⁰ Screen-media use among young children is disproportionately high among children from lower-income families and racial/ethnic minorities, and may have adverse effects on obesity risk.⁵¹ Effective strategies to reduce TV viewing or total screen time among children under 12 years of age include utilizing electronic TV monitoring devices, contingent feedback systems, and clinic-based counseling.⁵²

Physical activity provides children with psychological and social health benefits, such as improved self-esteem, social interaction, and fewer depressive symptoms.^{53, 54} Team sport seems to be associated with improved health outcomes compared to individual activities, due to the social nature of the participation.⁵³ Community sport participation is advocated as a form of leisure time physical activity for children, to improve physical health and to enhance psychological and social health outcomes.⁵³

With respect to other aspects of children's health and safety, behavioural interventions for sleep have not been shown to decrease infant crying, prevent sleep and behavioural problems in later childhood, or protect against postnatal depression.⁵⁵

There is consistent evidence of effectiveness for self-management education and comprehensive home-based interventions for asthma.⁵⁶⁻⁵⁹ Home-based, multi-trigger, multi-component interventions with an environmental focus and which include home visits by trained professionals have been shown to be effective in reducing asthma visits.^{60, 61}

1.B. Education

From early childhood through to late adolescence, education is fundamental to future outcomes of children and young people. In this review, the education domain covers pre-school and primary education and includes programs aimed at improving outcomes in academic achievement, and literacy.

Studies have documented a positive relationship between early care and education programs and child development outcomes.^{62, 63} Early Head Start,⁶⁴ Sure Start,⁶⁵ Better Beginnings, Better Futures,⁶³ and Toronto First Duty⁶⁶ are examples of integrated approaches to early childhood services. Integration has multiple social aims including healthier parenting, work-family balance, community development, promotion of equity and social justice through effective and culturally-competent programming as well as other aims noted previously. Programs show cost effectiveness⁶⁷⁻⁷¹ and evidence indicates that return on public investment in the education for children in poverty or low income families is higher.⁷²

There is robust evidence of the impact of family literacy, language and numeracy interventions on children's learning, particularly in the case of literacy, and these interventions can have a positive impact on the most disadvantaged families. Community-based early childhood literacy programs play an essential role in developing the literacy skills of both pre-school and school-aged children.⁷³ Canadian early literacy organizations do well to support early literacy development in communities.^{74, 75}

In British Columbia, the Vancouver Public Library has adopted the Raising a Reader and the Parent-Child Mother Goose programs.^{76, 77} In the Yukon, Canada, a Dolly Parton Imagination Library has been established to ensure that every child would have books, regardless of their family's income, similar to the intent of this literacy initiative first introduced within East Tennessee.^{78, 79}

Child and parent literacy appear to be associated with important health outcomes.⁸⁰ Good written materials can increase health knowledge, and combining good written materials with brief counseling can improve behaviors.⁸⁰ Parent involvement has a positive effect on children's reading acquisition.⁸¹ Low caregiver literacy is associated with poor preventive care behaviours and poor child health outcomes.⁸²

1.C. Material Well-being

A family's material circumstances can exert a strong influence on children's well-being. Family income and housing are examples of material well-being that can help build an important foundation for a child's life. Lower socioeconomic status is widely accepted to have deleterious effects on the well-being and development of children.⁸³ Housing instability during the first five years of a child's life is significantly associated with increases in attention problems, and internalizing and externalizing behaviour, notably among poor children.⁸⁴ Population-level early interventions such as home visiting and high-quality early child care provide evidence of effectiveness in reducing developmental vulnerability, preventing developmental delay and improving school readiness.⁸⁵

Childhood disadvantage has lasting negative effects on children's health and well-being.^{86,87} Poor children confront widespread environmental inequities.^{88,89} Children in low income households may be exposed to more family instability and they may receive less social support, have less access to books, while the air and water they consume may be more polluted.⁸⁹ Research shows small but significant effects of socioeconomic status on literacy and language, aggression, and internalizing behaviours including depression.⁹⁰ Children and young people describe aspects of family relationships, friendships and neighbourhoods that help to mitigate the impact of disadvantage on their well-being.^{91,92} Communities and advocacy groups can play an important role in promoting healthier environments for children.⁹³

1.D. Family and Peer Relationships

Infant-mother/father relationships and children's relationships with family and peers are key to their well-being. For most infants and children, their family is the main source of security and support which fosters development in many key areas such as social and emotional competence. There is significant association between both parental control and self-regulation in preschoolers.⁹⁴ Parenting programs have the potential to improve the health and well-being of parents and children. Facilitators to engagement in parenting programs include opportunity to learn skills, using trusted or known people to lead the course, meeting others and exchanging, accessibility of the course, well trained deliverers, and barriers include competing demands on parents' time and resources, experiences of group dynamics, stigma and gender issues around attending groups, accessibility of venues.⁹⁵

1.E. Participation

"Participation in community activities provides opportunities for children to learn new skills, build community networks and express their opinions."⁹⁶

After-school time programs where children participate in various activities can contribute to healthy development in physical, social, and emotional realms. Out of school-time programs range from those emphasizing community leadership to sports/arts/music. Evidence of after-school programs is not sufficient to make any policy or programming recommendations, but some areas of promise do exist.⁹⁷ Regular participation in high-quality afterschool programs is linked to significant gains in standardized test scores and work habits as well as reductions in behavioural problems and substance use.⁹⁸ Social competence and cognitive/prosocial behaviour may be tapped through programs such as Big Brothers, Big Sisters, Boys and Girls Clubs of Canada, Cadets, and other mentoring-type programs.

1.F. Subjective Well-being

Subjective well-being draws out how children feel about themselves, others, and their environment. Examples of mental health issues include anxiety, depression or grief and loss. Various factors such as poverty, trauma, and inadequate treatment have been shown to have particular impact children's social, emotional and mental health.⁹⁹ Child anxiety prevention programs indicate that provider type can moderate program effectiveness, while program duration, participant age, gender, and program type (universal or targeted) were not found to moderate program effectiveness.¹⁰⁰ Chronic involvement in bullying is associated with intrapersonal, interpersonal, and academic problems,¹⁰¹ and school bullying has been associated with adverse health and criminal outcomes later in life.¹⁰² Among effective preventive interventions for behavioural and emotional problems of children, three US programs have the best balance of evidence: in infancy, the individual Nurse Home Visitation Program; at preschool age, the individual Family Check Up; at school age, the Good Behaviour Game class program.¹⁰³ Three parenting programs in England and Australia are also worthy of highlight: the Incredible Years group format, Triple P individual format, and Parent Education Program group format."¹⁰³

1.G. Behaviours and Risks

Physical activity and healthy eating are examples of healthy behaviours that contribute to children's well-being. Conversely, substance abuse and aggression are risky behaviours which can have a negative effect on children's health and well-being. Parental and sibling smoking is a strong and significant determinant of the risk of smoking uptake by children.¹⁰⁴ Promising interventions to reduce risk behaviour in adolescents or young adults appear to be those that address multiple domains of influence on risk behaviour, and family-based interventions and combined interventions.¹⁰⁵ School-based interventions have been noted as effective in providing knowledge about substance use.¹⁰⁶

1.H. Environment

Environmental drivers of health are important to elucidate, and linking the environment to adverse health children's health outcomes is critical. There needs to be adequate consideration of children's environmental health. Ongoingly, researchers are identifying statistically significant associations between various environmental agents and health, for example urinary Bisphenol A levels and measures of adiposity in children and adolescents.^{107, 108} Also, there is evidence that the way a child's physical environment is designed, built, and maintained can also significantly affect the risk of disease, disability and injury.^{47, 109-112}

Current epidemiological evidence suggests that early-life exposure to persistent organic pollutants can adversely influence immune and respiratory systems development.¹¹³ Air pollution may cause adverse respiratory health effects in children and adverse pregnancy outcomes, and may contribute to infant mortality in Canada.¹¹⁴ Traffic-related air pollution exposure in a child's first year of life has been associated with attention deficit/hyperactivity disorder symptoms at seven years of age.¹¹⁵

Provision of smoke-free home for children is critical as passive smoking has been implicated in deteriorating cardiovascular status in children.¹¹⁶ Exposure of non-smoking pregnant women to environmental tobacco smoke" reduces mean birthweight and increases the risk of low birthweight, but has no clear effect on gestation or the risk of being small for gestational age.¹¹⁷

In order to reduce children's secondhand smoke exposure, various programs have been developed- for example, STARSS (Start Thinking about Reducing Secondhand Smoke)¹¹⁸ and Smoking? Not in Mama's House!¹¹⁹

The built environment has been identified as a significant determinant of health.^{96, 120} Various programs have been initiated that are intended to address issues of the built environment. Many include green engineering and community designs to encourage active transportation and healthy neighbourhoods. Examples include "Safe Routes to School", "Sunday Parkways", and "Walking School Bus".^{53,54} Larger initiatives include Smart Growth¹²¹ and Child Friendly Cities.¹²² Contemporary strategic planning and urban design should involve children's perspectives so that it is not child-blind.¹²³

Relationships between measures of natural space and positive emotional well-being are weak and lack consistency, but modest protective effects have been observed in small cities.¹²⁴ Positive emotional well-being was more strongly associated with other factors including demographic characteristics, family affluence, and perceptions of neighbourhood surroundings.¹²⁴ Positive outcomes of school-gardening initiatives on children's health and food behavior exist, but there is insufficient evidence of improvement of children's environmental attitude or social behaviour consistently with gardening.¹²⁵ School-community gardens promote site transformation, life skills, community building, food security, school food service, curriculum developments, and infrastructure development.¹²⁶ A review of farmers' markets and community gardens on nutrition-related outcomes was inconclusive due to few well-designed studies.¹²⁷

Growing up in a poor neighbourhood has negative effects on children. Risk of low birthweight, childhood injury and abuse, and teenage pregnancy or criminality double in poor areas. Interventions in underprivileged neighbourhoods can reduce health risks to children, especially in families that lack resources.¹²⁸ Community building and social change involves working to change policies, develop new programs, and expand capacity and partnerships to tackle issues such as affordable housing, sprawl, lack of greenspace, and more.

Synthesis of Findings

Section III

(2) *Family in-home visits aimed at improving early childhood development and children's health outcomes*

Generally, home visiting is one of several service strategies embedded in a comprehensive, high-quality early childhood system that promotes maternal, infant and early childhood health, safety and development; strong parent-child relationships; and responsible parenting among mothers and fathers. Home visiting programs may be established to prevent a range of adverse child health outcomes potentially associated with social disadvantage, while other programs may emphasize 'family wellness', including the cognitive and intellectual development of children, parenting skills and support, positive maternal mental health and use of other health services.¹²⁹

2.A. General (e.g., multi-component programs; target populations, modes of delivery, etc.)

There is good evidence to suggest that home visiting can have an impact in reducing rates of childhood injury, parenting or mother-child interaction.¹²⁹ There is some evidence to suggest a beneficial impact of home visiting on measures of intellectual development in children; mental health and physical growth; breastfeeding; children's diets; detection and management of postnatal depression; improvement in maternal employment, education; nutrition and other health habits.¹³⁰

Home visiting interventions with a comprehensive, intensive, rigorous approach that can be sustained over time with fidelity appear to be more effective than interventions with a narrow range of outcomes.^{129, 131, 132} Programs delivered by professionals produce replicable effects on children's health and development.¹³³ Programs that reach vulnerable or at-risk families may provide more benefit.^{132, 134}

A selection of evidence-based home visiting models include: Child FIRST, Early Head Start-Home Visiting, Early Intervention Program for Adolescent Mothers (EIP), Family Check-Up, Healthy Families America (HFA), Healthy Steps, Home Instruction for Parents of Preschool Youngsters (HIPPI), Maternal Early Childhood Sustained Home Visiting Program, Nurse-Family Partnership (NFP), Parents as Teachers (PAT), Play and Learning Strategies (PALS) Infant, and Infant Health and Development Program.

2.B. Child Development and School Readiness (early education, cognitive and intellectual development)

Home visiting models address child development and school readiness by engaging parents in activities designed to improve child functioning across developmental domains, educating parents about child development and strategies to enhance school readiness (such as literacy activities), promoting positive parent-child interactions, and linking families to center-based early childhood care and education experiences.

The literature indicates overall benefit of home visiting programs on school readiness and child development outcomes.^{135, 136} Home visiting programs that promote high quality parent-child

relationships and combined with high-quality early education programs are most likely to result in better school readiness outcomes for children,¹³⁷ as well as show favourable economic returns.⁶²

2.C. Child Health (birth outcomes, health care, immunizations, healthy nutrition, physical activity, obesity)

Home visiting programs that begin during a mother's pregnancy generally aim to improve birth outcomes by linking mothers to prenatal health care and providing them with information about fetal development. Postnatal programs ensure that children have access to health care, receive immunizations, etc. Some programs also provide information to parents about ways to support physical health, such as the importance of nutritious meals and physical activity.¹³⁸

For children from disadvantaged families, home visiting programs have provided significant improvements in reduced incidence of low birthweight.¹³⁹ There is some evidence to suggest a beneficial impact of home visiting on children's diets,¹²⁹ but home visiting components provided to disadvantaged groups to encourage fruit and vegetable intake for children under five did not show significantly increased overall fruit intake in the short term.⁸⁵ School-based interventions were reported to moderately improve fruit intake but have minimal impact on vegetable intake.¹⁴⁰ There is little evidence that home visiting has an effect on children's current BMI, caries levels or consumption of fruit and vegetables, however, they can help increase mothers nutritional knowledge and confidence.¹⁴¹

There is some evidence that early intervention delivered by trained community nurses to target children's body mass index (BMI) is effective in reducing mean BMI for children at age two.⁴¹ Parent-child relationships are important in explaining childhood obesity (through feeding, eating, play) and home visiting strategies should focus on interactions and influences of parent and child.¹⁴²

With respect to home visiting components aimed at housing interventions to reduce indoor allergens and improve children's health, there is sufficient evidence that multi-faceted in-home interventions for asthma tailored to the individual are effective in controlling asthma symptoms and reducing other measures of asthma morbidity.^{58, 59, 143-147} These interventions include home environmental assessment and education delivered by home visiting.

Randomized, controlled trials appear to show benefit of home visiting programs on utilization of dental services to improve dental literacy and introduce children and their families to dental prevention,^{67, 68} and to reduce early childhood caries in low income populations.¹⁴⁸

Home visiting programs have not been shown to be effective in increasing the uptake of immunization or hospital admission rates.^{129, 149} However there is some evidence that stepped intervention of tracking and case management improves infant immunization status in a population of high-risk urban infants of low socioeconomic status.¹⁵⁰

2.D. Maternal Health (pre- and post-natal, breastfeeding, attachment, self-sufficiency)

Home visiting programs aimed at improving maternal health provide mothers with health information and guidance during pregnancy and after the child's birth.

There is limited evidence that home visiting programs impact maternal depression.¹⁵¹⁻¹⁵⁶ Some visiting programs that serve low income pregnant women at-risk for postnatal depression, integrating mental health interventions into home visiting appears to be a promising approach for preventing postnatal depression.^{157, 158}

2.E. Positive Parenting Practices (parent education and support, family functioning)

Several home visiting programs are designed to promote positive parenting practices. As to the evidence of effectiveness, many programs have demonstrated benefits and statistically significant impact.¹⁵⁹ Home visiting programs that include at least one postnatal visit are associated with improved quality of the home environment and improved parenting.^{130, 133, 160-162}

Parenting interventions, most commonly provided within the home using multi-faceted interventions, are effective in reducing unintentional child injury, and there is fairly consistent evidence that they also improve home safety.¹⁶³⁻¹⁶⁶ This evidence relates mainly to interventions provided to families from disadvantaged populations, who are at-risk of adverse child health outcomes.

2.F. Reductions in Child Maltreatment (abuse, neglect)

Home visiting programs designed to prevent or reduce the incidence of child abuse and neglect generally involve professionals or paraprofessionals who work with parents to improve knowledge, skills, and behaviors that are associated with maltreatment. There is mixed evidence for the performance of childhood maltreatment programs.¹⁶⁷ Some home visiting programs designed to prevent child maltreatment indicate some promise, but there is inconclusiveness about reductions in maltreatment and improvements in child and family well-being.^{168, 169} However, rigorous research indicates that home visiting has the potential for positive results among high-risk families, particularly on health care usage and child development.²⁸

Home visiting is significantly effective as a means of improving parental, child, and maternal outcomes and preventing child abuse and neglect through parenting support, improving mental health and coping strategies, etc.¹⁷⁰ Short-term attachment-based home visit intervention is effective in enhancing parental sensitivity, improving child security, and reducing disorganization for children in the early childhood period.¹⁷¹

In the context of Aboriginal communities and reduction of family violence, there is a low level of evidence for most visiting programs including those involving home visiting for high risk families.¹⁷²⁻¹⁷⁶

2.G. Reductions in Juvenile Delinquency, Family Violence, and Crime

To reduce juvenile delinquency, family violence, and crime, home visiting models may seek to reduce risky parental behaviors by addressing mental health, self-efficacy, and self-sufficiency. Many home visiting program models provide parenting education and parent-child interaction activities to strengthen parents' capacity to manage their children's behaviours and set children on a positive path, apart from juvenile delinquency. The literature provides evidence of long-term effects of nurse home

visiting on children's criminal and antisocial behavior.^{177, 178 177, 178 177, 178 177, 178 177, 178 177, 178 177, 178 177, 178}
^{178 177, 178 177, 178 177, 178177, 178}

The Better Beginnings, Better Futures program operates in eight Ontario communities and is designed to prevent young children in low income, high risk neighbourhoods from experiencing poor developmental outcomes.⁶³ Better Beginnings is listed as a “best practice” model within the Public Health Agency of Canada’s (PHAC) Best Practices portal and it includes child-focused programs to enrich children’s social and academic environments, as well as parent- and family-focused programs for parent support and education.² There are a number of other programs listed in the PHAC Best Practices portal related to preventing violence, such as COPEing with Toddler Behaviour, DARE to be You, Family Thriving Program, Fast Track, etc.

2.H. Low Income, Disadvantaged Mothers, Families

Social disadvantage can have a significant impact on early child development, health and wellbeing.¹⁷⁹ Postnatal home-based support programs may have benefits for socially disadvantaged mothers and their children.^{139, 180, 181} Review of the Healthy Start Visit Program provided evidence that this program was able to make services more accessible to disadvantaged Chinese parents with preschool children.¹⁸² Results indicated significant increase in child cognitive measures, child school readiness, child oral health practices; decreases in child sedentary activities, child home injury, and hospital visits; decreases in parenting stress and child behavior problems and increases in social support.

2.I. Teen Moms, At-Risk Moms

Teen moms, first-time moms, and at-risk moms face various challenges, and home visiting programs may focus on prenatal and postpartum health care for this population, or on providing preventive mental health intervention, etc. Home visiting for preterm infants promotes improved parent-infant interaction, but there is limited evidence regarding the outcomes of infant development, morbidity, abuse/neglect, and growth/nutrition.¹⁸³ More evidence suggests that prenatal home visiting may improve the use of prenatal care, whereas less evidence exists that it improves neonatal birthweight or gestational age.¹⁸⁴

As to the effectiveness of home visiting pre- and postnatally for women with an alcohol or drug problem, there is insufficient evidence to recommend the routine use of home visits for pregnant or postpartum women with a drug or alcohol problem.^{185, 186} But, home visiting programs with more frequent visitation for at-risk families had higher success rates, and in general, programs showed a positive effect on maternal behaviour.¹⁸⁷ Positive program aspects include providing social support, fostering parental knowledge, skill development and problem solving, and connecting parents with community resources.¹⁸⁷

Synthesis of Findings

Section III

(3) *Community-based collaborative interventions aimed at improving early childhood development and children's health outcomes at a population level*

Community-based collaborative intervention involves partnerships between early childhood organizations, practitioners, government (municipalities, regional districts, province), parent groups, researchers, etc., in delivering programs to children, parents, and families.

With community-based collaborative programs, there tended to be lack of research and limitations in the research methodology to draw strong conclusions. As for collaborative partnerships, the literature provides support for their development. Early childhood intervention programs have a greater impact when there is effective collaboration between program staff, parents, and the community.^{188, 189} Program models that look to build relationships across the family, the school, and the community can improve outcomes for low income and socially culturally marginalized families.¹⁹⁰

Local partnerships delivering environmental interventions result in health gain, although more evidence is needed.¹⁹¹ In Ontario, Child Family Centres demonstrate an increasingly coordinated and integrated system of child and families supports.¹⁹² Integrated centres are seen as catalysts to facilitate networking of the family literacy environment which can ultimately help create more literate communities.¹⁹²

Multi-strategy approaches, especially those which incorporate community development/coalition building and multisectoral collaboration, appear to be more effective than single strategies.¹⁹³ Child and family hubs can strengthen children's social capital in those communities with few social facilities.¹⁹⁴ Children's participation in consultation has become an important element of planning and community development strategies of government and community organizations.¹⁹⁵

Synthesis of Findings

Section III

(4) *Features of interventions that may promote health equity or protect against increased inequities*

Regarding health equity, policies should among other things: strive to level up, not level down; focus on people in poverty only, narrow the health divide and reduce social inequities throughout the whole population; tackle the social determinants of health inequities; measure the extent of inequities and the progress towards goals; and give a voice to the voiceless.⁴²³ A health equity and social determinants of health approach can frame many aspects of children's health and development.¹⁴⁰ For example, such an approach in reducing childhood obesity would involve poverty reduction, early environment initiatives, addressing neighbourhood factors, and enhancing coordination.¹⁴⁰ Common elements of developing programs that promote aspects of health equity appear to be collaboration, sustained funding, and leadership.

SECTION IV: DISCUSSION

More than 200 systematic reviews were considered in this scoping review along with almost 500 intervention programs that had home- or community-based components. As a result, this review serves as a thick resource of evidence-based reviews tied to ECD and also provides useful links to online portals to search for evidence-based programs. In conducting the scoping review, some key systematic reviews stood out with regard to their contribution to broadly answering the questions regarding factors that influence healthy ECD, home visiting effectiveness, best practice community-based, collaborative intervention models, and features of programs that promote equity. For example, Evangelou et al.'s (2009) summary of the literature pertaining to early years learning and development is a comprehensive review of evidence in respect to the process of development for children and best supportive contexts for children's early learning and development.¹⁹⁶ Peacock et al.'s (2013) review on the influence of home visiting on disadvantaged populations provides evidence that home visiting by paraprofessionals holds promise for socially high-risk families with young children, and initiating interventions prenatally with high-frequency visits improves development and health outcomes for particular groups of children.¹³⁹ Avellar et al.'s (2013) review provides detailed evidence-based information for programs that serve pregnant women or families with children from birth to age five.¹⁵⁹ In Avellar et al.'s review, the HomVEE team prioritized 35 program models to determine which met established criteria for an evidence-based early childhood home visiting service delivery model.¹⁹⁷ The HomVEE team reported on quality of outcome measures, type of impact (favourable, unfavourable, ambiguous), duration of impacts, replication of impacts, and magnitude of impacts.

Certainly, many other foundational reviews are included and inform the global pool of knowledge in key ECD areas. Various reviews provide evidence for more specific areas, such as Gaylor and Spiker (2012)¹³⁵ and Spiker's (2012)¹³⁶ synthesis of evidence of home visiting programs on school readiness and child development outcomes, in which they concluded that there were positive impacts on young children's development and behaviour. Or, Goyal et al.'s (2013) systematic review in which they reported that home visiting for preterm infants promotes improved parent-infant interaction.¹⁸³ Or, Sellstrom and Bremberg's (2006) review which demonstrated that interventions in underprivileged neighbourhoods can reduce health risks to children, especially in families that lack resources.¹²⁸ Many more studies provide sufficient level evidence for various aspects of ECD and home visiting, although some research gaps exist. For example in considering children's nutrition, multi-component interventions and educational workshops to promote healthy food choices in early childhood education appear to be effective, and community-based interventions that provide activities to engage parents may provide added benefit by improving the home food environment but more research is needed to clarify effective community-based components and nutrition programs.

As for the question of what factors influence ECD other than lead, it is evident that the literature provides a wealth of evidence on social, biological, and environmental determinants. As for the question "What is the evidence for programs that promote ECD?", many promising practices emerged, of which nutrition, healthy eating, and activity programs seemed particularly abundant. Areas of children's health such as physical health, obesity, and nutrition have seen rapid growth in the number of intervention programs. Despite a large number of intervention programs with home- or community-based components for these health areas, the literature does not provide robust evidence of effectiveness for many specific components. The growing number of programs and focus in these areas reflects the increasing obesity trend among children and the strong interest in addressing the health issue through home- and community-based efforts. Review of the literature suggests that home visiting

strategies should focus on interactions and influences of parent and child in targeting obesity and that early intervention delivered by trained community nurses to target children's body mass index (BMI) may be effective in reducing mean BMI.⁴¹ Active school commuting by children may increase their level of physical activity, however evidence for the impact of active school transport or participating in after-school programs in promoting healthy body weights for children is not strong.⁴⁶ Similarly, active video games increase physical activity levels in children in the short term, but whether they lead to increases in habitual physical activity or decreases in sedentary behavior, the evidence is less clear.⁵⁰ The importance of the built environment and “smart”, “age-friendly” city design can exert a strong influence in children’s health. Important steps in fostering healthier environments include creating partnerships in neighbourhood planning, and engaging children and families in planning processes to ensure program and service access.

In considering the evidence for community-based collaborative programs, these programs tended to be fewer in number and, in some cases, lacked a body of evidence. McClure et al. (2005)¹⁹⁸ and Turner et al. (2004; 2005)^{199, 200} reviewed a selection of community-based programs designed to prevent injuries in children (falls, pedestrian injuries bicycle injuries, etc.) and reported that there tended to be lack of research and limitations in the research methodology to draw strong conclusions. With other studies of factors influencing ECD or home visiting interventions, common issues include lack of well-designed studies resulting in evidence that remains inconclusive. For example, McCormack’s (2010) review of farmers’ markets and community gardens on nutrition-related outcomes for children cited insufficient evidence because findings were hampered due to few well-designed studies.¹²⁷ Studies of interventions designed to reduce child maltreatment have not been particularly successful in establishing a strong body of evidence, to the degree that Segal (2012) suggested that evaluation should use a theory-driven approach in evaluating programs as this may decrease the variation in results.¹⁶⁷

With respect to programs or components of programs intended to promote equity or mitigate inequity to pinpoint successful aspects, still further review is required to identify features of interventions that promote health equity or protect against increased inequities. Some wide-ranging evidence of practices involving hubs and networks suggests that this is a promising avenue to pursue.

All in all, a fair amount of evidence is presented in this scoping review with respect to influences on ECD, home visiting components, and intervention programs. This scoping review reveals and presents a multitude of programs that tie with factors affecting healthy child development. Several home visiting programs provide strong evidence for their positive impact on all children and families in the areas of parental education, maternal and child health, for example. Program components and structure have been investigated and a number of items important to program success have been identified such as well-trained program staff, parental engagement, program duration and sustainability, and program development that is multisectoral in nature involving a variety of stakeholders. Benefits have been experienced by socioeconomically disadvantaged children and families as well, with proportionate universality being a best practice offering accessible programs and services to all.^b Best effort was made to review all programs found within portals, compendiums, etc., but as noted in Section II, this scoping review does not claim to be exhaustive in identifying resources. By narrowing on domains and programs of potential interest, this will allow deeper investigation of elements of programs and feasibility of collaboration and implementation in a specific community. By brainstorming goals and anticipated

^b For more on universal proportionality, see the Human Early Learning Partnership’s Proportionate Universality brief, found here: <http://earlylearning.ubc.ca/documents/70/>.

outcomes, and by considering which areas may resonate positively with prospective partners and groups, the way to move forward and work with the evidence can be clarified.

Some issues to consider in relation to this review include: what are current offerings for children and families in the community of Trail, apart from the continuum of services provided by THEP; has there been an environmental scan of what other agencies, organizations, and schools offer; what nutrition and activity programs are in place; does school programming offer after school activities for children and youth; have there been opportunities for children's voice at planning tables with respect to built environment or community design; what child and youth mentoring programs exist within Trail; are there municipal statistics compiled that enable detailed profiling of populations and areas within the community; what do data indicate for body weight of Trail children and their state of physical and mental health; are there community designs enabling safe routes to school; and are there Smart Growth¹²¹ initiatives and/or Child Friendly City²⁰¹ principles in place? Depending on areas of interest of the Trail Area Health and Environment Program with regard to programs and evidence, there can be discussion of how evidence-based interventions may 'fit' goals and community of Trail.

Although there is insufficient evidence regarding some programs, it may of interest to discuss areas that have not had time to accumulate sufficient evidence – e.g., a Munchkinland Discovery Centre²⁰² similar to that established in Parksville/Qualicum, or Lead Free Wheels.²⁰³ If there are evidence-based programs that require community- or municipal collaboration, it may be a future step to consider whether there are government-owned tracts of land that may be reconstituted for community or children's gardens; what government, corporation, and/or agency funding is available for partnership-based initiatives; or a horticultural society that may be open to collaborative ideas to promote food gardens; as examples.

In developing prevention programs and health promotion programs, much work is involved, and hopefully this scoping review serves as a foundational document to highlight best practices and assist pursuit of change to supplement and complement early childhood development activities within Trail.

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MAIN DOCUMENT

Early Childhood Development (ECD) Literature Review

(Factors that influence early childhood development, home visitation and community-based collaborative programs, as well as the features of those programs or interventions that promote health equity)

August 13, 2014

Prepared for the Trail Area Health and Environment Committee (THEC)

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Early Childhood Development (ECD) Literature Review

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PREFACE

This literature review explored the research on requested early child development (ECD) topics, specifically the factors affecting healthy early child development, the benefits and effectiveness of in-home visiting and community-based collaborative initiatives, and the features of ECD interventions that promote equity of outcomes.^a As per the terms of reference, this review does not attempt to speak to, describe, or evaluate programs within Trail or other communities. Some evaluative comments emerge in this review; it should be noted that any such statements come from the literature itself and not from an assessment carried out by the authors of this review. Any evaluative comments should be considered within the context of the section within which they appear and attributed to the researcher(s) of that work.

OVERVIEW

The Trail Area Health and Environment Committee (THEC) has a goal, approved through community consultation in 2010, to reduce the average blood lead levels for children 6 to 36 months in Trail to 4 µg/dL by 2015.¹ THEC seeks to ascertain whether more can be done at a family or community level to help improve early childhood development (ECD) and children's health outcomes in the population and thereby create resilience or protection, or offset in some way the potential negative impacts from children's exposure to low levels of lead. For this reason, a scoping review of the literature was undertaken to map evidence-based information pertaining to ECD factors, in-home visitation, and interventions aimed at fostering healthy ECD through in-home visits and community-based collaborative programs. Features of community and home visiting programs or interventions that may promote health equity are also of interest. Lead, other heavy metals, and chemical agents are not the focus of this review.

With respect to factors that influence ECD, evidence is grouped by seven categories: health and safety; education; material well-being, equity; family and peer relationships; participation; subjective well-being; behaviours and risks; and environment. In each category, the assembled evidence speaks to the global pool of knowledge and a number of conclusions stand out. For example, in relation to health and safety, responsiveness and appropriate maternal-infant interaction are vital parenting tools with wide-ranging benefits for the child, from better cognitive and psychosocial development to protection from disease and mortality. Interventions are effective in enhancing maternal responsiveness, resulting in better child health and development, especially for the neediest populations.

With respect to home visitation programs and their role in ECD, evidence is reported by eight domains in which programs aim to improve outcomes: general; child development and school readiness; child health; maternal health; positive parenting practices; reductions in child maltreatment; reductions in

^a Technically, this literature review could be described as a scoping or mapping review. This type of review provides an assessment of the literature where the aims are to identify the nature and extent of the research evidence and provide an overview of the type, extent, and quantity of research available on a given topic. By 'mapping' or categorizing existing research, this type of literature review can identify themes and trends related to a topic as well as potential research gaps and future research needs. It does not include a formal assessment of the quality of the literature.

juvenile delinquency, family violence, and crime; low income, disadvantaged mothers, families; and teen moms, at-risk moms. Key findings were summarized for each domain. For example, in the domain entitled “low income, disadvantaged mothers”, several systematic reviews conclude that home visiting is considered to be a promising intervention for socially disadvantaged families with young children. Various programs are effective in mitigating various adverse early child experiences, and factors such as parental engagement, agency partnership, etc., play a role in successful program outcomes. Initiatives involving hubs, networks, and coalitions are wide-ranging, and evidence suggests that programs involving collaboration, a good mix of partners, strong leadership, and efficient structures result in better outcomes. Examples of hubs, networks, and collaborative practice from several countries and regions are included.

In contemplating features of home visiting interventions that may promote equity, research has highlighted aspects such as facilitators (e.g., accessibility of courses) and barriers (e.g., parents’ resources, stigma around attending groups, and accessibility of venues).

This review summarizes a wealth of information regarding healthy ECD, but to be clear, this review is not intended to be comprehensive in its scope of factors related to healthy ECD, the related evidence base or programs; it is intended to provide an overview of the evidence-based literature and a selection of community-based collaborative programs designed to improve maternal nutrition, breastfeeding, attachment, etc. In this review, evidence is assembled rather than assessed as a way to identify the diverse variety of factors, activities, and programs that contribute to healthy ECD. In addition to presenting a selection of programs tailored to address social, biological, and environmental determinants of children’s health, this review includes evidence-based programs and promising practices related to material well-being, with a focus on low income, socially disadvantaged groups or families at risk. Programs range from home improvement loan programs (Norway), to partnering with bakeries to provide breakfast in schools in low income areas (US), to in-home nutrition interventions on children’s dietary outcomes by relative social disadvantage (US), to toddler fairs for children’s dental and hearing screening for hard-to-reach families (Canada).

Ideally, best practice programs designed for small communities that can be implemented through feasible, collaborative agency are of particular interest in this review. These programs serve to illustrate the benefits of community collaborative initiatives, including in-home visits towards the promotion of healthy ECD. Specific programs are described that could be developed to further promote healthy ECD. Other programs rated as “promising” or “good ideas” and/or implemented at a broader scale (e.g., regionally-administered) are also considered. Generally, home visiting is one of several service strategies embedded in a comprehensive, high-quality early childhood system that promotes maternal, infant and early childhood health, safety and development; strong parent-child relationships; and responsible parenting among mothers and fathers.

For this review, the scientific literature was scoped using select databases available through the University of British Columbia; grey literature was scoped mainly using online portals, resource libraries, and annotated lists. The majority of programs were identified through portals of best practices such as the Public Health Agency of Canada’s Best Practices site² along with a variety of other peer reviewed or scholarly resources.

SECTION I: INTRODUCTION

The early years lay the foundation of healthy child development and life-long learning.³⁻⁵ With respect to children's early environmental exposures, the history of research on lead neurotoxicity is extensive and evidence of adverse effects at lower and lower levels of exposure continues to grow.⁶ In 2013, Health Canada produced a State of Science report on lead and concluded that "*there is sufficient evidence that blood lead levels below 5 µg/dL are associated with adverse health effects*" and "*additional measures to further reduce exposures of lead to Canadians are warranted.*"⁷ In 2012, the US CDC published a statement on the lack of evidence that any blood lead level (BLL) can be considered to be "safe".⁸ In June 2012 the National Toxicology Program concluded that adverse health effects occur at levels below even 5 µg/dL.⁹

Chronic lead poisoning in children shows a strong association with neurodevelopmental effects such as decreased IQ, attention deficit and impaired motor coordination.^{7, 10} Prenatal lead and cadmium exposure has also shown to influence infant neurodevelopment at 6 months of age.¹¹ In a recent study of early childhood lead exposure on educational test performance among Connecticut schoolchildren, Edwards et al. (2013) showed that the magnitude of decreases in test scores associated with lead indicate important implications of early childhood lead exposure on academic performance at fourth grade.¹² In a 2012 prospective study, Huang et al. reported that low-level postnatal BLLs in children at 2 to 5 years may have delayed effects on neurodevelopment in those at 5 to 8 years.¹³ Limited Canadian data indicate that school drinking water can be an important component of children's overall exposure to lead.¹⁴ Recent research suggests that the relative contribution of lead in water to lead in blood is expected to become increasingly important.¹⁵

Strategies to mitigate the impact of lead include primary prevention of exposure through emissions reduction and secondary interventions such as in-home visitation programs that have education components for lead reduction exposure. Internationally, the World Health Organization manages children's environmental health information and programs, including lead initiatives.¹⁶ In Canada, lead awareness and reduction information is provided through Health Canada.^{17, 18} In the community of Trail, British Columbia, the Trail Area Health and Environment Program provides information and supports at a local level to help prevent lead exposure and promote children's healthy development.¹⁹ In the United States, the Environmental Protection Agency²⁰ and Centers for Disease Control and Prevention²¹ have key roles in lead prevention. Various state and county lead intervention programs have been established, for example the Childhood Lead Poisoning Prevention Program - Community Capacity Project (Milwaukee, IL)²²; the Chronic Lead Poisoning Team Intervention Program (Milwaukee, IL)²³; Lead Safe Babies (Philadelphia, PA)²⁴; the Philadelphia Lead Safe Homes Study²⁵; Childhood Lead Poisoning Prevention (St. Louis, MO)^{22, 26}; the Invest in Children Primary Lead Prevention Project (Cleveland, OH)²⁷; Lead Poisoning and Prevention Program (Hartford, CT)²⁸; Alameda County Healthy Homes (Oakland, CA)²⁹; the Niagara County Childhood Lead Poisoning Prevention Program (Niagara County, NY)³⁰; Community Participatory Lead Reduction Initiative (Grand Rapids, MI)³¹; Girls Take Charge to get the Lead Out (Omaha, NE)³²; and Lead Free Wheels (Ann Arbor, MI).³³ An example of a program internationally is the Lead Reduction Program (Broken Hill, Australia).³⁴

Lanphear, who collaborated with Yeoh et al. (2012) in a systematic literature review of the efficacy of lead hazard controls to reduce children's BLLs,³⁵⁻³⁷ points to the need for effective, evidence-based methods for reducing lead in house dust, soil, water, and consumer products, and notes that trials are

required to establish the most effective intervention for prevention of lead exposure. Primary prevention of exposure is critical, supplemented with evidence-based secondary measures specific to lead. Additionally, healthy child development strategies may include evidence-based early childhood development program components generally to offset environmental challenges that may be present in communities. In earlier research, it was stated also that enriched environments during development may be protective against lead-induced neurotoxicity.³⁸

In the community of Trail, efforts have been successful at lowering BLLs of the most vulnerable population, children aged 6 months to 3 years, from an average of 13 µg/dL in 1989 to about 5 µg/dL today.¹ Trail Area Health and Environment Program (THEP) activities include:^b

- reduction of emissions from the smelter,
- soil testing and remediation,
- primary prevention home visits and education from public health nurses and “healthy homes” program staff,
- children’s blood lead testing and case follow-up support for families (as needed),
- education for families and the community,
- involvement in a community coalition to enhance early childhood development, and
- ecological remediation.

These activities serve as a continuum of interventions from primary to secondary as well as from ecosystem to community to family. The focus of interventions is on primary prevention of children’s lead exposure within a context of helping improve the health and well-being of young children in the community.

The Trail Area Health and Environment Committee (THEC) has a goal, approved through community consultation in 2010, to reduce the average BLL in Trail to 4 µg/dL by 2015.¹ Teck, a lead-zinc smelter refinery in Trail, has an enhanced program to reduce “fugitive” emissions on its site which is anticipated to help in the BLL reduction goal. THEC also seeks to ascertain whether more can be done, at a family or community level, to help improve early childhood development (ECD) and/or children’s health outcomes in the population and thereby create resilience or protection, or offset in some way the potential negative impacts from children’s exposure to low levels of lead. For this reason, a literature scoping review was undertaken to examine: (1) evidence-based information pertaining to factors other than blood lead levels that influence ECD, (2) in-home visiting and community-based collaborative programs aimed at improving ECD and children’s health, and (3) features of those interventions that may promote health equity.^c The goal of the review was to identify the best evidence available, focusing on published systematic reviews. In the absence of systematic reviews, other reviews were considered along with randomized controlled trials in order to gain an understanding of the state of evidence related to factors influencing healthy child development.

^b See Program Diagram at <http://www.thep.ca/pages/about-the-program/> for a visual summary of the program areas.

^c Literature Search Proposal, available upon request.

SECTION II: METHODOLOGY

i. Elements of the Scoping Review

The primary goal of this scoping review of the literature was to locate scholarly journal articles and grey literature with content relevant to early childhood development, interventions, and community-based collaborative programs designed to promote healthy child development. The search included scoping of features of interventions and/or programs that may promote equity. Since systematic reviews and meta-analyses provide strong, evidence-based direction by synthesizing findings in a transparent way and providing a global pool of knowledge, they formed the majority of content of this review. Other reviews and randomized controlled trials were included to supplement topics either where systematic reviews were scant or reviews/trials provided useful additional perspective and evidence. Various background documents were included to contextualize topics.

The underlying aim of the scoping review was to identify papers that may be useful in reporting about healthy child development factors (excluding blood lead/heavy metals and chemical agents); family in-home visits and community-based collaborative interventions aimed at improving early child development and children's health outcomes; and features of interventions that may promote health equity or protect against increased inequities.

Key search statements used to locate articles are provided (Appendix I). Additional terms and combinations were used to fine-tune results. A date restriction, 2000 January -2013 June, was imposed, and English-only material was included.^d The scientific literature was scoped primarily using select databases (Table 1a); grey literature was scoped mainly using online portals, resource libraries, and annotated lists (Table 1b).

Portals included documented and ranked programs ranging from good ideas to evidence-based practices. Best effort was made to review all programs noted in portals, compendiums, etc., although with so many initiatives only a cursory review could be completed to identify and group resources. Too, best effort was made to select programs with community-based collaborative aspects, although some home visiting programs, etc., were included due to best practice ranking, but may not exhibit collaborative components. Where possible, programs promoting equity or targeting inequity were grouped separately but in this review, programs may be included which have equity/inequity components that are not specifically identified and grouped. More review of specific practices may be required to identify equity features or features of interventions that promote health equity or protect against increased inequities.

^d For some European community-based collaborative programs

Table II.a: Databases used to search for scientific literature

<ul style="list-style-type: none"> ➤ <i>Cochrane Database of Systematic Reviews</i> <ul style="list-style-type: none"> • UBC online subscription with full-text access to regularly updated systematic reviews by the Cochrane Collaboration.
<ul style="list-style-type: none"> ➤ <i>Ebsco</i> <ul style="list-style-type: none"> • UBC online subscription with access to approximately 70 databases including Academic Search Complete, Academic Search Premier, CINAHL, ERIC, Family & Society Studies Worldwide, Medline, PSYCInfo and Social Work Abstracts
<ul style="list-style-type: none"> ➤ <i>Google Scholar (and Google)</i> <ul style="list-style-type: none"> • Freely available Internet search engine (http://scholar.google.com) specifically for scholarly journal articles, books, dissertations, and technical reports. Google, itself, provides an additional search tool for grey literature, particularly, and book chapters, misc reports
<ul style="list-style-type: none"> ➤ <i>Health Evidence</i> <ul style="list-style-type: none"> • Freely available portal (http://www.healthevidence.org/) supported by McMaster University for access to 3,185 quality-rated systematic reviews evaluating the effectiveness of public health interventions.
<ul style="list-style-type: none"> ➤ <i>Web of Science</i> <ul style="list-style-type: none"> • UBC online subscription with full-text access sciences, social sciences, arts, and humanities literature and proceedings of international conferences, symposia, seminars, colloquia, workshops, and conventions. This resource was used to locate miscellaneous sources not found in other sources and to extend citation chaining where possible.

Table I.b: Portals, annotated lists, compendiums, and other resources used to search grey literature

<ul style="list-style-type: none"> ➤ <i>Portals</i> <ul style="list-style-type: none"> • Blueprints for Healthy Youth Development. Boulder, CO • Building Blocks. Commissioner for Children and Young People Western Australia • California Evidence-Based Clearinghouse, CEBC4. Los Angeles, CA • Canadian Best Practices – Maternal and Child Health. Public Health Agency of Canada. Ottawa, ON • Health Innovation Portal - Search for Innovative Practices. Toronto, ON: Health Council of Canada. • Healthy Communities Institute (<i>various state and county databases</i>), e.g., <ul style="list-style-type: none"> ▪ Arizona Health Matters - Promising practices online portal ▪ DC Health Matters - Promising practices online portal ▪ Health Matters in San Francisco – Promising practices online portal ▪ Healthy Kern County - Promising practices online portal ▪ Healthy San Bernadino County - Promising practices online portal ▪ Healthy Sonoma - Promising practices online portal • HOME visiting evidence of effectiveness. U.S. Department of Health and Human Services. Washington, DC.

- [National Association of County and City Health Officials](#) (NACCHO) Model Practice Search. Washington, DC
- [Office of Juvenile Justice and Delinquency Prevention Strategic Planning Tool](#). Washington, DC
- [Prevention and Early Intervention Network](#). Dublin, Ireland
- [Promising Practices Network on children, families and communities](#). Alhambra, CA
- [Promising Practices Profiles](#) (no longer updated). Australia
- [Substance Abuse and Mental Health Services Administration \(SAMHSA\) Model Programs](#) - National Registry of Evidence-based Programs and Practices
- [What Works Clearinghouse](#). Washington, DC. U.S. Department of Education

➤ *Resource Libraries, etc.:*

- *Centre for Environmental Health Equity* (<http://www.cehe.ca/children>)
- *Centre of Excellence for Early Childhood Development – online encyclopedia* (<http://www.excellence-earlychildhood.ca/home.asp>)
- *Human Early Learning Partnership (in-house database)*
- *National Collaborating Centre for Determinants of Health* <http://nccdh.ca/resources/library/> and http://nccdh.ca/images/uploads/Environ_Report_EN.pdf
- *National Collaborating Centre for Environmental Health* (<http://nceh.ca> and http://www.nceh.ca/sites/default/files/Community_Planning_Equity_Lens_Aug_2011.pdf)
- *Select government health websites by region/jurisdiction; select not-for-profit health/child development websites by region/jurisdiction)*

➤ *Compendiums, Annotated Lists, etc.:*

- Anglin M. [Literature review: the role of families and communities in building children's literacy skills](#). Toronto, ON: Frontier College; 2008.
- Armstrong L, Flynn RJ. [Summary of evidence-based prevention programs](#). Ottawa, ON: University of Ottawa; 2007.
- Association of State & Territorial Dental Directors (Feb). [Best practice approaches - prevention and control of early childhood tooth decay](#). Sparks, VA; 2013.
- Bamber J, Owens S, Schonfeld H, Ghatge D, Fullerton D. [Effective community development programmes. A review of the international evidence base](#). Dublin, Ireland: Centre for Effective Services; 2010.
- Center for Mental Health in Schools at UCLA. [Annotated "lists" of empirically supported/evidence based interventions for school-aged children and adolescents](#). Los Angeles, CA.
- Child Wellbeing & Child Protection - NSW Interagency Guidelines. [Key prevention and early intervention programs in NSW](#). North Sydney, NSW Government, Family and Community Services.
- Coalition for Evidence-Based Policy. [Social programs that work. What works in social policy? Findings from well-conducted randomized controlled trials](#). Washington, DC.
- Department of Health Promotion and Education. [Strengthening America's Families](#). Salt Lake City, UT: University of Utah.
- Duke Endowment. [Evidence-based programs in North Carolina and South Carolina](#). Charlotte, NC: Duke Endowment; 2008.

- Centre for Effective Services. [Prevention and Early Intervention Initiative in Republic of Ireland and Northern Ireland](#). Dublin, Ireland, CES.
- Glasheim B. [A guide to evidence-based mental health practices for children, adolescents and their families](#). Saginaw, MI: Saginaw County Community Mental Health Authority; 2006.
- Health Council of Canada (2011). [Understanding and improving aboriginal maternal and child health in Canada: compendium of promising practices](#). Toronto, ON,
- Her Majesty's Government (UK). [Early intervention: the next steps](#). London, UK; 2011.
- Howse RB, Trivette CM, Shindelar L, Dunst CJ, North Carolina Partnership for Children Inc. [The Smart Start Resource Guide of evidence-based and evidence: a summary of evidence](#). Raleigh, NC.
- Illinois Criminal Justice Information Authority. [Smarter solutions for crime reduction: an online resource for policymakers and practitioners](#). Chicago, IL.
- Lyn, A. [Middle childhood matters: an inventory of full-week after-school programs for children 6-12 years in Toronto](#). Toronto, ON: Community Social Planning Council of Toronto and Middle Childhood Matters Coalition; 2010.
- Ontario Health Promotion E-Bulletin. [Introducing a series of new Maternal and Infant Health Interventions to the Canadian Best Practices Portal](#). OHPE Bulletin. 2013;796.
- Ontario Physical Health and Education Activities. [Mental health promotion and physical activity. Recommended reading and references](#). Toronto, ON: OPHEA.
- Partnership for Results. [School-based & after school programs for Children](#). Auburn, NY: Partnership for Results; 2005.
- Ramage J. [Early intervention and prevention in family support. Synthesis report. Peer review seminar](#); May 30-Jun 1; Belfast, N Ireland: EuroChild, European Union. European Platform for Investing in Children; 2012.
- Rice et al. (2011). [What works in combating childhood obesity: an anthology of the literature on effective whole-system approaches](#). London, UK: Centre for Excellence and Outcomes in Children and Young People's Services.
- Strode, A. [A summary of best and promising mental health practices for select consumer populations](#). Spokane, WA: Washington Institute for Mental Illness Research and Training; 2003.
- Tully L. [Early intervention strategies for children and young people 8 to 14 years. Literature review](#). Ashfield, NSW: NSW Department of Community Services, Centre for Parenting & Research; 2007.
- U.S. Department of Agriculture. [Childhood obesity: a resource list for educators and researchers](#). Beltsville, MD: National Agricultural Library, Food and Nutrition Information Center; 2013 Jun.
- U.S. Department of Justice, U.S. Department of Health and Human Services. [Evidence-based practices for children exposed to violence: a selection from federal databases](#). Washington, DC: DHHS; 2011.
- Williams A. [Compendium of inspiring practices. Early intervention and prevention in family and parenting support](#). Brussels, Belgium: Eurochild; 2012
- Yannacci J, Rivard JC. [Matrix of children's evidence-based interventions](#). Alexandria, VA: NASMHPD Research Institute, Center for Mental Health Quality and Accountability; 2006 Apr.

Bibliographies of retrieved articles were reviewed, and select authors were searched forward and backward to uncover additional literature. Web of Science was used for citation chaining and mapping for particularly relevant articles. Google was used to locate grey literature with search specific controls (e.g., file type, institution, title phrases).

The following parameters guided the selection of literature for review:

- * Literature from programs offered in Canada, United States, Europe, Australia, Britain, Northern Ireland, Republic of Ireland, Scotland, New Zealand and other countries in the Western world
- * Programs conducted in a variety of settings such as in-home, community centres, public health units/departments, care centres, etc.; not-for-profit
- * Programs delivered by a variety of facilitators ranging from health professionals to community health workers
- * Programs delivered within the last 10 years
- * Programs with community-based collaborative features
- * Programs noting sensitivity to cultural diversity, education, literacy and socioeconomic status (note: where low income or socially disadvantaged foci were identified, these programs were grouped for independent consideration)
- * Programs not specific to special needs, disabilities, disorders (e.g., FASD, autism)
- * Findings presented in English^e

Literature review results were separated into two broad categories: (i) evidence-based papers pertaining to healthy child development, home visiting, and community-based collaboration, and (ii) programs themselves, with home visiting and community-based collaboration aspects. Accordingly, information is presented in this review that, first, relates to the evidence base and, second, highlights related programs. It was not possible to scrutinize the evidence base associated with each program and that was not the aim of the scoping review.

To further examine the evidence base and programs related to healthy child development, a framework was developed that distinguishes healthy child development as follows: Health and Safety; Education; Material Well-Being; Family and Peer Relationships; Participation; Subjective Well-being; Behaviours and Risks; and Environment. This framework incorporates the dimensions of child and youth health and well-being included in the “Child and Youth Health and Well-Being Indicators Project: CIHI and B.C. PHO Joint Summary Report (2013)”³⁹ and is based primarily on the work of “Building Blocks: best practice programs that improve the well-being of children and young people - Commissioner for Children and Young People Western Australia (2012).”⁴⁰ Descriptions of the developmental domains are adapted from the Commissioner’s report. The framework is presented in Section III.

(2) Limitations of the Scoping Review

There are limitations to this review and five important ones are identified.

First, the breadth of the topics included in this review makes it difficult to claim comprehensiveness in identifying related systematic reviews or, in the absence of those, meta-analyses and randomized trials. Therefore, what is reported should be considered a guide to potential areas to concentrate, and further research and literature should be explored as interests are narrowed.

Second, some topics overlap – for example, home visiting programs aimed at improving aspects of maternal health may be targeted at low income or at-risk women, so related reviews may be described under any of the following: “2d. *Maternal health*”, “2h. *Low income, disadvantaged mothers, families*”, or “2i. *Teen moms, at-risk moms*”. In most cases, reviews were categorized first by target population, but if there was not a clearly identified group to whom the intervention was directed, then a broader

^e With some exceptions

category was selected to place the review. Duplication was avoided; however some publications have been cited within two categories due to relevance in both.

Third, some topics have multiple components or sub-topics – for example, child health has various related areas such as *health and safety, healthy nutrition, physical activity, dental, built environment*. In some cases it was challenging to ensure that all areas were adequately addressed and properly categorized or cross-categorized.

Fourth, the focus of the literature review was mainly high income countries, with publications in English. Special populations such as children with special needs, disabilities, disorders, were not considered within the context of this review.

Fifth, this review is based heavily on summaries of abstracts and excerpts from publications. Excerpts and statements have been attributed to authors, and any portion of this review that is cited should acknowledge primary sources.

Overall, it is believed that this overview includes key publications for topics -- the majority being systematic reviews -- so that meaningful conclusions can be drawn from this work. The evidence reported in this overview would be applicable to children's programs and services in Canada and other western developed countries.

SECTION III: RESULTS*(1) Factors that influence children’s healthy development (excluding blood lead/heavy metals, pesticides/chemical agents)*

Children’s development is influenced by a complex set of biological, social and environmental factors interacting over the life course. Boivin et al. (2012) state that “early child development is an emergent property of multiple levels of influence in the complex social ecosystems where children grow up, live, and learn.”⁴¹ Boivin et al. (2012) and Evangelou (2009) provide an extensive review of the evidence that identifies the best supportive contexts for children’s early learning and development, focusing on interaction and relationships as well as physical surroundings.⁴² Kilburn (2013) discusses the growing body of evidence that psychological health, in addition to physical health, in childhood is associated with long-term outcomes and she also examines the implementation and effectiveness of policies that aim to promote child health.⁴³ The Harvard report (2010), “*The foundations of lifelong health are built in early childhood*”, provides a summary of multi-level macro to micro influences and also a framework for action.⁴⁴ The foundations of lifelong health refer to three domains of influence that establish a context within which the early roots of physical and mental well-being are either nourished or disrupted⁴⁴:

- *A stable and responsive environment of relationships. This domain underscores the extent to which young children need consistent, nurturing, and protective interactions with adults that enhance their learning and behavioral self-regulation as well as help them develop adaptive capacities that promote well-regulated stress response systems.*
- *Safe and supportive physical, chemical, and built environments. This domain highlights the importance of physical and emotional spaces that are free from toxins and fear, allow active exploration without significant risk of harm, and provide supports for families raising young children.*
- *Sound and appropriate nutrition. This domain emphasizes the foundational importance of health-promoting food intake.*

In addition to this literature, other reviews are noted below to provide further context and evidence relating to a variety of determinants affecting children’s development. For this report, the following framework is used to present findings from the literature to enable a relatively detailed investigation of determinants within main categories:

- A. Health and Safety
 - abuse, neglect
 - breastfeeding
 - dental health, oral care
 - early environment (pre/peri-natal: adversity, stress, gene-environment, intimate partner violence, attachment...)
 - injury prevention
 - nutrition, healthy eating, feeding, sleep
 - physical/mental health (activity/inactivity, obesity)
 - respiratory health (asthma)
- B. Education
 - child care, education (pre-school, kindergarten...)
 - language, literacy

- C. Material well-being, equity (low income, socially disadvantaged, rural)^f
 - childcare, education (pre-school, kindergarten)
 - dental health, oral care
 - family support (parenting, pre/peri-natal...)
 - housing, homelessness
 - hubs, networks
- D. Family and Peer Relationships
 - parent education, supportive parenting
- E. Participation
 - after school programs, arts
 - community leaders, healthy communities, social capital
 - mentoring
- F. Subjective Well-being
 - social competence, cognitive/prosocial behaviour
 - mental health, well-being, anxiety
- G. Behaviours and Risks
 - internalizing or externalizing behaviour, aggression, bullying, crime
 - substance abuse
- H. Environment
 - air quality
 - built environment
 - gardens, markets
 - neighbourhoods, place, socioeconomic status

As noted in Section 2, this framework incorporates the dimensions of child and youth health and well-being included in the “Child and Youth Health and Well-Being Indicators Project: CIHI and B.C. PHO Joint Summary Report (2013)”³⁹ and is based primarily on the work of “Building Blocks: best practice programs that improve the well-being of children and young people - Commissioner for Children and Young People Western Australia (2012).”⁴⁰

^f Each section within this category includes programs which have low income/socially disadvantage aspects; there may be additional programs noted in other categories with these aspects, but select programs have been identified here.

1.A. Health and Safety

Being healthy and safe is strongly related to a child's well-being. In this review, the Health and Safety domain includes aspects such as the pre- and perinatal/family environment (adversity, stress, gene-environment interactions), maternal sensitivity, attachment, breastfeeding, nutrition, physical health (activity/inactivity and obesity), and respiratory health (asthma). This domain also includes child maltreatment (abuse, neglect) and injury prevention. Home visiting programs and their impact on children's health and safety are discussed primarily within Section II.

a. Abuse and Neglect

Boivin et al. (2012) produced a consensus document on the literature relating to adverse childhood experiences such as abuse, neglect, chronic poverty, family dysfunction, etc. that lead to poor mental health and unhealthy behaviours, and the evidence for the effectiveness of a variety of interventions to mitigate the adverse effects of environmental influences on the developing child.⁴¹ Hertzman (2013) elaborated on the significance of early childhood adversity and how social environments 'get under the skin' early in life.^{45, 46} Responsiveness and appropriate maternal-infant interaction are vital parenting tools with wide-ranging benefits for the child, from better cognitive and psychosocial development to protection from disease and mortality.⁴⁷ Interventions are effective in enhancing maternal responsiveness, resulting in better child health and development, especially for the neediest populations.

A selection of programs aimed at ameliorating aspects of the family environment, etc., to prevent or curb abuse and neglect is provided (Appendix II.1.A.a).

b. Breastfeeding

Benefits conferred by breastfeeding are supported by the review by Shulze and Carlisle (2010), but with a note that some benefits may be overstated.⁴⁸ The systematic review by Kramer and Kakuma (2001)⁴⁹ demonstrated no apparent risks in recommending exclusive breastfeeding for the first 6 months of life, and the systematic review by Arentz et al. (2004)⁵⁰ suggests that breastfeeding seems to have a small but consistent protective effect against obesity in children. The systematic review by Sikorski et al. (2003)⁵¹ supports the conclusion that supplementary breastfeeding support should be provided as part of routine health service provision, and Renfrew et al. (2005)⁵² report in their systematic review that to enable women to breastfeed changes are needed such as coordination of national with local policy; ongoing monitoring of rates of variation in infant feeding; requires coordination and support at various levels. These findings are further supported by U.S. Preventive Services Task Force recommendation on interventions during pregnancy and after birth to promote and support breastfeeding.⁵³

Health advantages of breastfeeding and the nutritional composition of breast milk are reasons that advisory bodies recommend this form of infant feeding as best practice.⁵⁴ In a systematic review by Tidswell and Langley-Evans (2011), they reported that breastfeeding helps to protect children up to seven years of age from developing asthma, but the evidence showed the benefits were not significant in reducing the risk of allergic reaction (e.g., allergic rhinitis, allergic asthma, or atopic dermatitis).⁵⁴ Delgado and Matijasevich (2013) conducted a systematic review to identify studies describing the global prevalence of breastfeeding up to two years of age or beyond and its effects on child growth and development.⁵⁵ Authors reported no association was found with child development and concluded "that

evidence on the medium-term effects of breastfeeding up to two years of age or beyond is scarce and contradictory.”⁵⁵

In a systematic review to investigate the impact of breastfeeding education on exclusive breastfeeding rates, Sarah et al. (2013) reported that education and/or support increased exclusive breastfeeding rates and decreased no breastfeeding rates at birth, less than 1 month and 1-5 months.⁵⁶ Combined individual and group counseling appeared to be superior to individual or group counseling alone.

A worldwide program that encourages maternity hospitals to implement a ten-step breastfeeding component is the Baby Friendly Initiative of the World Health Organization and UNICEF.⁵⁷ Many evidence-based early care and family environment programs have breastfeeding components and a selection of programs is provided (Appendix II.1.A.b). Additional information regarding the impact of home visiting on breastfeeding outcomes is reported in Section II.

c. Dental Health, Oral Care

Early childhood caries is an infectious disease involving a combination of factors, including social, behavioural, microbiologic, environmental, and clinical factors.^{44, 58} The disease occurs worldwide, afflicts predominantly disadvantaged children,⁵⁹ and can affect children’s social and emotional functioning and economic productivity later in life.⁶⁰⁻⁶² Guarnizo-Herreno and Wehby (2012) reported that dental problems are significantly associated with reductions in school performance and psychosocial well-being, such that improving dental health may benefit child academic achievement and cognitive and psychosocial development.⁶³

There are factors occurring during the first year of life affect early childhood caries experience.⁶⁴ Key risk indicators noted by Leong et al. (2013) were infant feeding practices, maternal circumstances and oral health, and infant-related oral health behaviours.⁶⁴ As for topical agents for caries prevention, only 2.26 percent fluoride varnish is recommended for children younger than six years.⁶⁵ The analysis of controlled clinical trial data by Hujuel (2013) identified vitamin D as a promising caries-preventive agent, leading to a low-certainty conclusion that vitamin D may reduce the incidence of caries.⁶⁶ Randomized, controlled trials appear to show benefit of home visiting programs on utilization of dental services to improve dental literacy and introduce children and their families to dental prevention.^{67, 68}

There is increasingly emphasis on social determinants of oral health – i.e., moving beyond focus on individual risk factors approaches.^{69, 70} Programs aimed at improving dental health of children are varied, including mobile dental clinics (Peel Region, Ontario) and child health fairs (Waterloo, Ontario) (Appendix II.1.A.c).

d. Early Environment (stress, supportive parenting, etc.)

Findings suggest that early adverse conditions have lasting implications for physical health, and that continued exposure to increased levels of stress in adolescence might be a mechanism by which early adversity impacts later physical health.⁷¹⁻⁷⁶ Glasheen et al. (2010) conducted a systematic review to assess the evidence of the effect of postnatal maternal anxiety on children and noted that the strongest evidence was in somatic and psychological outcomes, but the evidence for an effect of postnatal maternal anxiety on child development was inconclusive.⁷⁷ In a later systematic review by Kingston et al. (2013) who conducted a systematic review of studies assessing the effect of prenatal and postpartum maternal psychological distress, findings suggest that prenatal distress can adversely affect cognitive,

behavioural, and psychomotor development, and that postpartum distress contributes to cognitive and socioemotional development.⁷⁸

Data from animal and human studies indicate that the prenatal environment plays a significant role in shaping children's neurocognitive development. In particular, two experiences relatively common in pregnancy - an unhealthy maternal diet and psychosocial distress - significantly affect children's future neurodevelopment.⁷⁹

The association between the home environment and children's temperament can be genetically or environmentally mediated.⁸⁰⁻⁸² Associations between maternal sensitivity and internalizing problems have been reported, confirming the importance of sensitive parenting for positive development in the preschool years.⁸³ Early intervention with young children and caregivers living with Intimate Partner Violence (IPV) provides a significant buffer to the negative effects that witnessing IPV have on children's development and their relationships with caregivers.⁸⁴ Interventions have been shown to be effective in enhancing children's attachment quality.⁸⁵ Systematic review evidence indicates that father's involvement has an impact on their children's social, behavioural and psychological outcomes,⁸⁶ and maternal employment may have variable effects on pre-school children's health.⁸⁷ A meta-analysis by Wilson and Durbin (2010) indicated that paternal depression has a significant and deleterious effect on parenting behaviors by fathers.⁸⁸

Growing up in orphanages is reported to have a substantial impact (lowering) on IQ compared to growing up in (foster) families.⁸⁹ More research is needed to detect the causes of the large IQ delays and to test ways of improving the intellectual development. Christoffersen (2012) reported that adopted children scored higher on IQ, school-performance, and lack of behavioural problems than their non-adopted siblings or peers who stayed behind in orphanages or foster homes.⁹⁰

To ascertain whether tactile stimulation is an effective intervention to support mental and physical health in physically healthy infants, Underdown et al. (2010) published a systematic review that indicated some evidence of benefits on mother-infant interaction, sleeping and crying, and on hormones influencing stress levels.⁹¹ *"In the absence of evidence of harm, these findings support the use of infant massage in the community, particularly in contexts where infant stimulation is poor."*⁹¹ Brownlee et al. (2013) indicated there is preliminary support for the efficacy of strength and resilience based interventions for understanding and promoting positive development in children and adolescents.⁹²

The Infant Health and Development Program (IHDP) was an evaluation of a comprehensive early childhood intervention for premature and low birth weight infants, designed to reduce the infants' health and developmental problems.⁹³ The intervention conducted by IHDP combined early childhood development and family support services with pediatric follow-up. Findings for cognitive development at 24 and 36 months were reported as "proven" according to promising practices criteria, and "promising" for behavioural changes. Through age 18, the intervention showed effects that are "promising" on cognitive development and achievement. There were no effects on health status, including growth. Other programs supporting early environment are provided (Appendix II.1.A.d).

e. Injury Prevention

Childhood injuries have significant impact on child health. Pearson et al. (2012) reported mixed results in their systematic review about the effectiveness of programs that provided information, advice or education about the prevention of unintentional injuries to children under 15 years during outdoor play

and leisure.⁹⁴ Dowswell and Towner (2002) state that there is a known association between social deprivation and risk of death from unintentional injury in childhood, but there is scant evidence relating to the prevention of child pedestrian injury or the impact of interventions in different social groups.⁹⁵ More recently, Rothman et al. (2013) conducted a systematic review of walking and child pedestrian injury and the built environment, reporting that that traffic calming and presence of playgrounds/recreation areas were consistently associated with more walking and less pedestrian injury.⁹⁶ Several built environment features were associated with more walking, but with increased injury.

A number of community-based programs to prevent injuries in children were examined by systematic review, but conclusions were similar: lack of research and limitations in the research methodology.⁹⁷⁻⁹⁹ Similarly, community-based programs to promote children's use of bicycle helmet and car seat restraints or prevent falls or poisoning in children showed some evidence to support the effectiveness of interventions, however there were study design limitations^{100, 101} or a lack of research studies.^{102, 103}

For studies of use of protective equipment to prevent childhood injury, some evidence suggests that more extensive educational programs (such as health fairs and media campaigns) increase their use, but methodological weaknesses of most of the studies included in the systematic review make it hard to draw conclusions about effectiveness of programs.^{94, 104} The Nurse-Family Partnership is a widely-known evidence-based program designed to address a variety of child health outcomes and it includes an injury prevention component. It is listed as a best practice program within the Public Health Agency of Canada portal¹⁰⁵ and the HomVEE review.¹⁰⁶ This program and others are noted (Appendix II.1.A.e).

f. Nutrition

Nutrition is an important determinant of health, and during the early years, parents have a strong influence on their children's diets, food choices and development of eating habits. There is growing recognition of the need to increase consumption of fruit and vegetables by children, given their known beneficial effects for health. Knai et al. (2006) conducted a systematic review of individual- and population-based interventions and promotion programs that encouraged the consumption of a diet relatively higher in fruit and/or vegetables in children, and reported strong evidence in favor of multi-component interventions to increase fruit and vegetable consumption in children.¹⁰⁷ Delgado et al. (2011) conducted a systematic review and meta-analysis of primary school interventions to promote fruit and vegetable consumption. Meta-analysis showed that computer-based interventions were effective in increasing fruit and vegetable consumption, but multicomponent interventions and free/subsidized fruit and vegetable interventions were not effective.¹⁰⁸ In a systematic review by Evans et al. (2012), school-based interventions were reported to moderately improve fruit intake but have minimal impact on vegetable intake.¹⁰⁹ Hendrie et al. (2013) reported that interventions that target an increase in children's dairy food or calcium intake could potentially increase children's dairy food intake by about one serving daily.¹¹⁰

Smithers et al. 2011 conducted a systematic review to examine associations between children's diet and nutrition, health, and development and their findings were as follows: *"In cross-sectional analyses, mixed associations were found between nutrient intake, nutritional biomarkers, and anthropometry. Birth cohort data showed healthier dietary patterns were associated with better lean mass, cognition, and behavior, but not with bone mass or body mass index at later ages."*¹¹¹ Few studies have characterized the diets of children under five years of age and linked diet with health.

Parents are believed to have a strong influence on children's eating behaviours. In a systematic review, Wang et al. (2011) investigated the resemblance in child and parental dietary intake, reporting *“resemblance is weak, and it varied considerably across studies, nutrients, foods and parent–child pairs.”*¹¹²

In a systematic review by Peters et al. (2012),¹¹³ the aim was to investigate the effectiveness of interventions that target parent nutrition knowledge and/or parenting practices with parents of young children aged two to five years in the development of healthy dietary habits. Due to the limited number of good quality studies little information could be reported on parental understanding of healthy diets and specific parenting styles and feeding practices. However, Manning (2013) demonstrated the effectiveness of an ecological approach to promote healthy food choices in early childhood education through an educational workshop series in three YMCA child care centres located in the Greater Toronto area.¹¹⁴ As well, Heim et al. (2011) noted that community-based interventions that provide activities to engage parents may provide added benefit by improving the home food environment.¹¹⁵

With regard to research specific to low income or socially disadvantaged groups and nutrition, Oldroyd et al. (2008) conducted a systematic review on the effectiveness of nutrition interventions on dietary outcomes by relative social disadvantage.¹¹⁶ The objective was to determine whether nutrition interventions widen dietary inequalities across socioeconomic status groups and authors found only limited evidence that nutrition interventions widen dietary inequalities.¹¹⁶ Due to small numbers of included studies, the possibility that nutrition interventions widen inequalities cannot be excluded.

Food subsidy programs are one strategy to promote healthy nutrition and to reduce socioeconomic inequalities in health. Black et al.'s (2012) systematic review summarized the evidence for the health and nutritional impacts of food subsidy programs among disadvantaged families from high income countries.¹¹⁷ Evidence for the effectiveness of food subsidy programs on the health and nutrition of men or children was lacking.¹¹⁷ The improved intake of targeted nutrients and foods, such as fruit and vegetables, could potentially reduce the rate of non-communicable diseases in adults, if the changes in diet are sustained. Thus, food subsidy programs for pregnant women and children should aim to focus on improving nutritional status in the longer term.

In British Columbia, The B.C. Farmers' Market Nutrition Coupon Project is a program involving partnering of farmers' markets with a community agency that works to provide nutrition, cooking, or healthy lifestyle skills building programs to lower income British Columbians.¹¹⁸ This program and several others are listed in Appendix II.1.A.f.

g. Physical/Mental Health (activity/inactivity, obesity, sleep)

Childhood overweight/obesity is recognized as an increasing health problem. Efforts to prevent the development of overweight and obesity have increasingly focused early in the life course as it is recognized that both metabolic and behavioural patterns are often established within the first few years of life. The Early Prevention of Obesity in CHildren (EPOCH) Collaboration, formed in 2009 has a key objective to determine if early intervention for childhood obesity impacts on body mass index (BMI) z scores at age 18-24 months.¹¹⁹ The Collaboration is also investigating whether early intervention has an

impact on children's dietary quality, TV viewing time, duration of breastfeeding, and parenting styles. Results are not yet available.

Determining early-life risk factors for obesity in later life is essential in order to effectively target preventative interventions to reduce obesity. Huang et al. (2007) reviewed the scientific evidence for prenatal programming of childhood overweight and obesity and concluded that there is support for prenatal programming of childhood overweight and obesity.¹²⁰ *"The biological mechanisms mediating these relationships are unknown but may be partially related to programming of insulin, leptin, and glucocorticoid resistance in utero."*¹²⁰

In a systematic review to investigate current evidence to determine whether the timing of introducing solid foods is associated with obesity in infancy and childhood, Moorcroft et al. (2011) summarized the evidence, stating that no clear association between the age of introduction of solid foods and obesity was found.¹²¹ They state that it is likely that a whole family approach to obesity prevention will be most effective.

Early systematic review evidence to assess the effectiveness of interventions designed to prevent obesity in childhood was inconclusive, due in part to limited quality data.¹²² Additional systematic reviews were carried out to assess the evidence of the effectiveness of interventions to promote physical activity in children and adolescents, and some evidence was found for potentially effective strategies to increase children's levels of physical activity.¹²³⁻¹²⁵ Limited evidence for an effect was found for interventions targeting children from low-socioeconomic populations, and environmental interventions. Strong evidence was found that school-based interventions with involvement of the family or community and multi-component interventions can increase physical activity in adolescents.^{123, 124}

Ciampa et al. (2010) assessed the evidence for interventions designed to prevent or reduce overweight and obesity in children younger than two years.¹²⁶ Few published studies attempted to intervene among children younger than two years to prevent or reduce obesity. Limited evidence suggests that interventions may improve dietary intake and parental attitudes and knowledge about nutrition for children in this age group.

The systematic review by Prentice-Dunn and Prentice-Dunn (2012) of the associations of physical activity and sedentary behavior to childhood overweight and obesity in cross-sectional studies from the last ten years revealed that physical activity was related negatively to child weight status in some studies; however, it was not associated in others. In general, sedentary behaviors were positively associated with weight status.¹²⁷

As stated earlier, the early years represent a critical period for promoting physical activity; however the amount of physical activity needed for healthy growth and development is not clear. Timmons et al. (2012) summarized the available evidence to determine the relationship between physical activity and measures of adiposity, bone and skeletal health, motor skill development, psychosocial health, cognitive development, and cardiometabolic health indicators in infants, toddlers, and preschoolers.¹²⁸ *"In infants, there was low- to moderate-quality evidence to suggest that increased or higher physical activity was positively associated with improved measures of adiposity, motor skill development, and cognitive development. In toddlers, there was moderate-quality evidence to suggest that increased or higher physical activity was positively associated with bone and skeletal health. In preschoolers, there was low- to high-quality evidence on the relationship between increased or higher physical activity and improved*

*measures of adiposity, motor skill development, psychosocial health, and cardiometabolic health indicators.*¹²⁸

Regarding the impact of childhood obesity on morbidity and mortality in adulthood, although there is a consistent body of evidence for associations between childhood BMI and cardiovascular outcomes, there is a lack of evidence for effects independent of adult BMI.¹²⁹

With the number of systematic reviews related to childhood overweight and obesity, the remaining literature was further categorized to break out findings.

Obesity Interventions and Settings

Hesketh and Campbell (2010)¹³⁰ report that behaviours that contribute to obesity can be positively impacted in a range of settings. Bleitch et al. (2013)¹³¹ indicate that *“the strength of evidence is moderate that a combined diet and physical activity intervention conducted in the community with a school component is more effective at preventing obesity or overweight.”* Findings reported by Kesten et al. (2011)¹³² suggest that interventions aimed at pre-adolescent girls may reduce the risk factors associated with childhood overweight and obesity. Regarding the effectiveness of home-based child obesity prevention programs, Showell et al. (2013)¹³³ report that the strength of the evidence is low. A randomized controlled trial by Wen et al. (2012)¹³⁴ stated that home-based early intervention delivered by trained community nurses was effective in reducing mean BMI for children at age 2. Understanding of parental influences and physical activity levels in children is limited.¹³⁵ Longer interventions that include parental participation seem to have greater success.¹³⁶ Skouteris et al. (2012)¹³⁷ suggest that parent-child relationships are important in explaining the unhealthy trend of childhood obesity. In reviewing the literature on weight-related issues for children in out-of-home care, Skouteris et al. (2011) reported that there is a lack of strategies or interventions designed specifically to combat overweight and obesity in children in out-of-home care.¹³⁸

Knowlden and Sharma (2012) systematically analyzed family and home-based randomized control trials aimed at treating overweight and obesity in children ages 2-7 years.¹³⁹ Among the identified studies, eight produced significant outcomes. The majority of the program incorporated educational sessions targeting parents as the primary modality for intervention delivery. Less than one-quarter of the interventions included home visitations; however, all of the interventions included home-based activities to reinforce behaviour modification.

Barnes (2012) proposes strategies to reduce childhood obesity in Ontario and its associated health problems by taking a health equity and social determinants of health approach¹⁴⁰ - for example, reducing childhood obesity through poverty reduction, early environment initiatives, addressing neighbourhood factors, and enhancing coordination. Others avenues have been to investigate home-based and community-based interventions on weight, physical activity, behaviour, etc., as noted.

Obesity/Physical Activity Intervention Program Components

A systematic review by Sargent et al. (2011) on components of primary care interventions to treat childhood overweight and obesity provided evidence for: training for health professionals before intervention delivery; behaviour change options; effecting behaviour change via a combination of counselling, education, written resources, support and motivation; and tailoring intensity according to whether behavioural, anthropometric or metabolic changes are the priority.¹⁴¹

Weight-related health interventions that require parent participation more effectively reduce body mass indexes of child and adolescent participants and longer interventions that include parent participation appear to have greater success.¹³⁶ Brown et al. (2013) suggested that intervention studies examine the mediating effects of interventions (i.e. cognitive/psychological, social environmental) so the most effective strategies can be implemented in future programs.¹⁴²

The number of activity promotion programs aimed at improving children's physical health has been increasing perhaps faster than any other type of program (Appendix II.1.A.g).

Physical Activity and Motor development

Riethmuller et al. (2009) systematically reviewed evidence from controlled trials on the efficacy of motor development interventions in young children.¹⁴³ Their review highlights the limited quantity and quality of interventions to improve motor development in young children and authors made these recommendations: (1) both teachers and researchers should be involved in the implementation of an intervention; (2) parental involvement is critical to ensuring transfer of knowledge from the intervention setting to the home environment; and (3) interventions should be methodologically sound.¹⁴³

Physical Activity, After School Transport, and the Built Environment

After school is a critical period in the physical activity and sedentary behaviour patterns of young people. In a systematic review by Beets et al. (2009), limited evidence suggests that after-school programs can improve physical activity levels and other health-related aspects.¹⁴⁴ Atkin et al. (2011) completed a systematic review of interventions to promote physical activity in young people conducted in the hours immediately after school and reported that evidence suggests that single-behaviour interventions may be most effective during these hours.¹⁴⁵ Authors also conclude that limitations in study design, lack of statistical power and problems with implementation have likely hindered the effectiveness of interventions in the after-school setting to date.

Active school transport may be an important source of children's physical activity. Faulkner et al. (2009) conducted a systematic review of active school transport, physical activity levels and body weight of children and youth.¹⁴⁶ Studies demonstrated that active school commuters tended to be more physically active overall than passive commuters. However, evidence for the impact of active school transport in promoting healthy body weights for children and youth is not compelling.

Sandercock et al. (2010) reviewed the available literature assessing differences in physical activity levels of children living in different built environments classified according to land use within developed countries.¹⁴⁷ The literature does not show major differences in the physical activity levels between children from rural or urban areas. Where studied, the suburban built environment appears most conducive to promoting physical activity. As for the association of the primary school built environment (e.g., playground availability) and childhood weight, results are inconclusive.¹⁴⁸

Physical Activity and Social Networks

The systematic review by Macdonald-Wallis et al. (2012) synthesized findings from various social network analyses of child and adolescent physical activity, to determine the extent to which social network structure is associated with physical activity behaviors.¹⁴⁹ "Three research themes were

*identified: (1) friendship similarities in physical activity; (2) peer group influences on physical activity; and (3) social preference (i.e., popularity) and physical activity. Synthesis of findings across studies found strong evidence for similarities in physical activity levels between an individual and their friends and within peer groups. There was mixed evidence for an association between social preference and physical activity levels. Conclusions: Friendship plays an important role in shaping physical activity behaviors. Physical activity interventions targeted at peer groups and that account for the influence of friendship groups might have utility as a means of increasing youth physical activity.*¹⁴⁹

Tracking Physical Activity

Jones et al. (2013) completed one of the first systematic reviews to investigate the evidence of tracking of physical activity and sedentary behavior specifically during early childhood (aged 0–5.9 years).¹⁵⁰ *“This review highlights the importance of establishing recommended levels of physical activity and sedentary behavior during the early years of life. Based on this review, the following recommendations are made: (1) early childhood should be targeted as a critical time to promote healthy lifestyle behaviors through methodologically sound prevention studies; and (2) future tracking studies should assess a broad range of sedentary behaviors using objective measures.”*¹⁵⁰

Active Video Games

Active video games (AVG) have gained interest as a way to increase physical activity in children. The systematic review by LeBlanc et al. (2013) aimed to explain the relationship between active video games and nine health and behavioural indicators in children.¹⁵¹ *“Controlled studies show that AVGs acutely increase light- to moderate-intensity physical activity; however, the findings about if or how AVG lead to increases in habitual physical activity or decreases in sedentary behaviour are less clear. Although AVGs may elicit some health benefits in special populations, there is not sufficient evidence to recommend AVGs as a means of increasing daily physical activity.”*¹⁵¹

Television, Screen Media Use

Thakkar et al. (2006) conducted a systematic review of experimental trials for the effects of television viewing by infants and preschoolers.¹⁵² Findings suggested that educational television programs are successful in broadening young children's knowledge, affecting their racial attitudes, and increasing their imaginativeness. There is insufficient experimental evidence for effects of viewing these programs on either children's prosocial behavior or their aggressive behavior. Finally, there is some evidence that viewing cartoons has a negative effect on children's attentional abilities. The studies presented here focus only on content.

Screen-media use among young children is disproportionately high among children from lower-income families and racial/ethnic minorities, and may have adverse effects on obesity risk. In order to identify strategies to reduce TV viewing or total screen time among children under 12 years of age, Schmidt et al. (2012) conducted a systematic review.¹⁵³ Of 47 studies that met our inclusion criteria, twenty-nine achieved significant reductions in TV viewing or screen-media use.¹⁵³ Studies utilizing electronic TV monitoring devices, contingent feedback systems, and clinic-based counseling were most effective, however more studies focusing on young children, minorities, and where there is long-term (>6 month)

follow-up data may help increase the effectiveness of existing strategies for screen time reduction and extend them to different populations.

Participation, Physical Activity Benefits

In consideration of psychological and social benefits of participation in sport for children and adolescents, Eime et al.'s (2013) systematic review indicated that *“there were many different psychological and social health benefits reported, with the most commonly being improved self-esteem, social interaction followed by fewer depressive symptoms. Sport may be associated with improved psychosocial health above and beyond improvements attributable to participation in physical activity. Specifically, team sport seems to be associated with improved health outcomes compared to individual activities, due to the social nature of the participation.”*¹⁵⁴ It is recommended that community sport participation is advocated as a form of leisure time physical activity for children and adolescents, in an effort to not only improve physical health in relation to such matters as the obesity crisis, but also to enhance psychological and social health outcomes.

With respect to whether exercise can improve self-esteem in children and young people, Ekeland et al. (2005), in a synthesis of several small, low quality trials, indicated that exercise may have short term beneficial effects on self-esteem in children and adolescents.¹⁵⁵

Sleep

Douglas and Hill (2013) carried out a systematic review to determine whether behavioural interventions for sleep, when applied by parents to infants younger than six months, improve maternal and infant outcomes.¹⁵⁶ Interventions have not been shown to decrease infant crying, prevent sleep and behavioural problems in later childhood, or protect against postnatal depression. *“In addition, behavioral interventions for infant sleep, applied as a population strategy of prevention from the first weeks and months, risk unintended outcomes, including increased amounts of problem crying, premature cessation of breastfeeding, worsened maternal anxiety, and, if the infant is required to sleep either day or night in a room separate from the caregiver, an increased risk of SIDS. The belief that behavioural intervention for sleep in the first six months of life improves outcomes for mothers and babies is historically constructed, overlooks feeding problems, and biases interpretation of data.”*¹⁵⁶

h. Respiratory Health (asthma)

Asthma is an increasingly prevalent chronic respiratory disease, particularly among children and certain minority groups. There is consistent evidence of effectiveness for self-management education and comprehensive home-based interventions¹⁵⁷⁻¹⁶⁰ Home-based, multi-trigger, multi-component interventions with an environmental focus and which include home visits by trained professionals have been shown to be effective.^{161, 162} Generally, the home setting enables educators to reach populations such as the economically disadvantaged that may experience barriers to care such as lack of transportation.¹⁶³ Welsh et al (2011), however, reported inconsistent evidence for home-based asthma educational interventions compared with standard care or education delivered outside of the home.¹⁶³ Several programs aimed at improving air quality, home environment, etc., are available within portals of ‘best practices’; because asthma is not a focus of this review, the list of programs provided is limited (Appendix II.1.A.h).

1.B. Education

From early childhood through to late adolescence, education is fundamental to future outcomes of children and young people. In this review, the Education domain covers pre-school and primary education and includes programs aimed at improving outcomes in academic achievement, and literacy.

a. Early Care and Education

Participation in early care and education (ECE) programs has become common for three and four-year olds. Studies have documented a positive relationship between ECE programs and child development outcomes.^{164, 165} Most programs were created in order to: (1) improve children's health and overall development; (2) provide support to families; (3) decrease gaps in school readiness; and 4) reduce the negative outcomes associated with living in poor neighbourhoods. Early Head Start,¹⁶⁶ Sure Start,¹⁶⁷ Better Beginnings, Better Futures,¹⁶⁵ and Toronto First Duty¹⁶⁸ are examples of integrated approaches to early childhood services. For projects such as Better Beginnings, Better Futures and Toronto First Duty, integration has multiple social aims including healthier parenting, work-family balance, community development, promotion of equity and social justice through effective and culturally-competent programming as well as other aims noted previously.¹⁶⁸

Systematic reviews of the scientific literature demonstrate effectiveness of programs such as Head Start in preventing developmental delay, as assessed by reductions in retention in grade and placement in special education.¹⁶⁹ For particular features of programs found to be effective, Gray and McCormick (2005) stated that programs should (1) employ more centre-based or mixed centre-based and home visiting models, (2) monitor standards of quality, (3) become more family focused and culturally competent, and (4) broaden the focus of their evaluations for the best return on investments in early childhood.¹⁷⁰ Halgunseth and Peterson (2009) echo that early childhood education programs must be respectful of the cultural and ethnic ideals of the families they serve.¹⁷¹

Studies on the economic returns on investment in early childhood development have shown larger returns from government investment incurred in early childhood compared to adulthood.¹⁷²⁻¹⁷⁵ Evidence indicates that return on public investment in the education for children in poverty or low income families is higher.¹⁷⁶ Her Majesty's Government (UK) (2011) state that early childhood development interventions have the potential to bring about wide ranging human capital benefits for children through to adulthood.¹⁷⁷ However, D'Onise et al. (2010) note in their systematic review of the evidence for child health effects of centre-based preschool intervention programs that the potential for early childhood interventions to improve population health across a range of health outcomes is somewhat weak.¹⁷⁸ They suggest that there is some support for the role of early childhood interventions to improve adult health behaviours but not chronic disease outcomes.¹⁷⁹ For a listing of a variety of early care and education programs, please see Appendix II.1.B.a.

b. Language and Literacy

There is robust evidence of the impact of family literacy, language and numeracy interventions on children's learning, particularly in the case of literacy, and these interventions can have a positive impact on the most disadvantaged families. Community-based early childhood literacy programs play an essential role in developing the literacy skills of both pre-school and school-aged children.¹⁸⁰ Balla-Boudreau et al. (2011) conducted an online survey of 200 Canadian early literacy organizations and reported that the programs surveyed are doing well to support early literacy development in their communities.^{181, 182} In British Columbia, the Vancouver Public Library has adopted the Raising a Reader

and the Parent-Child Mother Goose programs. In the Yukon, Canada, a Dolly Parton Imagination Library has been established to ensure that every child would have books, regardless of their family's income, similar to the intent of this literacy initiative first introduced within East Tennessee. More programs are listed in Appendix II.1.B.b.

The meta-analytic review by Sénéchal and Levesque (2008) focused on intervention studies that tested whether parent-child reading activities would enhance children's reading acquisition.¹⁸³ Results were clear: *"parent involvement has a positive effect on children's reading acquisition. Further analyses revealed that interventions in which parents tutored their children using specific literacy activities produced larger effects than those in which parents listened to their children read books."*¹⁸³

DeWalt and Hink (2009) reviewed the relationship between parent and child literacy and child health outcomes and interventions designed to improve child health outcomes for children or parents with low literacy skills.¹⁸⁴ Child and parent literacy appeared to be associated with important health outcomes. *"Children with low literacy generally had worse health behaviors. Parents with low literacy had less health knowledge and had behaviors that were less advantageous for their children's health compared with parents with higher literacy."* *"Interventions found that improving written materials can increase health knowledge, and combining good written materials with brief counseling can improve behaviors including adherence."*¹⁸⁴

Sanders et al. (2009) reported that low caregiver literacy is associated with poor preventive care behaviours and poor child health outcomes.¹⁸⁵ Future research should aim to ameliorate literacy-associated child health disparities.

The research synthesis by Mol and Bus (2011) examined whether the association between print exposure and components of reading grows stronger across development.¹⁸⁶ *"For all measures in the outcome domains of reading comprehension and technical reading and spelling, moderate to strong correlations with print exposure were found. The outcomes support an upward spiral of causality: Children who are more proficient in comprehension and technical reading and spelling skills read more; because of more print exposure, their comprehension and technical reading and spelling skills improved more with each year of education."*¹⁸⁶ Authors concluded *"that shared book reading to pre-conventional readers may be part of a continuum of out-of-school reading experiences that facilitate children's language, reading, and spelling achievement throughout their development."*

1.C. Material Well-being

A family's material circumstances can exert a strong influence on children's well-being. Family income and housing are examples of material well-being that can help build an important foundation for a child's life.

a. Low income

Lower socioeconomic status is widely accepted to have deleterious effects on the well-being and development of children and adolescents. The theory that family poverty adversely affects children's health, intellectual capabilities, academic achievement, and behaviour is well-documented.¹⁸⁷ Housing instability during the first five years of a child's life is significantly associated with increases in attention problems, and internalizing and externalizing behaviour, notably among poor children.¹⁸⁸ Various policies and interventions can attenuate poverty's negative influence on child development.^{187, 189, 190} For

example, policies to improve the mental health of mothers with young children and their home environments can “*change the economic gradient*” in child behaviour.¹⁹¹ Population-level early interventions such as home visiting and high-quality early child care provide evidence of effectiveness in reducing developmental vulnerability, preventing developmental delay and improving school readiness.¹⁹² The evidence base is limited with respect to the association of early childhood low income/socioeconomic status with physical health status in later childhood and adolescence.¹⁹³

An important lesson that Conti and Heckman (2012) cite in relation to shaping future policies to improve the health of individuals and communities is that inequalities open up early in life and early intervention is far more effective than later remediation.¹⁹⁴ In Appendix II.1.C.a, programs with a low income component have been identified and classified according to categories including early care and health, dental health, family support, hubs, networks, and physical/mental health.

Spencer (2004) carried out a preliminary systematic review of literature to address the question—among rich nations (or states within nations) what is the evidence that income inequality and differences in macro-level social policy affect rates of infant mortality and low birthweight (LBW)?¹⁹⁵ *“The findings, taking account of the methodological limitations of the review and of the included studies, suggest a statistically significant association between IMR and higher income inequality and other indicators of less re-distributive social policy. Only three studies examined the association of income inequality with LBW and, although they suggest a significant association, further studies will be needed to confirm this finding.”*¹⁹⁵

Childhood disadvantage has lasting negative effects on children's health and well-being. Systematic review methods were used by Attree (2004) to assess a group of qualitative studies that prioritize children's perspectives on growing up in disadvantage, exploring the social resources that they typically draw upon.¹⁹⁶ *“Children and young people describe aspects of family relationships, friendships and neighbourhoods that help to mitigate the impact of disadvantage on their well-being. However, their accounts demonstrate that such resources are not always and unambiguously experienced as supportive and protective. This systematic review highlights the value of social resources available to children living in poor circumstances, but also points up their limitations.”*¹⁹⁶

In a meta-synthesis of qualitative evidence, Attree (2005) explored parents' experiences of informal and formal support networks, considering their strengths and weaknesses in the context of poverty.¹⁹⁷ The review suggested that naturally occurring support systems do provide both material and emotional help to parents, but that such support has certain inherent drawbacks. It is not universally available and, in some circumstances, carries negative associations for poor families. In conclusion, this paper suggests that formal support services have the potential to fill gaps in informal support systems for poor families, but only if these are provided in ways which are sensitive to their needs. Therefore, parents' perspectives are essential to informing service design, development and evaluation in health and social care.¹⁹⁷

Galobardes et al. (2008) updated their 2004 systematic review on the association between childhood socioeconomic circumstances and cause-specific mortality, and confirmed that mortality risk for all causes was higher among those who experienced poorer socioeconomic circumstances during childhood.^{198, 199}

To determine the association between social disadvantage and infant health, Weightman et al. (2012) carried out a systematic review and meta-analyses.²⁰⁰ Although there was no clear pattern for failure to

thrive, there was a social gradient noted for low birth weight, premature birth, and stillbirth (increasing odds ratio with higher deprivation index).

Lower socioeconomic status is widely accepted to have deleterious effects on the well-being and development of children and adolescents. While socioeconomic status is largely determined by combinations of variables such as parental education level, marital status, and income, socioeconomic status may also interact with other variables mediating or moderating the influence of socioeconomic status on children's behavior and cognitive development. Letourneau et al. (2013) conducted a meta-analysis of research on the relationship between composite measures of socioeconomic status and developmental outcomes for children and adolescents between the ages of birth to 19 years of age.²⁰¹ The results revealed very small to small, but significant effects of socioeconomic status on aspects of the three outcome variables of literacy and language, aggression, and internalizing behaviours including depression. Many other factors come in to play that may better explain the small, but significant relationship between socioeconomic status and development.

Neighbourhood social capital is believed to influence the association between neighbourhood deprivation and health in children and adolescents. Vyncke et al. (2013) reviewed the role of social capital in health inequalities and the social gradient in health and well-being of children and adolescents.²⁰² The review foci were: the mediating role of neighbourhood social capital in the relationship between socioeconomic status and health-related outcomes in children and adolescents and (2) the interaction between neighbourhood social capital and socioeconomic characteristics in relation to health-related outcomes in children and adolescents. The findings are mixed but suggest that neighbourhood social capital might play a role in the health gradient among children and adolescents.

As to whether there is evidence in relation to an association between low income/socioeconomic status and physical health in later childhood/adolescence, Spencer et al.'s (2013) systematic review showed that, in contrast to the extensive literature on the impact of poor childhood social circumstances on adult health, the evidence base is limited.¹⁹³ The literature points to some associations of early low income/socioeconomic status with later poor health status, but this area requires further study.

As for evidence of effectiveness of home visiting models implemented in tribal communities, the amount of research available is small and in the review by Del Grosso et al. (2012), none of the programs included met the U.S. Department of Health and Human Services criteria.²⁰³

b. Environmental Injustice, Housing

In a 2013 paper, Landrigan writes *“Environmental injustice is the inequitable and disproportionately heavy exposure of poor, minority, and disenfranchised populations to toxic chemicals and other environmental hazards.”*²⁰⁴ Poor children confront widespread environmental inequities.²⁰⁵ Children in low income households may be exposed to more family instability and they may receive less social support, have less access to books, while the air and water they consume may be more polluted. Low income neighbourhoods may have fewer municipal services and also greater physical deterioration. Evans (2004) suggests that *“the accumulation of multiple environmental risks rather than singular risk exposure may be an especially pathogenic aspect of childhood poverty.”*²⁰⁵ More minority and poor families live in communities with landfills, hazardous waste facilities, incinerators, industrial plants, and old housing with poor indoor air quality and lead-based paint, and greater attention is being paid to matters of environmental healthy inequity. There has been growth in Canadian research documenting the health disparities and environmental injustices and impacts of environmental hazards across

locations since the 1990s.²⁰⁶ Low income and minority communities may be perceived as less powerful to defend against sources of environmental contamination, and communities and advocacy groups can play an important role in promoting healthier environments for children.²⁰⁷

Links between poor housing and poor health indicate that housing improvement may be an important mechanism through which public investment can lead to health improvement. Housing investment which improves thermal comfort in the home can lead to health improvements and may promote improved social relationships within and beyond the household. In addition, there is some suggestion that provision of adequate, affordable warmth may reduce absences from school or work.²⁰⁸ Sufficient evidence now shows that specific housing interventions can improve certain health outcomes.^{209, 210} As early as 2002, the U.S. Task Force on Community Preventive Services recommended housing subsidy programs for low income families, which provide rental vouchers for use in the private housing market and allow families choice in residential location. This recommendation was based on outcomes of improved neighborhood safety and families' reduced exposure to violence. The Task Force concluded that insufficient evidence was available on which to base a recommendation for or against creation of mixed-income housing developments that provide safe and affordable housing in neighborhoods with adequate goods and services.²¹¹ Albert (2013) described how a locally developed model of integrated, place-based service delivery is a solution to addressing the needs of vulnerable children and families in our communities.²¹²

Programs designed to assist with aspects of housing for low income families are noted in Appendix II.1.C.b.

1.D. Family and Peer Relationships

Infant-mother/father relationships and children's relationships with family and peers are key to their well-being. For most infants and children, their family is the main source of security and support which fosters development in many key areas such as social and emotional competence. Various infant and child development programs are provided in best practices portals noted in Section II - Methodology. A selection is included in Appendix II.1.D.

a. Parent Education, Supportive Parenting

Odgers et al. (2012) report *"a graded relationship between neighborhood socioeconomic status and children's antisocial behaviour that (a) can be observed at school entry, (b) widens across childhood, (c) remains after controlling for family-level socioeconomic status and risk, and (d) is completely mediated by maternal warmth and parental monitoring."*²¹³

Karreman et al. (2006) conducted a meta-analysis to examine the strength of the relation between parenting (positive control, negative control and responsiveness) and self-regulation in preschoolers.²¹⁴ Results revealed significant associations between both types of parental control and self-regulation. There was no significant association between self-regulation and responsiveness.

Parenting programs have the potential to improve the health and well-being of parents and children. A challenge for providers is to recruit and retain parents in programs. Mytton et al. (2013), by way of a systematic review of the literature on facilitators and barriers to engagement in parenting programs, identified a number of facilitators (e.g., opportunity to learn skills, using trusted or known people to lead

the course, meeting others and exchanging , accessibility of the course, well trained deliverers) and barriers (competing demands on parents' time and resources, experiences of group dynamics, stigma and gender issues around attending groups, accessibility of venues).²¹⁵
A selection of parenting programs is listed in Appendix II.1.D.a.

1.E. Participation

“Participation in community activities provides opportunities for children to learn new skills, build community networks and express their opinions.”⁴⁰ Background information included for this domain and the programs that have been identified highlight ways that children can be encouraged to participate in their communities, engage in mentoring, etc., and avoid becoming socially isolated.

a. After School Programs, Arts

Zief et al. (2006) state that collected evidence of after-school programs is not sufficient to make any policy or programming recommendations, but they note that some areas of promise do exist (supervision and participation).²¹⁶ On the other hand, Vandell et al. (2007) report that regular participation in high-quality after-school programs is linked to significant gains in standardized test scores and work habits as well as reductions in behavioural problems and substance use.²¹⁷

The City of Toronto is working to develop a provincial strategy for after-school hours in Ontario.²¹⁸ A goal is for the sustainability of an accessible quality after-school system through core government funding and subsidies to support a network of community-based programming for children ages 6 to 12. Out of school-time programs may range from those emphasizing community leadership to sports/arts/music to karate, to describe only a few. A unique discovery centre that allows for children's activities either scheduled through school or outside of school hours is Munchkinland in Parksville/Qualicum, British Columbia.

Lifter et al. (2011)²¹⁹ present a review about the importance of play in early intervention and how play is regarded in terms of fostering social competence and prosocial behaviour. After-school time programs where children participate in various activities can contribute to healthy development in a number of realms – e.g., physical, social, emotional.

Social competence and cognitive/prosocial behaviour may be tapped through programs such as Big Brothers, Big Sisters, Boys and Girls Clubs of Canada, Cadets, and other mentoring-type programs (Appendix II.1.E.a).

1.F. Subjective Well-being

Subjective well-being is a category used in this report to draw out how children feel about themselves, others, and their environment. Examples of mental health issues include anxiety, depression or grief and loss.

a. Mental Health, Well-Being, Anxiety

Boivin et al. (2012) summarized a significant body of evidence (longitudinal, etc.) regarding early life experiences and mental health.⁴¹ Various factors such as poverty, trauma, and inadequate treatment have been shown to have particular impact children's social, emotional and mental health.²²⁰ A

comprehensive review by Fisak et al. (2011) of the effectiveness of child and adolescent anxiety prevention programs indicate that provider type can moderate program effectiveness, while program duration, participant age, gender, and program type (universal versus targeted) were not found to moderate program effectiveness.²²¹ Ttofi and Farrington (2012) presented results from two systematic/meta-analytic reviews of longitudinal studies on the association of school bullying (perpetration and victimization) with adverse health and criminal outcomes later in life.²²² Significant associations between the two predictors and the outcomes are found even after controlling for other major childhood risk factors that are measured before school bullying. The results indicate that effective antibullying programs should be encouraged.²²² They could be viewed as a form of early crime prevention as well as an early form of public health promotion.

In childhood, mental health problems primarily consist of behaviour and emotional problems. Bayer et al. (2009) undertook a systematic review to identify evidence-based preventive interventions for behavioural and emotional problems of children aged 0-8 years.²²³ *“Among effective programs, three US programs have the best balance of evidence: in infancy, the individual Nurse Home Visitation Program; at preschool age, the individual Family Check Up; at school age, the Good Behaviour Game class program. Three parenting programs in England and Australia are also worthy of highlight: the Incredible Years group format, Triple P individual format, and Parent Education Program group format.”*²²³

In Appendix II.1.F.a, there is a list of programs aimed at strengthening children’s mental health and well-being. For example, “Children in the Middle”²²⁴ helps children coping with parents undergoing divorce; the “Olweus Bullying Prevention Program”²²⁵ is a violence prevention program for children facing bullying and other anxiety-provoking issues. Various programs in this domain promote emotion fitness, optimistic thinking, or paths to alternative thinking.

1.G. Behaviours and Risks

Physical activity and healthy eating are examples of healthy behaviours that contribute to children’s well-being. Conversely, substance abuse (drugs, alcohol, etc.) and aggression are risky behaviours which can have a negative effect on children’s health and well-being.

a. Internalizing or Externalizing Behaviour, Aggression, Bullying, Crime

Chronic involvement in bullying is associated with many intrapersonal, interpersonal, and academic problems, and even sporadic experiences of bullying are harmful.²²⁶ Various interventions have been developed and have been adopted by countries world-wide (Appendix II.1.G.a).

b. Smoking, Substance Abuse

For smoking, there is increasing evidence that contact with other smokers, particularly in the family, is a strong determinant of risk of smoking uptake. Jo (2011) reported that parental and sibling smoking is a strong and significant determinant of the risk of smoking uptake by children and young people and, as such, is a major and entirely avoidable health risk.²²⁷ Various intervention programs address smoking reduction/cessation, with an aim to protect children from exposure to smoking behaviour, especially by family members.

Niccols et al. (2012) reviewed the effectiveness of integrated programs for mothers with substance abuse issues.²²⁸ A specific substance use treatment and at least one parenting or child service were used

and through cohort studies and randomized trials it was shown that integrated programs were associated with improvements in parenting skills.

Broning et al. (2012) report that there is early evidence for the effectiveness of preventive interventions in childhood and adolescence for children from substance-affected families.²²⁹ Promising interventions to reduce risk behaviour in adolescents or young adults appear to be those that address multiple domains of influence on risk behaviour,²³⁰ and family-based interventions and combined interventions.²³¹ School-based interventions have been noted as effective in providing knowledge about substance use,²³¹ while little has been reported on programs conducted in different cultures.

Although the focus of this review is primarily children, rather than youth, a selection of programs with a youth-focus is listed, primarily because youth seem to be the main target of such programs (Appendix II.1.G.b).

1.H. Environment

Environmental drivers of health are important to elucidate, and linking the environment to adverse health children's health outcomes is critical. There is concern about adequate protection of children's health from chemicals in the environment. Reports from the largest companies in the United States shows that toys and other children's products contain low levels of dozens of industrial chemicals, some of "high concern".²³² For example, "*cobalt in plastic building blocks and baby bibs, ethylene glycol in dolls, methyl ethyl ketone in clothing, antimony in high chairs and booster seats, parabens in baby wipes, D4 in baby creams.*"²³² In Canada, as of 2005 there were over 23,000 substances in commercial use yet to be fully evaluated.²³³ Ongoingly, researchers are identifying statistically significant associations between various chemicals and health, for example urinary Bisphenol A levels and measures of adiposity in children and adolescents.^{234, 235} In the United States, costs for treatment of childhood illnesses linked to toxic environmental exposures is estimated to be over \$76 billion.²³⁶

A primer on children's health and the environment, prepared by the Canadian Partnership for Children's Health and Environment (CPCHE), details environmental exposures and health effects of concern to children and what can be done.²³³ In 2010 Health Canada published a national strategic framework on children's environmental health.²³⁷ Researchers are beginning to propose new methodologies for estimating risk in ways that can facilitate development of practice guidelines or other evidence-based recommendations for prevention.²³⁶ Makri et al. (2004) summarized available literature relating to maturation of biological processes in children.²³⁸ Essentially the work provides insight regarding pediatric sensitivity to environmental chemicals, and may be useful for evaluating developmental trends of susceptibility, and for identifying time periods and/or chemical classes of particular concern.

As to whether exposure to pesticides during pregnancy and/or early childhood is associated with neurodevelopmental outcomes in children, Burns et al. (2013) reported that no particular pesticide was identified as causally related to adverse neurodevelopmental outcomes in infants and children.²³⁹

In addition to the danger of toxic chemical exposures as an environmental threat to child health,²⁴⁰⁻²⁴⁷ there is evidence that the way a child's physical environment is designed, built, and maintained can also significantly affect the risk of disease, disability and injury.^{44, 148, 248-250} Cities and communities can provide a physical environment that contributes to all children thriving, through promoting social connectedness, feelings of safety, freedom of movement, access to natural areas and green space and

diverse opportunities for play. The built environment and various exposures in relation to children's health are explored further as follows: air quality; built environment; gardens, greenspace, etc.; neighbourhoods, place, and socioeconomic status.

a. Air Quality

Children are both more exposed and particularly vulnerable to air contaminants.²⁵¹ Current epidemiological evidence suggests that early-life exposure to persistent organic pollutants can adversely influence immune and respiratory systems development.²⁵² Exposures in utero and in the first few years of life have disproportionate effects.²⁵³ Relative to their body weight, children breathe more air, drink more water, and eat more food than adults; their exposure and behaviours increase their exposure (e.g., they are closer to the ground, they play vigorously outdoors). Immune systems of young children may be less able to endure toxicants. Epigenetics research raises concerns that environmental exposures may affect not just today's children, but also our children's children.²⁵³

There is growing concern about the health effects of ambient air pollution in children. Regarding the adverse effects of air pollution on the health of Canadian children, Koranteng et al. (2007) pointed to evidence from Canadian studies which suggests that air pollution may cause adverse respiratory health effects in children and adverse pregnancy outcomes, and may contribute to infant mortality in Canada.²⁵⁴ In May 2013, Newman et al. reported a statistically significant association between traffic-related air pollution exposure in a child's first year of life and attention deficit/hyperactivity disorder symptoms at seven years of age.²⁵⁵ Chiu et al. (2013) found an association between black carbon traffic particles and attention measures at 7-14 years of age.²⁵⁶

Children residing in rural settings may encounter air contaminants from agricultural activities (e.g., confined animal feeding operations) but these contaminants and many others (e.g., diesel exhaust, biomass burning, solvents, and veterinary antibiotics) remain largely understudied with respect to their impact on children.

A number of programs have been initiated to improve air quality and foster children's healthy development such as AirNow²⁵⁷; Clean School Bus USA²⁵⁸; and Project Green Fleet^{259, 260}; and many others.²⁶¹⁻²⁶⁵ For more, see Appendix II.1.H.a.

Children's exposure to environmental tobacco smoke also presents concern.²⁶⁶ A cross-sectional descriptive study conducted in Manitoba to describe the factors associated with providing a smoke-free home for kindergarten children found that being better educated, living with a partner, and having a higher income were associated with smoke-free homes.²⁶⁷ Smoke-free indoor public environments are enforced through national legislation and such regulations have been shown to reduce secondhand smoke exposure and, consequently, respiratory and cardiovascular morbidity. Evidence of particular health benefit in children is now emerging, including reductions in low birthweight deliveries, preterm birth and asthma exacerbations.²⁶⁸ A systematic review and meta-analysis by Leonardi-Bee et al. (2008) to determine the effects of environmental tobacco smoke exposure on birth outcomes indicated that exposure of non-smoking pregnant women to environmental tobacco smoke "reduces mean birthweight and increases the risk of low birthweight, but has no clear effect on gestation or the risk of being small for gestational age."²⁶⁹ Further, passive smoking may be implicated in deteriorating cardiovascular status

in children because of their partially developed physiological systems.²⁷⁰ Been et al. (2013) aim to comprehensively assess the impact of smoke-free legislation on fetal, infant and childhood outcomes.²⁶⁸

In order to reduce children's secondhand smoke exposure, various programs have been developed- for example, STARSS (Start Thinking about Reducing Secondhand Smoke)²⁷¹ and Smoking? Not in Mama's House!²⁷² Others are listed in Appendix II.1.H.a.

b. Built Environment

The built environment has been identified as a significant determinant of health and there is growing recognition of the importance of the built environment in influencing people's health-related decisions (e.g., whether to walk or drive). There has been strong interest in ensuring that built environments are safe for children and have features that promote their healthy development (e.g., safe routes to school). Moore (2012) states that *"there is evidence of the importance of geography and physical environment for children's health and well-being; that place matters for children; that social support and networks matter for people's well-being; that locational disadvantages lead to poorer outcomes for children."*²⁷³

*"The built environment in which children live, play and interact affects wellbeing as children need safe spaces to relax, have fun, explore and be active."*²⁷⁴ Jackson et al. (2013) argue that *"much work needs to be done in the area of healthy built environments, including research on how to reap the benefits of healthy built environments and an increased focus on building healthy environments."*²⁷⁴

Further work needs to be done to specify *"which factors at which levels matter to which aspects of healthy child development."*²⁴⁹ There are clues to suggest that there are initiatives that can be undertaken at the neighbourhood level and that such efforts should target language and cognitive skills, communication skills and physical health and well-being.^{275, 276} Initiatives can be targeted at older children (i.e., age three years and up), as they have a greater geographical range than younger children. For promoting healthy child development among younger children, the focus should be directed to the household level and on outcomes related to social knowledge and competence and emotional health and maturity.²⁴⁹ Dunn states that *"It will be challenging for public policy to address housing affordability, quality, security and design issues. But even more challenging will be penetrating into the domestic lives of families to ensure that very young children get the kind of early stimulation needed to promote healthy child development."*²⁴⁹

Community design has been more closely scrutinized in terms of association with impact on health indices such as obesity, diabetes, heart disease, asthma, cancer and depression.^{274, 277} In Nova Scotia, planners surveyed on the question of whether and how rural planners should address health issues, reported that health is important to address in planning practice²⁷⁸ but there are barriers to implementation (e.g., government silos) and practice (e.g., roles of planners).

Smart Growth involves looking at communities *"not only as places to live but as vehicles to promote health and well-being,"*²⁷⁹ and in Canada as well as the United States, this movement has been working for more than a decade to foster sustainability principles across the country through education, research and capacity building. The Child Friendly city framework was established by Unicef (2004),²⁸⁰ and McAllister (2009) describes four major issues that are critical to the creation and maintenance of a child-friendly community: safety, greenspace, access, and integration.²⁸¹ Also, there has been more effort to include children in planning processes so that the voice of children may be heard with respect to community design. The 'Vertical Living Kids' research project interviewed children aged 8–12 to elicit

their views on local environments, to get children involved in design so that contemporary strategic planning is not child-blind.²⁸²

Pabayo et al. (2012) examined the combined influence of poverty and dangerousness of the neighbourhood on active transportation to school among a cohort of children followed throughout the early school years.²⁸³ Authors report that *“Since active transportation is most likely to be adopted by those living in poverty and because it is also associated with unsafe environments, some children are experiencing environmental injustice in relation to active transportation.”* Interventions may be implemented to reduce environmental injustice through improvements in road safety. Yiannakoulias et al. (2011)²⁸⁴ investigated the effects of urban change on the risk of child pedestrian injury in Edmonton, Alberta, a city that has experienced large economic and population growth following the expansion of the oil and gas industry in Canada. Areas with higher proportions of families on low incomes had higher injury incidence.

Various programs have been initiated that are intended to address issues of the built environment. Many include green engineering and community designs to encourage active transportation and healthy neighbourhoods. Examples include “Safe Routes to School”,²⁸⁵ “Sunday Parkways”,²⁸⁶ and “Walking School Bus”.^{287, 288} In some cases, partnerships have been developed to focus on creating “transportation justice” for “transit dependent” populations. For example, the Bay Area Transportation Justice Working Group is a collaboration of economic and environmental justice, public and environmental health, transportation and land use, labour, homeless, housing, and youth organizations.²⁸⁹ These organizations have partnered to define a regional transportation agenda and to advocate for improved social and economic equity in transportation planning, funding, and policy-making.

More on this and a list of other programs is provided in Appendix II.1.H.b.

c. Gardens, greenspace, etc.

Some population studies have suggested positive effects of greenspace on various indicators of health,²⁹⁰ however there are limited large-scale epidemiological studies assessing this relationship, specifically for populations of young people and in the Canadian context. Quynh et al. (2013), who examined the relationship between exposure to public natural space and positive emotional well-being among young adolescent Canadians, reported that over half of Canadian youth reported positive emotional well-being.²⁹⁰ Relationships between measures of natural space and positive emotional well-being were weak and lacked consistency overall, but modest protective effects were observed in small cities. Positive emotional well-being was more strongly associated with other factors including demographic characteristics, family affluence, and perceptions of neighbourhood surroundings.

Blair (2009)²⁹¹ in a review of the literature on children’s gardening, reported positive outcomes of school-gardening initiatives in the areas of science achievement and food behaviour, but he did not demonstrate that children’s environmental attitude or social behaviour consistently improves with gardening. Qualitative studies documented a wider range of positive social outcomes and environmental behaviours. In one particular study of a school-community garden program, Schmidt et al. (2011)²⁹² stated that it resulted in promoted site transformation, life skills, community building, food security, school food service, curriculum developments, infrastructure development, extension master gardener collaboration, climate impact, future needs, and sustainability. McCormack (2010)²⁹³ completed a review

of farmers' markets and community gardens on nutrition-related outcomes, but findings were hampered due to few well-designed studies.

Whether community gardens, community kitchens, and food box programs are effective options for food-insecure families is uncertain. An evaluation of the uptake and perceptions of community gardens, community kitchens, and food box programs among food-insecure families identified two themes for non-participation. First, families expressed that programs were not accessible because they lacked the knowledge of how or where to participate or because programs were not in their neighbourhoods. Second, programs lacked fit for families, as they were not suited to busy schedules, interests, or needs. This information suggests that these programs may not be effective options for these families to improve their food access.²⁹⁴

To foster gardening and greenspace projects, various programs have developed in many areas, from community market farms, buying local, children's gardening, to "greening" areas (Appendix II.1.H.c).

d. Neighbourhoods, Place, Socioeconomic Status

Growing up in a poor neighbourhood has negative effects on children and adolescents. In the literature it has been concluded that the risk of low birth weight, childhood injury and abuse, and teenage pregnancy or criminality double in poor areas. Sellstrom and Bremberg (2006) demonstrated that interventions in underprivileged neighbourhoods can reduce health risks to children, especially in families that lack resources.²⁹⁵

Community building and social change involves working to change policies, develop new programs, and expand capacity and partnerships to tackle issues such as affordable housing, sprawl, lack of greenspace, and more. A sample of programs intended to build healthy neighbourhoods and healthy families are provided in Appendix II.1.H.d.

As to whether residential mobility in childhood may have an adverse association with health outcomes through the life course, Jelleyman and Spencer (2008) assessed the evidence.²⁹⁶ *"Outcomes identified in association with residential mobility included: higher levels of behavioural and emotional problems; increased teenage pregnancy rates; accelerated initiation of illicit drug use; adolescent depression; reduced continuity of healthcare. ...Residential mobility interacts at neighbourhood, family and individual levels in cumulative and compounding ways with significance for the wellbeing of children."*²⁹⁶

SECTION III: RESULTS (continued)**(2) Family in-home visits aimed at improving early childhood development and children's health outcomes**

Note: Additional information on family in-home visits is included in Section 1 (Healthy Child Development)

Generally, home visiting is one of several service strategies embedded in a comprehensive, high-quality early childhood system that promotes maternal, infant and early childhood health, safety and development; strong parent-child relationships; and responsible parenting among mothers and fathers. Home visiting programs may be established to prevent a range of adverse child health outcomes potentially associated with social disadvantage, while other programs may emphasize 'family wellness', including the cognitive and intellectual development of children, parenting skills and support, positive maternal mental health and use of other health services.²⁹⁷

In this synthesis of home visiting literature, information has been extracted primarily from systematic reviews. Where the literature is scant with respect to systematic reviews or other evidence reviews, randomized controlled trial evidence is reported where available. The following categories are used to frame the home visiting literature findings:

- 2.A. [General](#) (e.g., multi-component programs; target populations, modes of delivery, etc.)
- 2.B. [Child development and school readiness](#) (early education, cognitive and intellectual development)
- 2.C. [Child health](#) (health and safety, injury prevention, healthy nutrition, physical activity, obesity)
- 2.D. [Maternal health](#) (pre- and post-natal, breastfeeding, attachment, self-sufficiency)
- 2.E. [Positive parenting practices](#) (parent education and support, family functioning)
- 2.F. [Reductions in child maltreatment](#) (abuse, neglect)
- 2.G. [Reductions in juvenile delinquency, family violence, and crime](#)
- 2.H. [Low income, disadvantaged mothers, families](#)
- 2.I. [Teen moms, at-risk moms](#)

These categories reflect home visiting program aims such as early literacy and school readiness, child safety and injury prevention, reduction in child abuse and neglect, or target populations such as low income families or teen moms.

2.A. General (e.g., multi-component programs; target populations, modes of delivery, etc.)

A number of reviews investigate multiple outcomes, various target populations, etc., and the aim of this section is to introduce general research findings to date with respect to home visiting, starting with earlier reviews and culminating with the most recent.

In 2001 Ciliska et al. assessed the evidence for the effectiveness of public health nursing interventions delivered by home visiting of clients in the pre- and postnatal period. In their systematic review, they reported positive outcomes including "improvement in children's mental development, mental health

and physical growth, reduction in the mother's depression, improvement in maternal employment, education, nutrition and other health habits, and government cost saving. There was no proven impact on low birth weight, gestational age or neonatal morbidity or mortality."²⁹⁸ Programs significantly benefitted clients considered to be at-risk due to factors such as low income and low educational achievement.²⁹⁸

Bull et al. (2004)²⁹⁷ investigated several questions in relation to home visiting and reported that there was

- (i) good evidence to suggest that home visiting can have an impact in reducing rates of childhood injury; parenting or mother-child interaction;
- (ii) some evidence to suggest a beneficial impact of home visiting on measures of intellectual development in children; breastfeeding; children's diets; detection and management of postnatal depression; and
- (iii) insufficient evidence to suggest that home visiting programs can have a beneficial impact on low birth weight or other pregnancy outcomes; immunization or hospital admission rates; access to social support; maternal life course development such as participation in education or employment, spacing of subsequent pregnancies, or child abuse. However, with respect to the latter, the Task Force on Community Preventive Services recommends early child home visiting for preventing child abuse and neglect, based on strong evidence of effectiveness.²⁹⁹

In investigating the question of how home visiting programs are best delivered, Bull et al. reported that home visiting interventions that focus on a small range of outcomes appear to be less effective than interventions with a more comprehensive approach.²⁹⁷ Also, evidence suggests that more intensive programs of home visiting have greater impact, but there was no clear evidence on whether home visiting is more effective when delivered by professionals rather than lay people.²⁹⁷

In Sweet and Applebaum's 2004 meta-analytic review to assess the effectiveness of home visiting as a strategy for helping families across a range of outcomes, they did not find that any one characteristic to be consistently related to outcome.³⁰⁰ Similarly, Zercher and Spiker (2004) concluded that "*research on home visitation programs has not been able to show that these programs have a strong and consistent effect on participating children and families, but modest effects have been repeatedly reported. Programs that are designed and implemented with greater rigour seem to provide better results. These results may include changes in parental health and safety behaviour, parenting and discipline and parental life course. Home visitation programs also appear to offer greater benefits to certain subgroups of families, such as low-income single teen mothers. On the whole, home visitation programs have not been shown to result in large changes in important child outcomes, such as birth weight, cognitive development or behaviour problems.*"³⁰¹

Russell et al. (2007) reviewed home visiting programs focusing on traditional outcomes such as child maltreatment prevention, as well as programs focusing on nontraditional outcomes, such as community connection.³⁰² Conclusions about program effectiveness could not be drawn from the evidence and authors noted the need for rigorous documentation of program implementation to facilitate evaluation. Similarly, Olds et al. (2007) stated that few programs have met standards for there to be certainty with regard to what aspects of home visiting lead to successful outcomes, but they reported that evidence is mounting that indicates that "*programs delivered by professionals, especially nurse home visiting programs for pregnant women and parents of young children, produce replicable effects on children's health and development, and that these programs can be reliably reproduced with different populations living in a variety of community settings.*"³⁰³ Reading (2005) summarized early randomized,

controlled trial findings of Olds et al. (1998; 2002; 2004)³⁰⁴⁻³⁰⁶ by stating that the trials had “*beneficial effects on the mother’s functioning and the child’s social, emotional and psychomotor development. Effects for nurse delivered programmes were stronger and more child-centred than for the paraprofessionals.*”³⁰⁷ Further, Donelan-McCall and Olds (2012) indicated that home visiting programs with the greatest promise to improve pregnancy outcomes, parental life-course, child abuse and neglect rates, compromised caregiving, and children’s social and emotional problems have employed professional home visitors, in particular nurses.³⁰⁸

In 2007 Saskatchewan’s Ministry of Education, in collaboration with the Universities of Saskatchewan and Regina, assessed the evidence of home visiting programs similar to that of KidsFirst.³⁰⁹ KidsFirst is a paraprofessional home visiting program launched in 2002 that provides support and services to vulnerable families with young children (aged 0-5) in Saskatchewan.³¹⁰ In examining the evidence for programs with similar aims to build capacity in families, promote healthy child development and facilitate goal achievement for parents, the review showed “*varying, mixed or inconsistent results.*”³⁰⁹ “*On the whole, the benefits to children and their parents were usually modest. In areas such as prenatal outcomes, signs of improvement due to programs similar to KidsFirst were rare.*”³⁰⁹

Korfmacher et al. (2008) sought to clarify what factors influenced parent involvement and they noted these to be parent characteristics, qualities of the home visitor, and program features.³¹¹

The National Collaborating Centre for Determinants of Health (NCCDH) synthesized evidence of public health early child home visiting programs in a 2008 discussion paper.³¹² In addition to pointing to mixed results of home visiting programs as reported in the literature, the authors included a summary of key components of successful home visiting programs. These components were: program fidelity; theoretically-grounded frameworks; delivery by professionals (although there is mention that teams consisting of a nurse and a paraprofessional can be effective); maintenance of enrolment; and pre- and postnatal aspects, running for a minimum of one year and of high intensity – programs with these components tend to be more effective, leading to better outcomes. Also, evidence indicated that programs that reached vulnerable or at-risk families may provide more benefit. These conclusions are similar to those of Kitzman (2007) who investigated whether program outcomes differ according to program characteristics.³¹³ Specific to characteristics of participants, she noted that there is evidence to suggest that that mothers with the fewest personal and social resources benefit more from home visit programs. As well, Kitzman stated that family engagement and investment in program objectives are critical; establishing quality relationships is important, however a constructed friendship alone is not sufficient to produce the anticipated outcomes; and that the impact of multi-dimensional home visiting programs lasts long after the intervention ends.^{313,g}

Paulsell (2012) discussed the need for guidance for policymakers and practitioners to effectively implement and sustain high-fidelity programs, as well as adapt program models to different populations

^g An example of a large, multi-dimensional program is the large U.S. initiative called the Maternal, Infant and Early Childhood Home Visiting Program, which is responsive to the needs of children and families in communities at-risk, has the opportunity to affect changes that will improve the health and well-being of vulnerable populations by addressing child development within a framework of life course development.³¹⁴ Supplee L, Adirim T. Evidence-based home visiting to enhance child health and child development and to support families. Washington, DC: American Psychological Association; 2012; Available from: <http://www.apa.org/pi/families/resources/newsletter/2012/07/home-visiting.aspx>. The Nurse-Family Partnership is another example of a multifaceted program designed to prevent a range of health and social problems and promote healthy development and independence in families.

and contexts.³¹⁵ Strategies are required to help avoid program attrition and enable programs to provide the services intended. Supportive supervision, fidelity monitoring, and a positive organizational climate are important for developing successful evidence-based programs.

In a 2012 synthesis of evidence of the impact of home visiting, Spiker reported that home visiting is effective for children's cognitive and behavioural outcomes (e.g., Early Head Start, The Nurse-Family Partnership and The Infant Health and Developmental program); that home visiting is not significantly effective in improving pregnancy outcomes; that some components help to improve child's health and development and mothers' sensitivity to child cues; and that there is inconsistency in the results with respect to reductions in child maltreatment.³¹⁶ Spiker stated that the efficacy of home visiting programs also depends upon the population targeted, providers and home visit content. As reported in the NCCDH report,³¹² home visiting programs targeted at vulnerable or at-risk subgroups (e.g., parents living in poverty or parents with psychological difficulties) are generally more effective, and larger positive effects of home visiting programs are usually found when participants are fully involved and when nurses and/or other professionals deliver services to families instead of paraprofessionals.³¹⁶ This enables implementation of home visiting programs with a high degree of fidelity that can be sustained over time. Spiker goes on to report that *"With regard to home visit content, programs tend to be more effective when services are comprehensive in focus, components are implemented with rigour, and when they target families' multiple needs. Finally, home visiting programs that promote high quality parent-child relationships and combined with high-quality early education programs are most likely to result in better school readiness outcomes for children."*

In 2013, Filene et al. used a component-based, domain-specific approach to determine which characteristics most strongly predict home visiting program outcomes.³¹⁷ They reported significant and positive outcomes for maternal life course, child cognitive skills, and parent behaviors and skills, but no consistent pattern of effective components for birth outcomes, child physical health, and child maltreatment.

The King's College London review of the research evidence (2013)³¹⁸ on the impact of home visiting on families indicated that health visitors can have a positive impact on health and that success was related to three main areas:

- i. organising health visiting services to support best practice (single, holistic form of provision, centred upon universal service)
- ii. delivering proven programs and interventions to promote health and well-being (including collaboration with other community provision), and
- iii. having a suitably skilled and trained workforce.³¹⁸

Peacock et al. (2013) concluded from their systematic review that home visiting by paraprofessionals holds promise for socially high-risk families with young children, and initiating the intervention prenatally and increasing the number of visits improves development and health outcomes for particular groups of children.³¹⁹

The home visiting evidence of effectiveness review by Avellar et al. (2013) provided detailed evidence-based information for programs that serve pregnant women or families with children from birth to age 5 and the programs aim to improve outcomes in at least one of the following eight domains:

- i. Child health
- ii. Child development and school readiness
- iii. Family economic self-sufficiency

- iv. Linkages and referrals
- v. Maternal health
- vi. Positive parenting practices
- vii. Reductions in child maltreatment
- viii. Reductions in juvenile delinquency, family violence, and crime.³²⁰

As of August 2013, the HomVEE team had prioritized 35 program models for the review to determine which met the U.S. Department of Health and Human Services (DHHS) criteria for an evidence-based early childhood home visiting service delivery model.³²¹ The HomVEE team reported on quality of outcome measures, type of impact (favourable, unfavourable, ambiguous), duration of impacts, replication of impacts, and magnitude of impacts. The following is an excerpt of the HomVEE executive summary:

Overall, HomVEE identified 14 home visiting models that meet the DHHS criteria for an evidence-based early childhood home visiting service delivery model: (1) Child FIRST, (2) Early Head Start-Home Visiting, (3) Early Intervention Program for Adolescent Mothers (EIP), (4) Early Start (New Zealand), (5) Family Check-Up, (6) Healthy Families America (HFA), (7) Healthy Steps, (8) Home Instruction for Parents of Preschool Youngsters (HIPPPY), (9) Maternal Early Childhood Sustained Home Visiting Program, (10) Nurse Family Partnership (NFP), (11) Oklahoma's Community-Based Family Resource and Support (CBFRS) Program, (12) Parents as Teachers (PAT), (13) Play and Learning Strategies (PALS) Infant, and (14) SafeCare Augmented. All of them have at least one high- or moderate-quality study with at least two favorable, statistically significant impacts in two different domains or two or more high- or moderate-quality studies using non- overlapping analytic study samples with one or more statistically significant, favorable impacts in the same domain.^{320h}

The literature is further reviewed and reported by specific domain in the following sections to provide a clearer synthesis regarding program components, content, delivery, target population, etc.

2.B. Child Development and School Readiness (early education, cognitive and intellectual development)

Home visiting models address child development and school readiness by engaging parents in activities designed to improve child functioning across developmental domains, educating parents about child development and strategies to enhance school readiness (such as literacy activities), promoting positive parent-child interactions, and linking families to center-based early childhood care and education experiences.

The literature indicates overall benefit of home visiting programs on school readiness and child development outcomes. Gaylor and Spiker (2012) reviewed seven home visiting program models across 16 studies that measured child development and school readiness outcomes and they concluded that

^h See Tables 2 and 3 in Avellar et al. (2013)320. Avellar S, Paulsell D, Sama-Miller E, Grosso PD. Home visiting evidence of effectiveness: executive summary. Washington, DC: U.S. Department of Health and Human Services; 2013 Sep. Available from: <http://homvee.acf.hhs.gov/Default.aspx>.

there were positive impacts on young children's development and behaviour.³²² As noted in the previous section, Spiker's 2012 synthesis of evidence indicated that home visiting is effective for children's cognitive and behavioural outcomes (e.g., Early Head Start, The Nurse-Family Partnership and The Infant Health and Developmental program).³¹⁶ Findings reported by Zhai et al. (2013) suggest that, regardless of geographic region, Head Start and pre-K participants had higher academic skills at school entry than did their counterparts.³²³ Karoly 2010 reported favourable economic returns for programs that focused on home visiting or parent education as well as for programs that combined those services with early childhood education.¹⁶⁴ Earlier findings from systematic reviews suggested effectiveness of home visiting programs in preventing developmental delay, as assessed by reductions in retention in grade and placement in special education.¹⁶⁹

In the HomVee review of research on 32 home visiting program models there were 16 program models with high- or moderate-quality studies that measured outcomes in the child development and school readiness domain. Of these, 12 had favourable effects on primary outcome measures (e.g., direct observations of behaviour), and 5 had favourable effects on secondary outcome measures (e.g., parent or teacher reports).³²⁴

2.C. Child Health (birth outcomes, health care, immunizations, healthy nutrition, physical activity, obesity)

Home visiting programs that begin during a mother's pregnancy generally aim to improve birth outcomes by linking mothers to prenatal health care and providing them with information about fetal development. Postnatal programs ensure that children have access to health care, receive immunizations, etc. Some programs also provide information to parents about ways to support physical health, such as the importance of nutritious meals and physical activity.³²⁵ In this section, sub-categories will be used to highlight areas: general program models, birthweight, nutrition, physical health, dental health, and immunization.

General Program Models

In the HomVee evidence review, of the 14 home visiting program models that met the U.S. Department of Health and Human Services criteria for an evidence-based early childhood home visiting service delivery model and with high- or moderate-quality studies that measured outcomes in the child health domain, five had favourable effects on primary outcome measures (birth outcomes and counts of health care service),ⁱ and six had favourable effects on secondary outcome measures (parent reports about children's health and use of health care services).^j³²⁵

Birthweight

With respect to effectiveness of paraprofessional home-visiting programs on health outcomes of young children from disadvantaged families, Peacock et al. (2013) reported significant improvements in reduced incidence of low birth weights.³¹⁹

ⁱ Early Intervention Program (EIP) for Adolescent Mothers; Early Start (New Zealand); Healthy Families America; Healthy Steps; Nurse-Family Partnership

^j Early Start (New Zealand); Healthy Families America; Maternal Early Childhood Sustained Home-Visiting Program (MECSH); Nurse-Family Partnership

Nutrition

Regarding evidence relating to home visiting and child health - specifically, nutrition - two randomized controlled trials of home visiting components provided to disadvantaged groups to encourage fruit and vegetable intake for children under five did not show significantly increased overall fruit intake in the short term.¹⁹² Scheiwe et al. (2010) conducted four-year follow-up of a randomized controlled trial where the intervention used monthly home visits from trained volunteers to improve infant feeding practices among a sample of low income mothers in two disadvantaged London boroughs. Authors reported that there was little evidence that the intervention had an important effect on children's current BMI, caries levels or consumption of fruit and vegetables, however, mothers from the intervention group had better nutritional knowledge and confidence.³²⁶ The review by Bull et al. in 2004 stated that there is some evidence to suggest a beneficial impact of home visiting on children's diets.²⁹⁷

Physical Health

For children's physical health and obesity, Wen et al. (2012) reported findings from a randomized, controlled trial on home-based early intervention delivered by trained community nurses to target children's body mass index (BMI) and noted it was effective in reducing mean BMI for children at age 2.¹³⁴ The systematic review by Skouteris et al. (2012) revealed that parent-child relationships (e.g., in feeding, eating, and play) are important in explaining childhood obesity and that prevention/intervention (home visiting) strategies should be bi-directional in that they focus on interactions and influences of parent and child.¹³⁷

With respect to home visiting components aimed at housing interventions to reduce indoor allergens and improve children's health, there is sufficient evidence that multi-faceted in-home interventions for asthma tailored to the individual are effective in controlling asthma symptoms and reducing other measures of asthma morbidity.^{159, 160, 209, 210, 327-329} These interventions include home environmental assessment and education delivered by home visiting.

Dental health

Specific to dental health and impact of home visiting, this topic was not extensively searched, however a selection of randomized, controlled trials appear to show benefit of home visiting programs on utilization of dental services to improve dental literacy and introduce children and their families to dental prevention,^{67, 68} and to reduce early childhood caries in a low income community.³³⁰

Immunization

Kendrick et al. (2000) completed a systematic review to evaluate the effectiveness of home visiting programs on the uptake of childhood immunization.³³¹ Their conclusion was that home visiting programs have not been shown to be effective in increasing the uptake of immunization. Bull et al. (2004) also reported that there was insufficient evidence of the impact of home visiting on immunization or hospital admission rates.²⁹⁷ However a 2009 randomized, controlled trial by Hambidge et al. indicated that a stepped intervention of tracking and case management improved infant immunization status and receipt of preventive care in a population of high-risk urban infants of low socioeconomic status.³³²

2.D. Maternal Health (pre- and post-natal, breastfeeding, attachment, self-sufficiency)

Home visiting programs aimed at improving maternal health provide mothers with health information and guidance during pregnancy and after the child's birth.

The HomVEE programs with high- or moderate-quality studies measuring outcomes for maternal health that had favourable effects on primary outcome measures included: Child FIRST; Family Check-Up; Healthy Families America; Maternal Early Childhood Sustained Home Visiting Program; Nurse-Family Partnership; and Oklahoma's Community-Based Family Resource and Support (CBFRS) Program.³²⁰ Within the Canadian Best Practices portal (Public Health Agency of Canada), the following programs with maternal health home visiting components include: Born Equal – Growing Healthy; Early Start; Family Thriving Program; Healthy Families America; Healthy Start (Oregon); Nurse-Family Partnership.² The criteria used to distinguish these "best practice" interventions are found here: <http://cbpp-pcpe.phac-aspc.gc.ca/our-process/>.

Home visiting programs aimed at promoting breastfeeding have been examined through systematic review, and Bull et al. (2004) reported that there is some evidence to suggest a beneficial impact of home visiting on breastfeeding. As well, additional randomized, controlled trials provide support for home visiting programs with breastfeeding components, such as initiation of breastfeeding,³³³ duration of exclusive breastfeeding,³³⁴⁻³³⁶ and helping young mothers meet breastfeeding and healthy feeding guidelines.³³⁷ Further findings specific to low income, disadvantaged, at-risk mothers and their health are reported in section 2h.

To date, there is limited evidence that home visiting programs impact maternal depression³³⁸⁻³⁴³ However, Tandon et al. (2011; 2013) reported that for home visiting programs that serve low income pregnant women at-risk for postnatal depression, integrating mental health interventions into home visiting appears to be a promising approach for preventing postnatal depression.^{344, 345}

In terms of whether additional prenatal care in the home can improve birth outcomes for women with a prior preterm delivery, a randomized clinical trial by Lutembacher et al. (2013) suggests that the intervention may limit some risk factors and shorten intrapartum length of stay, but other evidence is scant.³⁴⁶ As for the impact of universal postnatal nurse home visiting on emergency care, Dodge et al. (2013) completed a randomized, controlled trial of a population-level intervention to test program effectiveness in reducing infant emergency medical care between birth and age 12 months. Authors reported that *"This brief, universal, postnatal nurse home visiting program improves population-level infant health care outcomes for the first 12 months of life. Nurse home visiting can be implemented universally at high fidelity with positive impacts on infant emergency health care that are similar to those of longer, more intensive home visiting programs."*³⁴⁷

2.E. Positive Parenting Practices (parent education and support, family functioning)

Several home visiting programs are designed to promote positive parenting practices. As to the evidence of effectiveness, many programs have demonstrated benefits and statistically significant impact.³²⁰ Home visiting programs that include at least one postnatal visit are associated with improved quality of the home environment and improved parenting.^{298, 303, 348-350}

Parenting interventions, most commonly provided within the home using multi-faceted interventions, are effective in reducing unintentional child injury, and there is fairly consistent evidence that they also improve home safety.³⁵¹⁻³⁵⁴ This evidence relates mainly to interventions provided to families from disadvantaged populations, who are at-risk of adverse child health outcomes.

2.F. Reductions in Child Maltreatment (abuse, neglect)

Home visiting programs designed to prevent or reduce the incidence of child abuse and neglect generally involve professionals or paraprofessionals who work with parents to improve knowledge, skills, and behaviors that are associated with maltreatment. Many efforts to reduce family violence are documented in the published literature. Segal et al. (2012) write that *“despite decades of experience with program delivery, more than sixty published controlled trials, and more than thirty published literature reviews, there is still uncertainty surrounding the performance of these programs.”*³⁵⁵ The authors go on to suggest that evaluation should include a logic model to investigate stated objectives in relation to a theory or mechanism of change underpinning the home visiting program consistent with the target population as use of a theory-driven approach in evaluating programs may decrease the variation in results.³⁵⁵

With respect to home visiting designed to prevent or ameliorate child physical abuse and neglect, Barlow et al. (2006) completed a review of systematic reviews and stated, *“There was limited evidence of the effectiveness of services in improving objective measures of abuse and neglect, due in part to methodological issues involved in their measurement, but good evidence of modest benefits in improving a range of outcomes that are associated with physical abuse and neglect, including parental and family functioning and child development. The results also showed some interventions (e.g., media-based and perinatal coaching) to be ineffective with high-risk families.”*³⁵⁶

Bilukha et al. published a systematic review in 2005 on the effectiveness of early childhood home visiting in preventing violence. From this and earlier work,^{299, 357, 358} the U.S. Task Force on Community Preventive Services recommended early childhood home visiting for preventing child abuse and neglect, on the basis of strong evidence of effectiveness.²⁹⁹ The Task Force found insufficient evidence to determine the effectiveness of early childhood home visiting in preventing violence by visited children, violence by visited parents, intimate partner violence in visited families, or behavioural interventions and counseling to prevent child abuse and neglect.^{299, 359} With respect to the latter, Selph et al. (2013) reviewed new evidence on the effectiveness of behavioural interventions and counseling in health care settings for reducing child abuse and neglect and related health outcomes, as well as adverse effects of interventions. They concluded *“Risk assessment and behavioral interventions in pediatric clinics reduced abuse and neglect outcomes for young children. Early childhood home visitation also reduced abuse and neglect, but results were inconsistent.”*

In regard to childhood injury, an early systematic review of randomized, controlled trials by Roberts et al. (1996) concluded that home visiting programs have the potential to significantly reduce the rates of childhood injury.³⁶⁰ The program “Early Start” was associated with small to moderate benefits in a range of areas relating to child abuse, physical punishment, child behavior, and parenting competence.^{361, 362} There was little evidence to suggest that the Early Start program had benefits that extended to the level of parents or family overall.³⁶¹

A systematic review of reviews was carried out by Mikton and Butchart (2009) to assess effectiveness of universal and selective child maltreatment prevention interventions, focusing on seven main types of interventions: home visiting, parent education, child sex abuse prevention, abusive head trauma prevention, multi-component interventions, media-based interventions, and support and mutual aid groups.³⁶³ Their findings were as follows: *“Four of the seven -- home-visiting, parent education, abusive head trauma prevention and multi-component interventions -- show promise in preventing actual child maltreatment. Three of them -- home visiting, parent education and child sexual abuse prevention -- appear effective in reducing risk factors for child maltreatment, although these conclusions are tentative due to the methodological shortcomings of the reviews and outcome evaluation studies they draw on.”*³⁶³ In effect, some home visiting programs designed to prevent child maltreatment indicate some promise, but there is inconclusiveness about reductions in maltreatment and improvements in child and family well-being.³⁶⁴ However, rigorous research indicates that home visiting has the potential for positive results among high-risk families, particularly on health care usage and child development.¹⁰⁶ Not surprisingly, with variation in evidence of effectiveness, there is variation in the cost effectiveness of home visiting programs for the prevention of maltreatment.³⁶⁵ *“The most cost-effective programs use professional home visitors in a multidisciplinary team, target high risk populations and include more than just home visiting.”*³⁶⁵

Randomized trial evidence provided by LeCroy and Krysik (2011) showed significant results for home visiting effectiveness as a means of improving parental, child, and maternal outcomes and preventing child abuse and neglect through parenting support, improving mental health and coping strategies, etc.³⁶⁶ McIntosh et al. (2009) provided evidence to suggest that, *“within the context of regular home visits, specially trained home visitors can increase maternal sensitivity and infant cooperativeness and are better able to identify infants in need of removal from the home for child protection.”*³⁶⁷ Further, Moss et al. (2011) *“demonstrated the efficacy of short-term attachment-based home visit intervention in enhancing parental sensitivity, improving child security, and reducing disorganization for children in the early childhood period.”*³⁶⁸

In the context of Aboriginal communities and reduction of family violence, Shea et al. (2010) completed a systematic review of interventions and approaches and reported a low level of evidence for most studies including those involving home visiting for high risk families.³⁶⁹⁻³⁷³

2.G. Reductions in Juvenile Delinquency, Family Violence, and Crime

To reduce juvenile delinquency, family violence, and crime, home visiting models may seek to reduce risky parental behaviors by addressing mental health, self-efficacy, and self-sufficiency. Many home visiting program models provide parenting education and parent-child interaction activities to strengthen parents' capacity to manage their children's behaviours and set children on a positive path, apart from juvenile delinquency.

The Better Beginnings, Better Futures program operates in eight Ontario communities and is designed to prevent young children in low income, high risk neighbourhoods from experiencing poor developmental outcomes. Better Beginnings is listed as a “best practice” model within the Public Health Agency of Canada's (PHAC) Best Practices portal and it includes child-focused programs to enrich children's social and academic environments, as well as parent- and family-focused programs for parent support and education.² There are a number of other programs listed in the PHAC Best Practices portal related to

preventing violence, such as COPEing with Toddler Behaviour, DARE to be You, Family Thriving Program, Fast Track, etc.

Various programs that seek to reduce risk parental behaviours or support positive parent-child interaction are evaluated in the HomVEE review of evidence.³⁷⁴ Of four home visiting program models met the U.S. Department of Health and Human standards for the high or moderate ratings, none had favorable effects on primary outcome measures. Two (Healthy Families America and Nurse-Family Partnership) had favorable effects on secondary outcome measures.

In looking at research that specifically looked at reduction outcomes, research by Olds et al. (2004; 2002) showed long-term effects of nurse home visiting on children's criminal and antisocial behavior.^{304, 375} Authors stated that the program produced reductions in arrests, convictions, emergent substance use, and promiscuous sexual activity of 15-year-old children whose nurse-visited mothers were low income and unmarried when they registered in the study during pregnancy.^{375, 376}

2.H. Low Income, Disadvantaged Mothers, Families

Social disadvantage can have a significant impact on early child development, health and wellbeing. What happens during this critical period is important for all aspects of development. Caregiving competence and the quality of the environment play an important role in supporting development in young children and parents have an important role to play in optimising child development and mitigating the negative effects of social disadvantage. Home-based child development programmes aim to optimise children's developmental outcomes through educating, training and supporting parents in their own home to provide a more nurturing and stimulating environment for their child. Miller et al. (2012)³⁷⁷

A number of home visiting programs target those at-risk or have program components focused on supporting socially disadvantaged or at-risk moms. Home visiting may be embedded within a universal child health system or designed specifically to support certain populations.^{336, 378} Whether by universal design or targeted intervention, home visiting is considered to be a promising intervention for socially disadvantaged families with young children.^{314, 319, 379} Moore et al. (2012) describe the importance of how home visiting services are delivered to vulnerable families and children, and what is known about effective ways of engaging with vulnerable parents and families - for example, parent involvement is important to understand in home visiting programs.²⁷³ Widdup et al. (2012) highlighted the challenges of ensuring equitable access to a universal post-natal home visiting program and effect on ongoing use of child and family nurses services for Aboriginal and non-Aboriginal infants.³⁸⁰

Hodnett and Roberts (2000) stated that babies born in socioeconomic disadvantage are likely to be at higher risk of injury, abuse and neglect, and to have health problems in infancy.³⁵⁰ In their systematic review they assessed the effects of programs offering additional home-based support for women who had recently given birth and who were socially disadvantaged.³⁵⁰ Authors concluded that postnatal home-based support programs appeared to have no risks and may have benefits for socially disadvantaged mothers and their children, possibly including reduced rates of child injury.

Kitzman (2007) investigated the outcomes of home visiting programs for low income families and summarized results based on maternal outcomes, child health and development, and outcomes in

general. She pointed to reviews by Kendrick,³⁵⁴ Olds,^{375, 381} and Gomby^{382, 383} that conclude that home visiting can be an effective strategy to improve health of children from socially disadvantaged families. She also points to inconsistency in findings, such that different programs and different levels of program implementation have resulted in different outcomes.³¹³

The review by Russell et al. (2007)³⁰² concluded that *“home visiting programs represent a promising—but still largely untested and undocumented—strategy for strengthening parents and communities and fostering positive developmental outcomes for children.”* Lynn (2011)³³⁶ conducted a randomized controlled trial of sustained nurse home visiting, noting that it showed trends to enhanced outcomes in many (breastfeeding, children’s mental development, women’s experience of motherhood), but not all, areas. KidsFirst Regina (2011),³⁰⁹ a program which provides support and services to vulnerable families with young children, reported mixed or inconsistent results in a review of paraprofessional and professional home visiting programs in Canada and in the United States. In a systematic review by Miller et al. (2012) to determine the effects of home-based programs aimed specifically at improving developmental outcomes for preschool children from socially disadvantaged families, there was insufficient evidence of the effectiveness of home-based interventions that are specifically targeted at improving developmental outcomes for preschool children from socially disadvantaged families.³⁷⁷

Antenatal care is generally thought to be an effective method of improving pregnancy outcomes. Hollowell et al. (2011) conducted a systematic review to assess the effectiveness of specific antenatal care programs in reducing infant mortality in low income and vulnerable groups of women. Authors assessed effects on infant mortality, and *“of the fifteen studies which met inclusion criteria, only one was considered to demonstrate a beneficial effect on an outcome of interest. Six interventions were considered ‘promising’. Overall, there was insufficient evidence of adequate quality to recommend routine implementation of any of the programs as a means of reducing infant mortality in disadvantaged/vulnerable women.”*³⁸⁴

Peacock et al.’s 2013 systematic review of the effectiveness of home visiting programs on child outcomes provides a recent summary of significant improvements to the development and health of young children as a result of home-visiting. These improvements include: *“(a) prevention of child abuse in some cases, particularly when the intervention is initiated prenatally; (b) developmental benefits in relation to cognition and problem behaviours, and less consistently with language skills; and (c) reduced incidence of low birth weights and health problems in older children, and increased incidence of appropriate weight gain in early childhood. However, overall home-visiting programs are limited in improving the lives of socially high-risk children who live in disadvantaged families.”*³¹⁹

Leung et al.’s evaluation (2013) of the Healthy Start Visit Program provided evidence that this program was able to make services more accessible to disadvantaged Chinese parents with preschool children.³⁷⁸ Results indicated significant increase in child cognitive measures, child school readiness, child oral health practices; decreases in child sedentary activities, child home injury, and hospital visits; decreases in parenting stress and child behavior problems and increases in social support.

2.1. Teen Moms, At-Risk Moms

Teen moms, first-time moms, and at-risk moms face various challenges, and home visiting programs may focus on prenatal and postpartum health care for this population, or on providing preventive mental health intervention, etc. There are systematic reviews available which investigate home visiting

effectiveness in relation to first-time moms, moms with substance abuse issues, etc. This overview does not attempt to examine home visiting literature specific to preterm birth and low birth weight, however the results of two related systematic reviews are reported here: Goyal et al. (2013) reported that home visiting for preterm infants promotes improved parent-infant interaction, but there was limited evidence regarding the outcomes of infant development, morbidity, abuse/neglect, and growth/nutrition³⁸⁵; and Issel et al. (2011) stated that more evidence suggests that prenatal home visiting may improve the use of prenatal care, whereas less evidence exists that it improves neonatal birth weight or gestational age.³⁸⁶ Based on a retrospective cohort study, Goyal et al. (2013) reported that a higher dosage of intervention among at-risk, first time mothers enrolled prenatally in home visiting was associated with reduced likelihood of adverse pregnancy outcomes.³⁸⁷

As to the effectiveness of home visiting pre- and postnatally for women with an alcohol or drug problem, reviews indicated that there was insufficient evidence to recommend the routine use of home visits for pregnant or postpartum women with a drug or alcohol problem.^{388, 389} An earlier review by Drummond et al. (2002) also reported overall lack of impact, differential effects by program site, along with challenges in appropriate measurement, design, etc.³⁹⁰ Nievar et al. (2010) state, however, that home visiting programs with more frequent visitation for at-risk families had higher success rates, and in general, programs showed a positive effect on maternal behaviour.³⁹¹

In a randomized, controlled trial of a home visit program for adolescent mothers, Aracena et al. (2009) reported “*higher scores for the intervention group on the mothers’ mental health and nutritional state, as well as on the children’s levels of linguistic development.*”³⁹² A randomized, controlled trial of the effect of a paraprofessional home-visiting intervention on American Indian teen mothers suggested that the intervention improved parenting and infant outcomes.³⁹³ Ferguson and Vanderpool’s study (2013) of a maternal, infant, and early childhood home visiting program on parental risk factors suggested that families who were deemed at-risk for adverse pregnancy and child health outcomes benefitted from participation in the home visiting program.³⁷⁹ Positive program aspects included providing social support, fostering parental knowledge, skill development and problem solving, and connecting parents with community resources. The Families First home visiting program aimed at improving the well-being of at-risk families with preschool children reported increased positive parenting outcomes; decreased hostile parenting; no change in the overall score for mother’s psychological well-being but three of the six subscales were improved; purpose in life; environmental mastery; self-acceptance; increased social support; increased neighbourhood cohesion. No differences were found between program and comparison groups for neighbourhood safety, maternal depression, use of community services, families’ participation in voluntary organizations, delayed child development and reading sessions with children.³⁹⁴

A list of some select home visiting programs is included in Appendix II.2.A.

SECTION III: RESULTS (continued)*(3) Community-based collaborative interventions aimed at improving early childhood development and children's health outcomes at a population level*

Community-based collaborative intervention involves partnerships between early childhood organizations, practitioners, government (municipalities, regional districts, province), parent groups, researchers, etc., in delivering programs to children, parents, and families.

"...the collaboration partnership is one strategic way of assembling each entity to bring forth its most useful resources..."³⁹⁵

Examples of community-based collaborative programs include McClure et al. (2005) "*Community-based programmes to prevent falls in children*"¹⁰³; Turner et al. (2004) "*Community-based programmes to prevent pedestrian injuries in children 0-14 years*"⁹⁷; Turner et al. (2005) "*Community-based programs to promote car seat restraints in children 0-16 years*."¹⁰¹ These are discussed in 1.A. Health and Safety: e. Injury Prevention. With a number of studies that were systematically reviewed, there tended to be lack of research and limitations in the research methodology to draw strong conclusions. More of the discussion here covers general aspects and findings in relation to collaborative partnerships.

Armstrong et al. (2006)³⁹⁶ present an argument for the development of multisectoral partnerships, where disciplines and sectors collaborate to inform policy and practice. By working across different policy and program sectors, health disparities and underlying social determinants can be addressed. Research indicates that early childhood intervention programs have a greater impact on the life chances of children when there is effective collaboration between the program, parents, and the community.³⁹⁷
³⁹⁸ Enablers for multisectoral collaboration have been cited as: a powerful shared vision of the problem to be addressed and what success would look like in solving it; strong relationships and an effective mix of partners; leadership; adequate, sustainable and flexible resources; and efficient structures and processes to do the work of collaboration.^{399, 400} With respect to the research on the development of multisectoral collaborations designed to support early childhood development in rural communities, similar enablers for success were identified: skills, knowledge and resources of internal and external leaders.⁴⁰¹ Goodall and Vorhaus (2011)⁴⁰² state that partnership and multi-agency arrangements are an essential component of a comprehensive strategy for parental engagement – "an evidence-based model that looks to build relationships across the family, the school, and the community can improve outcomes for low income and socially culturally marginalized families."

Hayes et al. (2012) states that local partnerships delivering environmental interventions result in health gain, although more evidence is needed.⁴⁰³ Milton et al. (2012)⁴⁰⁴ state that more evidence is needed to determine the population health impact of initiatives that aim to engage communities, although their synthesis found that initiatives did have positive impacts on housing, crime, social capital and community empowerment. Head and Stanley (2007)⁴⁰⁵ confirm that the network approach of the Australian Research Alliance for Children and Youth (ARACY) which includes stakeholders from three sectors - research, government policy, and professional practice – is making a difference in attracting support for evidence-based advice about effective early intervention. Also, in an evaluation of the Australian Government's Communities for Children program, Purcal et al. (2011)⁴⁰⁶ report that the program increased the number of agencies working together to support families with young children (0-5 years), and it enhanced the working relationships between providers. These outcomes assisted the

engagement of disadvantaged families into the early intervention program and helped to increase their trust of service providers. In Sweden integrated family centres provide high quality and educational services that are available to all families.⁴⁰⁷ In these centres there is co-location of the health service with the social service and the open pre-school. Compliance of professionals is a significant element that facilitates positive parenting.⁴⁰⁸

In the US, the National Education Association, which has formed multisectoral partnerships in sixteen communities to advance student learning, reports that these partnership programs can have a powerful impact.⁴⁰⁹ In California, the Children's Outcome Project promotes integrated, multisectoral place-based initiatives to improve the health and well-being of children.⁴¹⁰ In Ontario, Child Family Centres demonstrate an increasingly coordinated and integrated system of child and families supports. Integrated centres are seen as catalysts to facilitate networking of the family literacy environment which can ultimately help create more literate communities.⁴¹¹ In places like North Rhine-Westphalia, childcare centres have been developed into family centres in order to foster integration of services which is considered to have highly positive effects on the development of children and on the prevention of child neglect and maltreatment.⁴¹²

Saewyc and Stewart (2006) identified that multi-strategy approaches, especially those which incorporate community development/coalition building and multisectoral collaboration, appear to be more effective than single strategies.⁴¹³ Collaboration and multi-layered interventions can contribute to enhanced outcomes for families and neighbourhoods.⁴¹⁴ Child and family hubs can strengthen children's social capital in those communities with few social facilities.⁴¹⁵ Moore and Fry (2011) synthesized the literature on place-based approaches to meeting the needs of young children and their families and proposed a framework for a comprehensive community-based approach with these characteristics: universal; tiered, multi-level; place-based; relational; partnership-based; governance-structure.²⁷³

Increasingly, community-based participatory research (CBPR) is being used to study and address environmental justice.⁴¹⁶ CBPR is an approach for translating evidence-based models and research knowledge from child health into interventions.⁴¹⁷ Academic–community partnerships using CBPR principles may support increased dissemination of evidence-based practices to community-based organizations.⁴¹⁸ For example, in New Hampshire, academic-community partners collaborated to translate science and best practices into social action and policy change to address childhood lead poisoning and demonstrated that broad-based partnerships can be enhanced by CBPR attributes.⁴¹⁹

Too, in relation to CBPR, children's participation in consultation has become an important element of planning and community development strategies of government and community organizations.⁴²⁰ Researchers have noted positive effects on children's personal and social development for those participating in planning councils,⁴²¹ but in some cases children feel that their voices have not been heard and there are barriers to their participation.^{420, 422}

Community-based collaborative programs are listed in Appendix II.3.A. Coalitions, hubs, and multisectoral partnership initiatives aimed at helping children, families and communities in regions of Canada are separated from international initiatives.^k

^k Key Canadian sources of best-practice programs include the maternal and child health portal of the Public Health Agency of Canada^k and the Health Innovation Portal of the Health Council of Canada. In the US, the Healthy Communities Institute support several state and county best practices portals which are populated by an

SECTION III: RESULTS (continued)

- (4) *Features of interventions in (2) or (3) above that may promote health equity or protect against increased inequities (Note: See Section III.1.C – Healthy Child Development - Material Well-Being, where features of programs relating to low income, equity/inequity are covered.)*

In considering equity in health, Whitehead and Dahlgren, in a 2006 World Health Report,⁴²³ discussed ten principles for policy action:

1. *Policies should strive to level up, not level down*
2. *The three main approaches to reducing social inequities in health are interdependent and should build on one another: focusing on people in poverty only, narrowing the health divide and reducing social inequities throughout the whole population*
3. *Population health policies should have the dual purpose of promoting health gains in the population as a whole and reducing health inequities*
4. *Actions should be concerned with tackling the social determinants of health inequities*
5. *Stated policy intentions are not enough: the possibility of actions doing harm must be monitored*
6. *Select appropriate tools to measure the extent of inequities and the progress towards goals*
7. *Make concerted efforts to give a voice to the voiceless*
8. *Wherever possible, social inequities in health should be described and analysed separately for men and women*
9. *Relate differences in health by ethnic background or geography to socioeconomic background*
10. *Health systems should be built on equity principles*

Overall, more review of programs in this section is necessary to identify specific features of programs reported to be effective. To better understand the nature and extent of inequities, ‘equity proofing’ or health equity audits may serve as tools.¹ Health equity tools have been summarized by the Equity Lens for Public Health project at the University of Victoria: <http://www.uvic.ca/research/projects/elph/>.

As for general observations of programs noted, some serve low income groups in urban centres; some focus on socially disadvantaged persons in smaller communities; some programs provide services for Aboriginal, immigrant, or non-English speaking populations specifically. For example, the Inner-City Response Team⁴²⁵ in Vancouver’s poor inner city is home to many Aboriginal families, as well as immigrant populations, and many families in this area struggle with poverty, drug abuse, violence, street crime, and disorder. The response program seeks to involve family and community in building a safety net around the child—working across traditional service silos with community members and service providers to achieve successful outcomes for these children. Sheway⁴²⁶ is a program also offered within the Downtown Eastside of Vancouver for prenatal care and a range of other supports during pregnancy for low income women. Another urban program is the Boyle Street Co-op program in Edmonton which connects people living in poverty with the things they need, such as prenatal support and outreach for

impressive number of programs. The Eurochild publication by Williams (2012) is a useful compendium of inspiring practices incorporating initiatives across Europe.

¹ For more on this, please see BC Ministry of Health’s Core Programs Evidence Review “Equity Lens” (e.g., The Health Equity Audit and Equity Lens sections p. 28-29, with table) as useful resources.⁴²⁴ Pedersen S, Barr V, Wortman J, Rootman I, Public Health Association of British Columbia. CORE Public health functions for BC. Evidence review: equity lens. Victoria, BC: British Columbia Ministry of Health; 2007 Jul. Available from: <http://www.health.gov.bc.ca/public-health/pdf/equity-lens-evidence-review.pdf>.

women. The Healthy Baby program in Manitoba⁴²⁷ is a financial assistance program available to communities province-wide and offers pre- and post-natal support to families with an income less than \$32,000. KidsFirst⁴²⁸, a federally-funded, provincially-run intervention program for vulnerable families with young children (aged 0-5) in Saskatchewan, offers support and services in nine areas identified as having high levels of need: Meadow Lake, Moose Jaw, Nipawin, Northern Saskatchewan, North Battleford, Yorkton and selected neighbourhoods in Prince Albert, Regina and Saskatoon. In the Yukon, partnership between the Rendezvous Rotary Club of Whitehorse and the Yukon Literacy Coalition provides Yukon children one free book every month, mailed directly to their home, until the age of 5 which enables every child to have books, regardless of their family's income.

Some initiatives have developed in smaller communities, such as Rimbey, Alberta (population just over 2,000)⁴²⁹ where a neighbourhood place hosts a community wellness group concerned with the issue of domestic violence, bullying, and suicide in the community. In Rimbey, there is also an after school program which provides quality care for children. The town of Blackfalds, Alberta, with a population similar to Trail, British Columbia (just over 7,000)⁴³⁰ has partnered with various agencies, groups and organizations to create resources for its residents. Through collaboration, the town operates 15 community social housing units, has a centre for immigrants and refugees, a food bank program, an optimist club, block parents, neighbourhood watch, a skateboard park and water spray park, a stepping stones program to help pregnant and parenting youth, and connection to the John Howard Society - a restorative process for offenders. Common elements of the programs that enabled their development and success appear to be collaboration, sustained funding, and leadership.

With respect to more specific findings related to the literature on interventions or programs with features that may promote health equity, an abstract listing of programs is available on request so that more investigation of these programs can be undertaken by the Trail Area Health and Environment Committee.

SECTION IV: DISCUSSION

More than 200 systematic reviews were considered in this scoping review along with almost 500 intervention programs that had home- or community-based components. As a result, this review serves as a thick resource of evidence-based reviews tied to ECD and also provides useful links to online portals to search for evidence-based programs. In conducting the scoping review, some key systematic reviews stood out with regard to their contribution to broadly answering the questions regarding factors that influence healthy ECD, home visiting effectiveness, best practice community-based, collaborative intervention models, and features of programs that promote equity. For example, Evangelou et al.'s (2009) summary of the literature pertaining to early years learning and development is a comprehensive review of evidence in respect to the process of development for children and best supportive contexts for children's early learning and development.⁴² Peacock et al.'s (2013) review on the influence of home visiting on disadvantaged populations provides evidence that home visiting by paraprofessionals holds promise for socially high-risk families with young children, and initiating interventions prenatally with high-frequency visits improves development and health outcomes for particular groups of children.³¹⁹ Avellar et al.'s (2013) review provides detailed evidence-based information for programs that serve pregnant women or families with children from birth to age five.³²⁰ In Avellar et al.'s review, the HomVEE team prioritized 35 program models to determine which met established criteria for an evidence-based early childhood home visiting service delivery model.³²¹ The HomVEE team reported on quality of outcome measures, type of impact (favourable, unfavourable, ambiguous), duration of impacts, replication of impacts, and magnitude of impacts.

Certainly, many other foundational reviews are included and inform the global pool of knowledge in key ECD areas. Various reviews provide evidence for more specific areas, such as Gaylor and Spiker (2012)³²² and Spiker's (2012)³¹⁶ synthesis of evidence of home visiting programs on school readiness and child development outcomes, in which they concluded that there were positive impacts on young children's development and behaviour. Or, Goyal et al.'s (2013) systematic review in which they reported that home visiting for preterm infants promotes improved parent-infant interaction.³⁸⁵ Or, Sellstrom and Bremberg's (2006) review which demonstrated that interventions in underprivileged neighbourhoods can reduce health risks to children, especially in families that lack resources.²⁹⁵ Many more studies provide sufficient level evidence for various aspects of ECD and home visiting, although some research gaps exist. For example in considering children's nutrition, multi-component interventions and educational workshops to promote healthy food choices in early childhood education appear to be effective, and community-based interventions that provide activities to engage parents may provide added benefit by improving the home food environment but more research is needed to clarify effective community-based components and nutrition programs.

As for the question of what factors influence ECD other than lead, it is evident that the literature provides a wealth of evidence on social, biological, and environmental determinants. As for the question "What is the evidence for programs that promote ECD?", many promising practices emerged, of which nutrition, healthy eating, and activity programs seemed particularly abundant. Areas of children's health such as physical health, obesity, and nutrition have seen rapid growth in the number of intervention programs. Despite a large number of intervention programs with home- or community-based components for these health areas, the literature does not provide robust evidence of effectiveness for many specific components. The growing number of programs and focus in these areas reflects the increasing obesity trend among children and the strong interest in addressing the health issue through home- and community-based efforts. Review of the literature suggests that home visiting

strategies should focus on interactions and influences of parent and child in targeting obesity and that early intervention delivered by trained community nurses to target children's body mass index (BMI) may be effective in reducing mean BMI.¹³⁴ Active school commuting by children may increase their level of physical activity, however evidence for the impact of active school transport or participating in after-school programs in promoting healthy body weights for children is not strong.¹⁴⁶ Similarly, active video games increase physical activity levels in children in the short term, but whether they lead to increases in habitual physical activity or decreases in sedentary behavior, the evidence is less clear.¹⁵¹ The importance of the built environment and “smart”, “age-friendly” city design can exert a strong influence in children’s health. Important steps in fostering healthier environments include creating partnerships in neighbourhood planning, and engaging children and families in planning processes to ensure program and service access.

In considering the evidence for community-based collaborative programs, these programs tended to be fewer in number and, in some cases, lacked a body of evidence. McClure et al. (2005)¹⁰³ and Turner et al. (2004; 2005)^{97, 101} reviewed a selection of community-based programs designed to prevent injuries in children (falls, pedestrian injuries bicycle injuries, etc.) and reported that there tended to be lack of research and limitations in the research methodology to draw strong conclusions. With other studies of factors influencing ECD or home visiting interventions, common issues include lack of well-designed studies resulting in evidence that remains inconclusive. For example, McCormack’s (2010) review of farmers’ markets and community gardens on nutrition-related outcomes for children cited insufficient evidence because findings were hampered due to few well-designed studies.²⁹³ Studies of interventions designed to reduce child maltreatment have not been particularly successful in establishing a strong body of evidence, to the degree that Segal (2012) suggested that evaluation should use a theory-driven approach in evaluating programs as this may decrease the variation in results.³⁵⁵

With respect to programs or components of programs intended to promote equity or mitigate inequity to pinpoint successful aspects, still further review is required to identify features of interventions that promote health equity or protect against increased inequities. Some wide-ranging evidence of practices involving hubs and networks suggests that this is a promising avenue to pursue.

All in all, a fair amount of evidence is presented in this scoping review with respect to influences on ECD, home visiting components, and intervention programs. This scoping review reveals and presents a multitude of programs that tie with factors affecting healthy child development. Several home visiting programs provide strong evidence for their positive impact on children and families in the areas of parental education, maternal and child health, for example. Program components and structure have been investigated and a number of items important to program success have been identified such as well-trained program staff, parental engagement, program duration and sustainability, and program development that is multisectoral in nature involving a variety of stakeholders. Benefits have been experienced by socioeconomically disadvantaged children and families as well, with proportionate universality being a best practice offering accessible programs and services to all.^m Best effort was made to review all programs found within portals, compendiums, etc., but as noted in Section II, this scoping review does not claim to be exhaustive in identifying resources. By narrowing on domains and programs of potential interest, this will allow deeper investigation of elements of programs and feasibility of collaboration and implementation in a specific community. By brainstorming goals and anticipated

^m For more on universal proportionality, see the Human Early Learning Partnership’s Proportionate Universality brief, found here: <http://earlylearning.ubc.ca/documents/70/>.

outcomes, and by considering which areas may resonate positively with prospective partners and groups, the way to move forward and work with the evidence can be clarified.

Some issues to consider in relation to this review include: what are current offerings for children and families in the community of Trail, apart from the continuum of services provided by THEP; has there been an environmental scan of what other agencies, organizations, and schools offer; what nutrition and activity programs are in place; does school programming offer after school activities for children and youth; have there been opportunities for children's voice at planning tables with respect to built environment or community design; what child and youth mentoring programs exist within Trail; are there municipal statistics compiled that enable detailed profiling of populations and areas within the community; what do data indicate for body weight of Trail children and their state of physical and mental health; are there community designs enabling safe routes to school; and are there Smart Growth²⁷⁹ initiatives and/or Child Friendly City²⁸¹ principles in place? Depending on areas of interest of the Trail Area Health and Environment Program with regard to programs and evidence, there can be discussion of how evidence-based interventions may 'fit' goals and community of Trail.

Although there is insufficient evidence regarding some programs, it may of interest to discuss areas that have not had time to accumulate sufficient evidence – e.g., a Munchkinland Discovery Centre⁴³¹ similar to that established in Parksville/Qualicum, or Lead Free Wheels.³³ If there are evidence-based programs that require community- or municipal collaboration, it may be a future step to consider whether there are government-owned tracts of land that may be reconstituted for community or children's gardens; what government, corporation, and/or agency funding is available for partnership-based initiatives; or a horticultural society that may be open to collaborative ideas to promote food gardens; as examples.

In developing prevention programs and health promotion programs, much work is involved, and hopefully this scoping review serves as a foundational document to to highlight best practices and assist pursuit of change to supplement and complement early childhood development activities within Traild offset environmental challenges that may be present.

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SECTION VI: APPENDICES (provided by separate file)

APPENDICES

Early Childhood Development (ECD) Literature Review

(Factors that influence early childhood development, home visitation and community-based collaborative programs, as well as the features of those programs or interventions that promote health equity)

August 13, 2014

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Early Childhood Development Literature Review

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SECTION VI: APPENDICES

Appendix I: Literature Search Proposal (available upon request)

Appendix II: Key Search Statements¹

Table 1a: Ebsco² – Key Search Statements³

FOR QUESTION 1: effectiveness of community-based, collaborative interventions at improving early childhood development outcomes at a population level, particularly for a small rural community? ⁴
(1) (child* development) or ECD or (developmental vulnerability) or (developmental delay) or (developmental challenges) or thrive* or (early enrichment) or (healthy development) or (child* ill health)
AND
(2) intervention or program or service or visit or engagement or education or teaching or outreach or (focus group) or hand-washing or nutrition or (early learning) or (healthy home) or (child friendly) or (child-friendly) or (family friendly) or (family-friendly) or storytime or (story time) or (family time) or (baby time) or (strong start) or CBAL or (Love to Learn) or (building beautiful babies) or (risk reduction) or dance or gymnastics or (wellness centre) or (wellness center) or (gathering place) or (gathering space) or (skateboard park) or (play space) or (family place) or (safe space) or (safe street) or (greenspace) or (built environment) or hbe or (smart growth) or transportation or (clean street) or (community design) or walkability or (livable cit*) or greenway or (bike path) or (cycle path) or hub or (child care centre) or (child care center) or (recreation) or (arts) or (head start) or (aquatic centre) or (aquatic center) or (welcome wagon) or munchkinland or (community greening) or (dust suppression) or (blood test) or (affordable housing) or (adequate housing) or (safe housing) or (healthy hous*) or (inclusive services) or (one-stop access to services) or (care coordination) or (transportation to service) or (family resource program) or (family literacy) or (developmental programs) or (neighbor?hood place) or (home grown food) or (home grown produce) or (vegetable garden) or (organic garden) or (community garden) ⁵
AND
(3) (rural community) or town or (small community) or Revelstoke ⁶
AND
(4) collaborative or multi-sectoral or multi-stakeholder or partner* or consortium or cross-sectoral or network or council or rotary or (chamber of commerce) or cbpr or (united way) or Lions or

¹ Initial search statements are provided in this table, however through searching, revisions (iterations) were made as approach was fine-tuned

² Through the University of British Columbia, approximately 55 databases are hosted by Ebsco, including Medline.

³ Similar terms/statements were used for additional database searches

⁴ Includes equity lens so that programs with focus on low-income, socially disadvantaged groups, etc., will be identified; also programs aimed at cultural sensitivity/cultural competency

⁵ In Phase 2b, specific terms were dropped and the search focused on systematic reviews, meta analyses, and randomized controlled trials in relation to ECD and home-visitation. With this broader focus, additional reviews were added to results from Phase 2a.

⁶ May broaden and use 'community' only, depending on results; other communities may be added; Revelstoke, etc.

(children first) or (first call) or (board of trade) or (school district) or (parent advisory committee) or PAC or decision-makers or stakeholders or (policy makers) or (integrated delivery) or (integrated service) or (success by 6) or coalition or (community table) or (ecd council)⁷

Table 1b: Ebsco – Key Search Statements

FOR QUESTION 2: effectiveness of in-home visits to families by public health nurses (and non-nurse program professionals) in terms of improved early childhood development (ECD) outcomes? ⁸
(1) (early child* development) or ECD or (developmental vulnerability) or (developmental delay) or (developmental challenges) or thrive* or (early enrichment) or (healthy development) or (child* ill health)
AND
(home visit) or (in-home visit) or (partnership) or IDP or (infant development program) or (home hazard prevention) or MCFD or (Ministry of Children and Family Development)
AND
(3) effective* or evaluation ⁹
NOT
(4) disability* or disorder
Limits: (2000-2013); scholarly

Table 1c: Ebsco – Key Search Statements

FOR QUESTION 3: ECD interventions or features of those interventions that promote health equity and, at least, protect against increased inequities?
(1) (early child* development) or ECD or (developmental vulnerability) or (developmental delay) or (developmental challenges) or thrive* or (early enrichment) or (healthy development) or (child* ill health)
AND
(2) intervention or program or service or visit or engagement or education or teaching or outreach or (focus group) or hand-washing or nutrition or (early learning) or (healthy home) or (child friendly) or (child-friendly) or (family friendly) or (family-friendly) or storytime or (story time) or (family time) or (baby time) or (strong start)

⁷ The term ‘intersectoral’ was avoided as it widened the search to more developing country partnership-type initiatives related to funding, etc.

⁸ Includes equity lens so that programs with focus on low-income, socially disadvantaged groups, etc., will be identified; also includes trained volunteers, para-professionals, lay or peer home visiting, public health early child home visiting

⁹ As noted in a previous footnote: In Phase 2b, specific terms were dropped and the search focused on systematic reviews, meta analyses, and randomized controlled trials in relation to ECD and home-visitation. With this broader focus, additional reviews were added to results from Phase 2a.

<p>or CBAL or (Love to Learn) or (building beautiful babies) or (risk reduction) or dance or gymnastics or (wellness centre) or (wellness center) or (gathering place) or (gathering space) or (skateboard park) or (play space) or (family place) or (safe space) or (safe street) or (greenspace) or (built environment) or hbe or (smart growth) or transportation or (clean street) or (community design) or walkability or (livable cit*) or greenway or (bike path) or (cycle path) or hub or (child care centre) or (child care center) or (recreation) or (arts) or (head start) or (aquatic centre) or (aquatic center) or (welcome wagon) or munchkinland or (community greening) or (dust suppression) or (blood test) or (affordable housing) or (adequate housing) or (safe housing) or (healthy hous*) or (inclusive services) or (one-stop access to services) or (care coordination) or (transportation to service) or (family resource program) or (family literacy) or (developmental programs) or (neighborhood place) or (home grown food) or (home grown produce) or (vegetable garden) or (organic garden) or (community garden)</p>
AND
(3) (health equit*) or (health inequit*) or (health inequality*) or (health equalit*) or (health injustice)
Limits: (2000-2013)

Table 1d: Google – Sample Search Statements¹⁰

<p>intervention canad* (child* AROUND(3) development) (collaborative or multi sectoral and inter*sectoral) community-based -africa -aids -tanzania -asia -thailand -india -malnutrition –muslim</p>
<p>(collaborative, community-based) (intervention program) (early child* development) ("environmental health") -gov -aboriginal -disabilities -autism -"special needs" -canada</p>
<p>(collaborative, community-based) (intervention program) (early child* development) (best practices) -gov -aboriginal -disabilities -autism -"special needs" -canada -"developing countries"</p>
<p>("early intervention" OR "early child* development") ("best practice" OR "evidence-based") (collaborative AND community-based) child* -disabilit* -autism -"special needs"</p>
<p>program canad* child* health (multisectoral OR collaborative OR community) ("intervention") filetype:pdf</p>
<p>(child* and family*) collaborative "community-based" program scandinavi*</p>
<p>"early intervention program" "what works" communit* literacy</p>
<p>Limits: (January 2011-December 2013)¹¹; pages limited to Canada, initially, to locate Canadian resources</p>

Appendix III.1.A: Health and Safety Programs¹²

¹⁰ Most searching was done between July 16-31, 2013

¹¹ Google grey literature searching was more restrictive, date-wise, than scientific literature due to volume

a. Abuse, neglect

[Circle of Parents¹](#)[Good Parent-Good Start \(Dobry Rodzic – Dobry Start\)²](#)[Homebuilders³](#)[Nurturing Families Network \(NFN\)⁴](#)[Safe Environment for Every Kid \(SEEK\) Model⁵](#)[Upstate New York Shaken Baby Syndrome \(SBS\) Education Program⁶](#)

b. Breastfeeding

[Baby Friendly Initiative⁷](#)[Circle of Security⁸](#)

c. Dental health, oral care

[Child Health Fairs⁹](#)[Crest Cavity-Free Zone Program¹⁰](#)[Fall-Asleep Pacifier¹¹](#)[Healthy Babies Healthy Children; Fluoride Varnish Project Study^{12,13}](#)[Healthy Smile Happy Child Project¹⁴](#)[Region of Peel - Mobile Dental Clinic¹⁵](#)[Sioux Lookout Fluoride Varnish Program¹⁶](#)

d. Early environment (pre/peri-natal environment - adversity, stress, gene-environment, intimate partner violence, attachment...)

[Aboriginal Prenatal Wellness Program¹⁷](#)[Baby Love¹⁸](#)[Born equal-Growing Healthy \[Naître égaux - Grandir en santé\]¹⁹](#)[Breaking The Cycle²⁰](#)[Infant Health and Development Program²¹](#)[Louise Dean Centre²²](#)[Putnam County Early Entry into Prenatal Care-WIC²³](#)[Sacred Path²⁴](#)

e. Injury Prevention

[A Million Messages²⁵](#)

¹² Program names are provided with hyperlinks to primary information sources where possible. In some cases, links point to secondary sources, such as portals. In most cases, further scientific evidence is available for programs. An annotated bibliography of programs is available.

[Adults and Children Together - Parents Raising Safe Kids \(ACT-PRSK\)²⁶](#)

[Child Pedestrian Injury Prevention Project²⁷](#)

[Kids Can't Fly Window Falls Prevention²⁸](#)

[Nurse-Family Partnership²⁹](#)

[Safe Community Program³⁰](#)

f. Nutrition, healthy eating, feeding, sleep

[B.C. Farmers' Market Nutrition Coupon Project³¹](#)

[Blessings in a Backpack³²](#)

[Buying Nutritional Food on a Limited Budget \(Wisconsin\)³³](#)

[California Farm to School Program \(California\)³⁴](#)

[California Latino 5 a Day Program \(California\)³⁵](#)

[Canada Prenatal Nutrition Program³⁶](#)

[CHEP Good Food³⁷](#)

[Childhood feeding collaborative³⁸](#)

[Color Me Healthy \(North Carolina\)³⁹](#)

[Cooks Academy at Old Cockrill \(Nashville, TN\)⁴⁰](#)

[Evergreen Action Nutrition Program \(Guelph, Ontario\)⁴¹](#)

[Farm 2 School Lunch Program \(Kansas and Missouri\)⁴²](#)

[First-grade Gardeners More Likely to Taste Vegetables \(California\)⁴³](#)

[Food Day \(USA\)⁴⁴](#)

[Food Stamps and Electronic Benefits Transfer \(EBT\) at Arizona Farmer's Markets \(Arizona\)⁴⁵](#)

[Food Trust \(USA\)*⁴⁶](#)

[Get Fresh Detroit \(Detroit\)⁴⁷](#)

[Green Cart Initiative \(New York City, NY\)⁴⁸](#)

[Green Harvest Program \(Pittsburgh, PA\)⁴⁹](#)

[Harvesting for the Hungry \(San Jose\)⁵⁰](#)

[Healthy Food Outlet Project \(Sonoma\)⁵¹](#)

[Just Food \(New York, NY\)⁵²](#)

[LA Sprouts⁵³](#)

[Lowfat Lucy \(New York, NY\)*⁵⁴](#)

[Maryland WIC 5-A-Day \(MD\)⁵⁵](#)

[Michigan Farmers' Market Nutrition Program \(Genesee County, Michigan\)⁵⁶](#)

[National Produce Program \(USA\)⁵⁷](#)

[North Carolina Fruits and Veggies Nutrition Coalition \(North Carolina\)⁵⁸](#)

[North Carolina Healthy Weight Initiative \(North Carolina\)⁵⁹](#)

[Nunavik Childcare Centre Nutrition Project⁶⁰](#)

[Nutrition and Physical Activity Self Assessment for Child Care \(NAP SACC\)⁶¹](#)

[Nutrition Education for Families with Financial Problems \(The Netherlands\)⁶²](#)

[Partnering with a Bakery to Provide Breakfast to Low-Income Schools \(United Kingdom\)⁶³](#)

[Partners Through Food: Organizing to Increase Access to Healthy Food \(Upper Falls, NY\)⁶⁴](#)

[Peer Nutrition Program⁶⁵](#)

[Pennsylvania Fresh Food Financing Initiative \(Pennsylvania\)⁶⁶](#)

[Petaluma Bounty \(Petaluma, CA\)*⁶⁷](#)
[Portland Fruit Tree Project \(Portland, OR\)⁶⁸](#)
[Preventing Obesity by Design⁶⁹](#)
[Project CAFE \(Los Angeles\)⁷⁰](#)
[Red Hook Farmers' Market \(New York, NY\)⁷¹](#)
[Rock and Wrap It Up! \(USA\)⁷²](#)
[Rocky View Schools Healthy Eating Initiative \(Canada\)⁷³](#)
[SALUD Campaign \(Connecticut\)⁷⁴](#)
[San Francisco Organics Recycling Program \(San Francisco, CA\)*⁷⁵](#)
[Smart Meal Program \(Sonoma\)⁷⁶](#)
[Steps to a Healthier Salinas \(Salinas\)⁷⁷](#)
[Steps to a Healthier Yuma County \(Yuma County, Arizona\)⁷⁸](#)
[Switch What You Do, View, and Chew \(USA\)⁷⁹](#)
[Targeting the Taqueria - Steps To A Healthier Salinas \(Salinas\)⁸⁰](#)
[Tarrant County WIC/Library Plan \(Tarrant County, TX\)⁸¹](#)
[Teaching Nutrition and Life Skills to Adults with Low Incomes \(Verona, VA\)*⁸²](#)
[Urban Farming Education \(West Oakland, CA\)*⁸³](#)

g. Physical/mental health (activity/inactivity, obesity)

[ACT!vate Omaha \(Omaha, NE\)⁸⁴](#)
[Activate West Michigan Coalition \(Grand Rapids, MI\)](#)
[Active Choices \(San Francisco, CA\)⁸⁵](#)
[Active Kids Adventure Park⁸⁶](#)
[ACTIVE Louisville's Healthy Eating Initiative \(Louisville, KY\)⁸⁷](#)
[Active Start \(Los Angeles, CA\)⁸⁸](#)
[Bay Area SCORES \(Bay Area, CA\)*⁸⁹](#)
[Be Active Kids⁹⁰](#)
[CAN DO Houston⁹¹](#)
[CASPIAN study⁹²](#)
[CATCH - Coordinated Approach to Child Health⁹³](#)
[Central California Regional Obesity Prevention Program⁹⁴](#)
[Child and Adolescent Trial for Cardiovascular Health \(CATCH\)⁹⁵](#)
[Children and Neighbors Defeat Obesity \(CAN DO\) Houston \(Houston, TX\)⁹⁶](#)
[Children's Health Fund \(USA\)⁹⁷](#)
[Children's Power Play! \(California\)⁹⁸](#)
[Children's Health and Activity Modification Program \(C.H.A.M.P.\)⁹⁹](#)
[CHOPPS: Preventing childhood obesity by reducing consumption of carbonated drinks \(United Kingdom\)¹⁰⁰](#)
[Commit 2B Fit \(Florida\)¹⁰¹](#)
[Dump Your Plump \(Johnson\)¹⁰²](#)
[Eat Smart, Move More, Weigh Less \(North Carolina\)¹⁰³](#)
[Eat Well and Keep Moving \(Baltimore, MD\)¹⁰⁴](#)

[Eat Well, Play Hard \(Elyria, OH\)¹⁰⁵](#)
[EMPOWER¹⁰⁶](#)
[Every Little Step Counts \(Phoenix, AZ\)¹⁰⁷](#)
[Fit Community \(North Carolina\)¹⁰⁸](#)
[Fit Kids \(Westchester \)¹⁰⁹](#)
[Fit Kids, Fit Families \(Washington\)¹¹⁰](#)
[Fitness and Mobility Exercise Program \(FAME\) \(Vancouver, BC\)¹¹¹](#)
[Florida Healthy Kids \(Florida\)¹¹²](#)
[Fuel Up to Play 60 \(USA\)¹¹³](#)
[Get Movin' Challenge \(Owensboro, KY\)¹¹⁴](#)
[Get Tulsa Kids Trekkin' \(Tulsa County, OK\)¹¹⁵](#)
[Head to Toe Weight Management Program \(St. Louis, MO\)¹¹⁶](#)
[Health Education to Reduce Obesity \(HERO\) \(Jacksonville, FL\)¹¹⁷](#)
[Healthier Haskell Program \(Lawrence, KS\)¹¹⁸](#)
[Healthy Bodies/Healthy Minds: physical activity and mental health promotion^{119,120}](#)
[Healthy Buddies \(Canada\)¹²¹](#)
[Healthy Children, Healthy Weights \(Columbus, OH\)¹²²](#)
[Healthy Communities Walking Program \(Michigan ,OH\)¹²³](#)
[Healthy Eating, Active Communities \(California\)¹²⁴](#)
[Healthy Eating, Active Living \(HEAL\) \(Sonoma, CA\)¹²⁵](#)
[Healthy Families America \(USA\)¹²⁶](#)
[Healthy Families New York \(New York\)¹²⁷](#)
[Healthy Families: Palm Beach \(Palm Beach County\)¹²⁸](#)
[Healthy Homes/Healthy Families \(Georgia\)¹²⁹](#)
[Healthy Hoops \(USA\)¹³⁰](#)
[Healthy Living Cambridge Kids¹³¹](#)
[Heartbeat Wales \(Wales\)¹³²](#)
[Hearts N' Parks \(USA\)¹³³](#)
[HEBS Walking Campaign \(Scotland\)¹³⁴](#)
[Hip-Hop to Health Jr \(Chicago\)¹³⁵](#)
[I Am Moving, I Am Learning \(West Virginia\)¹³⁶](#)
[In SHAPE \(Keene, NH\)¹³⁷](#)
[Intervention to Reduce Coronary Heart Disease Risk Factors in Infants \(Finland\)¹³⁸](#)
[iWalk \(Sonoma\)¹³⁹](#)
[Junior Tracks \(Cerro Gordo County, IA\)](#)
[Kids N Fitness: A Family-Centered Lifestyle Intervention for Overweight Youth \(Los Angeles, CA\)¹³⁵](#)
[Kids Walk-to-School Day \(Washington\)¹⁴⁰](#)
[Let's Move! \(USA\)¹⁴¹](#)
[Live Well Omaha Kids \(Omaha, NE\)¹⁴²](#)
[LiveWell Colorado \(Colorado\)¹⁴³](#)
[Livingston County Tobacco Control Program \(Livingston County, NY\)¹⁴⁴](#)
[Marbles Kids Museum¹⁴⁵](#)
[Mass in Motion \(Massachusetts\)¹⁴⁶](#)

[Mayor's Healthy Hometown Movement \(Louisville, KY\)¹⁴¹](#)
[MEND 5-7 programme¹⁴⁰](#)
[Mind, Exercise, Nutrition...Do it! \(MEND\) Program \(United Kingdom\)¹⁴⁷](#)
[Mornings in Motion \(Tennessee\)¹⁴⁶](#)
[NutriActive \(Iowa\)¹⁴⁸](#)
[Pasos Adelante \(Arizona\)¹⁴⁹](#)
[Power-up: a collaborative after-school program¹⁵⁰](#)
[Romp & Chomp \(Australia\)¹⁵¹](#)
[Sea Lion Club \(Germany\)¹⁵²](#)
[Shape Up & Go! \(Ohio, Florida, and Nevada\)¹⁵³](#)
[Shape Up Somerville \(Somerville, MA\)¹⁵⁴](#)
[Signs to Promote Stair Use \(El Paso, TX \)¹⁵⁵](#)
[ToyBox-study¹⁵⁶](#)
[VERB: It's what you do. \(USA\)¹⁵⁷](#)
[Walking School Bus¹⁵⁸](#)
[We Can! \(USA\)¹⁵⁹](#)

h. Respiratory Health (asthma)

[Controlling Asthma in the Richmond Metro Area \(CARMA\)¹⁶⁰](#)
Numerous intervention programs available

Appendix III.1.B: Education Programs

a. Early care and education (pre-school, kindergarten...)

[Brookline Early Education Project¹⁶¹](#)[Child FIRST¹⁶²](#)[Early Head Start¹⁶³](#)[Early Start¹⁶⁴](#)[Exploring Together Pre-school Program¹⁶⁵](#)[Foundation Years - Sure Start Children's Centres¹⁶⁶](#)[Getting Ready for School¹⁶⁷](#)[Getting Ready: Promoting school readiness through a relationship-based partnership model¹⁶⁸](#)[High/Scope Perry Preschool Program¹⁶⁹](#)[HIPPY \(Home Instruction Program for Preschool Youngsters\) Canada¹⁷⁰](#)[HIPPY \(Home Instruction Program for Preschool Youngsters\) International¹⁷¹](#)[HIPPY \(Home Instruction Program for Preschool Youngsters\) USA¹⁷²](#)[Parent-Child Home Program¹⁷³](#)[Parents as Teachers¹⁷⁴](#)

b. Language, literacy

[Dolly Parton's Imagination Library¹⁷⁵](#)[Dolly Parton Literacy Imagination Library Yukon¹⁷⁶](#)[Doodle Den¹⁷⁷](#)[Eager and Able to Learn¹⁷⁸](#)[Even Start - family literacy program¹⁷⁹](#)[Every Child Ready to Read¹⁸⁰](#)[Family Literacy Program Evaluation¹⁸¹](#)[Literacivic¹⁸²](#)[Literacy Learning Parties¹⁸³](#)[Literacy nooks¹⁸⁴](#)[Literacy Trails¹⁸⁵](#)[Motheread/Fatheread¹⁸⁶](#)[Parent-Child Mother Goose Program¹⁸⁷](#)[Raising a Reader¹⁸⁸](#)[Reach out and Read¹⁸⁹](#)[Ready to Learn¹⁹⁰](#)[Ready4Learning¹⁹¹](#)[Special intervention programs - Kindergarten Early Language Intervention Program; Talking for Literacy; Reading for All; Hola; Learning Language and Loving It¹⁹²](#)[Write Minded¹⁹³](#)

Appendix III.1.C: Material Well-Being (equity/inequity, low income, socially disadvantaged, rural)¹³

a. Early Care and Education (pre-school, kindergarten)

[Boyle Street Co-Op Edmonton¹⁹⁴](#)
[Chicago School District's Child-Parent Center Program¹⁹⁵](#)
[Comer School Development Program¹⁹⁶](#)
[Community Investment Collaborative for Kids \(CICK\)¹⁹⁷](#)
[Early Literacy and Learning Model¹⁹⁸](#)
[Enhancing Reading Achievement¹⁹⁹](#)
[Families First Edmonton – Families Matter Partnership Initiative²⁰⁰](#)
[Houston Parent-Child Development Program²⁰¹](#)
[Preschool Family Support Initiative²⁰²](#)
[Sure Start Local Programmes \(Children's Centres\)²⁰³](#)
[Syracuse Family Development Quality Infant Toddler Care Program²⁰⁴](#)

b. Dental Health

[Children's Oral Health Initiative²⁰⁵](#)
[Community Dental Facilitator Project²⁰⁶](#)
[Crest Cavity-Free Zone Program¹⁰](#)
[King County \(KC\) Kids Oral Health Program²⁰⁷](#)

c. Family support (parenting...)

[Community Action Program for Children²⁰⁸](#)
[Early Childhood Development Reinvestment Initiative²⁰⁹](#)
[Every Woman Southeast²¹⁰](#)
[First 5 California²¹¹](#)
[Healthy Baby Manitoba²¹²](#)
[Heaven's Loft²¹³](#)
[Incredible Years²¹⁴](#)
[Inner City Response Team²¹⁵](#)
[Janice Mirikitani Family, Youth and Childcare Center²¹⁶](#)
[KidsFirst²¹⁷](#)
[Maternal Child Health²¹⁸](#)
[New Moms Network²¹⁹](#)
[Nurse-Family Partnership for Low Income Women²²⁰](#)

¹³ Many programs noted have a low-income focus; samples of programs by topic are provided; lists are not comprehensive

[One World Child Development CentrePALS \(Participate and Learn Skills\)²²¹](#)
[Parent-Child Home Program¹⁷³](#)
[ParentCorps²²²](#)
[Parenting Fundamentals²²³](#)
[Participatory Learning and Action \(PLA\) project²²⁴](#)
[Partnering with a Bakery to Provide Breakfast to Low-Income Schools⁶³](#)
[Responsive Intersectoral Children’s Health, Education, and Research \(RICHER\) Initiative²²⁵](#)
[Settlement Music School's Kaleidoscope Preschool Arts Enrichment Program²²⁶](#)
[Sheway²²⁷](#)
[Through the Looking Glass \(TtLG\): A Community Partnership in Parenting²²⁸](#)
[Toddler Fair²²⁹](#)

d. Environmental Injustice, housing

[Geelong Project²³⁰](#)
[Health House²³¹](#)
[Healthy Homes University²³²](#)
[Home-Improvement Loans for low-income families and families at risk²³³](#)
[Homeless and Parenting Program Initiative \(HAPPI\)](#)
[Household Organisational Management Expenses \(HOME\) Advice Program \(formerly Family Homelessness Prevention Pilots \(FHPP\)²³⁴](#)

e. Hubs, networks

[Children & youth²³⁵](#)
[Hook & Hub²³⁶](#)
[PROSPER project²³⁷](#)
[Rural Beginnings Project²³⁸](#)
[Unlocking Potential Foundation²³⁹](#)

f. Physical/mental health (activity/inactivity, obesity, nutrition)

[Good Food Box](#){Capital Region Good Food Society, 2013 #12157}
[Head Start – nutrition counseling component²⁴⁰](#)
[Healthy Weigh/El camino saludable²⁴¹](#)

Appendix III.1.D: Family and Peer Relationships Programs

a. Infant and Child Development

[3, 4, 5 Learning Years²⁴²](#)[Child Development Project²⁴³](#)[Children's Futures²⁴⁴](#)[Coordinated Approach To Child Health \(CATCH\)²⁴⁵](#)[DARE to be You²⁴⁶](#)[Early Risers: Skills for Success²⁴⁷](#)[Family Preservation Services²⁴⁸](#)[Family Thriving Program \(FTP\)²⁴⁹](#)[Get Real About Violence²⁵⁰](#)[Handle With Care²⁵¹](#)[Healthy Babies Healthy Children¹²](#)[Healthy Start Oregon²⁵²](#)[Helping Kids Grow²⁵³](#)[Home Start International Program²⁵⁴](#)[Positive Action²⁵⁵](#)[Starting Early Starting Smart²⁵⁶](#)[Wraparound Initiative²⁵⁷](#)[You Can Do It!²⁵⁸](#)

b. Parent education, supportive parenting

[1-2-3 Magic and Emotion Coaching²⁵⁹](#)[Aboriginal Dads²⁶⁰](#)[Baby FAST²⁶¹](#)[Bending Like a River: The Parenting Between Cultures Program²⁶²](#)[COPEing with Toddler Behaviour²⁶³](#)[Each One Teach One²⁶⁴](#)[Family Journeys: Parent Resource Program²⁶⁵](#)[Hey Dad! for Indigenous Dads, Uncles and Pops²⁶⁶](#)[It Takes A Village: Multicultural Early Learning Program²⁶⁷](#)[Kids Club & Moms Empowerment²⁶⁸](#)[Nobody's Perfect²⁶⁹](#)[Nurturing Parenting Programs²⁷⁰](#)[Oregon Parenting Education Collaborative²⁷¹](#)[Parenting Partnership²⁷²](#)[Pre-K FAST²⁷³](#)[Right From The Start²⁷⁴](#)[Systematic Training for Effective Parenting²⁷⁵](#)[Triple P - Positive Parenting Program²⁷⁶](#)

Appendix III.1.E: Participation Programs

a. After School Programs, Arts

[After-School Time Period inventory report²⁷⁷](#)
[BEAG - Early Years Arts Team Pilot Project²⁷⁸](#)
[Bonkers Beat Music Kinder & Childcare²⁷⁹](#)
[Brocodile the Crocodile²⁸⁰](#)
[Brooklyn Botanic Garden²⁸¹](#)
[Capacity-Building for Community Leaders in a Healthy Living Environment²⁸²](#)
[CDC's Healthy Communities Program - Steps Communities²⁸³](#)
[Educational Karate Program \(EKP\)²⁸⁴](#)
[ExpandED Schools by TASC²⁸⁵](#)
[Jigsaw²⁸⁶](#)
[Munchkinland Discovery Centre²⁸⁷](#)
[OLE \(Outdoor Leadership Education\)²⁸⁸](#)
[Out of School Time Initiative²⁸⁹](#)
[Protective Behaviours²⁹⁰](#)
[Quantum Opportunities Program²⁹¹](#)
[Solving the Jigsaw²⁹²](#)
[Sports Mentoring Project²⁹³](#)

b. Social Competence, Cognitive/Prosocial Behaviour

[Big Brothers Big Sisters²⁹⁴](#)
[Big Brothers Big Sisters Ireland²⁹⁵](#)
[Big Brothers Big Sisters of Canada²⁹⁶](#)
[Boys and Girls Clubs of Canada²⁹⁷](#)
[Building social capital as a pathway to success²⁹⁸](#)
[Cadets WA Program²⁹⁹](#)
[Citizen Engagement Program³⁰⁰](#)
[Citizen Schools³⁰¹](#)
[DREAM \(Directing through Recreation, Education, And Mentoring\)³⁰²](#)
[Every Person Influences Children \(EPIC\)³⁰³](#)
[Juvenile Mentoring Program \(JUMP\)³⁰⁴](#)
[Supporting Social Inclusion and Regeneration in Limerick³⁰⁵](#)

Appendix III.1.F: Subjective Well-Being

a. Mental Health, Well-Being, Anxiety

[Bright Ideas: Developing Optimistic Thinking Skills Program](#)³⁰⁶

[Children in Between](#)³⁰⁷

[Children in the Middle](#)³⁰⁸

[Communities that Care](#)³⁰⁹

[Emotional Fitness Centers](#)³¹⁰

[FRIENDS](#)³¹¹

[Friends for Life](#)³¹²

[Healthy minds start here](#)³¹³

[KidsMatter Primary](#)³¹⁴

[Olweus Bullying Prevention Program](#)³¹⁵

[PATHS Canada. Promoting Alternative Thinking Strategies \(PATH\)](#)³¹⁶

[Promoting Alternative Thinking Strategies \(PATHS\)](#)³¹⁷

[Rainbows](#)³¹⁸

[Ready, Steady, Grow](#)³¹⁹

[School Community Intervention Partnership \(SCIP\)](#)³²⁰

[Seasons for Growth](#)³²¹

[Towards Flourishing Project](#)³²²

[Values-driven evidence-based practices implementation projects](#)³²³

[Washington State Children's Mental Health Evidence-Based Practices Pilot Program Partnerships for Success](#)³²⁴

Appendix III.1.G: Behaviours and Risks Programs

a. Internalizing or externalizing behaviour, aggression, bullying, crime

[Best Practices -- Early Intervention, Outreach and Community Linkages for Youth with Substance Use Problems](#)³²⁵

[CAST: CAMHS \(Child and Adolescent Mental Health Service\) and Schools Together](#)³²⁶

[Cool Kids](#)³²⁷

[Family & Schools Together](#)³²⁸

[Family & Schools Together Canada \(FS&T\)](#)³²⁹

[Fast track](#)³³⁰

[Help Me Grow](#)³³¹

[Pathways to Prevention](#)³³²

[Rolling out SNAP](#)³³³

[SNAP® under 12 outreach project](#)³³⁴

[Westside Infant-Family Network](#)³³⁵

b. Substance Abuse

[Across Ages](#)³³⁶

[All StarsTM](#)³³⁷

[Border Binge-Drinking Reduction Program](#)³³⁸

[Cambridge Bay Wellness Centre](#)³³⁹

[Children's Aid Society - Carrera Program](#)³⁴⁰

[Communities Mobilizing for Change on Alcohol \(CMCA\)](#)³⁴¹

[Community Trials Intervention to Reduce High-Risk Drinking \(RHRD\)](#)³⁴²

[Family Matters](#)³⁴³

[Guiding Good Choices \(formerly PDFY\)](#)³⁴⁴

[Innovative Health Services for Homeless Youth \(IHSY\)](#)³⁴⁵

[Jigsaw](#)²⁸⁶

[Midwestern Prevention Project \(MPP\)](#)³⁴⁶

[Project Break Away](#)³⁴⁷

[Project Northland](#)³⁴⁸

[Project STAR \(Students Taught Awareness and Resistance\)](#)³⁴⁹

[Reconnect](#)³⁵⁰

[Safe Dates](#)³⁵¹

[Seattle Social Development Project](#)³⁵²

[Smarter than Smoking](#)³⁵³

[Strengthening Families for Parents and Youth](#)³⁵⁴

[Strengthening Families Program for Parents and Youth 10-14](#)³⁵⁵

[Striving Together to Achieve Rewarding Tomorrows \(CASASTART\)](#)³⁵⁶

[Teen Outreach Program](#)³⁵⁷

Appendix III.1.H: Environment

a. Air Quality

[AirNow \(USA\)³⁵⁸](#)[Baby & Me - Tobacco Free \(Chautauqua County, NY\)³⁵⁹](#)[Clean School Bus USA \(USA\)³⁶⁰](#)[Design for the Environment³⁶¹](#)[Outdoor Air Quality Flag Program \(San Joaquin Valley Air Pollution Control District\)³⁶²](#)[Project Green Fleet³⁶³](#)[Project Green Fleet \(Minnesota\)³⁶⁴](#)[Reducing Environmental Triggers of Asthma \(Minnesota\)³⁶⁵](#)[STARSS \(Start Thinking about Reducing Secondhand Smoke\)³⁶⁶](#)[Smoking?...Not in Mama's House! \(Kauai District, HI\)³⁶⁷](#)

b. Built Environment

[A Living Laboratory: The City of Chattanooga, USA \(Chattanooga, TN\)³⁵⁹](#)[Active Design Guidelines \(New York City, NY\)³⁶⁴](#)[Bay Area Transportation Justice Working Group \(San Francisco, CA\)*³⁶⁸](#)[Berkeley Charleston Dorchester Regional Bicycle and Pedestrian Action Plan \(Berkeley-Charleston-Dorchester, SC\)³⁶⁹](#)[Buffalo Healthy Communities Initiative \(Buffalo, NY\)³⁷⁰](#)[Cambridge-Somerville Healthy Homes Project \(Cambridge and Somerville, MA\)³⁷¹](#)[Cornwall Housing and Health³⁷²](#)[Design for the Environment \(USA\)³⁶¹](#)[Environmental Health Leadership Training \(New York\)³⁷³](#)[Evergreen Jogging Path \(Boyle Heights, CA\)³⁷⁴](#)[Feet First \(Seattle, WA\)³⁷⁵](#)[Fenway Alliance: Walkability in a Commerical District \(Fenway District, Boston, MA\)³⁷⁶](#)[Georgia Retrofit Program \(Georgia\)³⁷⁷](#)[GIS Walking Maps \(Boston, MA\)³⁷⁸](#)[Green Engineering \(USA\)³⁷⁹](#)[Growing Healthy Kids Project \(Orange County, NC\)³⁷⁷](#)[Health House \(USA\)²³¹](#)[Healthy Neighborhoods Program³⁸⁰](#)[Healthy Neighborhoods Program \(Niagara County, NY\)³⁷⁷](#)[Healthy Pest Free Housing Initiative \(Boston\)³⁷⁶](#)[Healthy Places Coalition \(California\)³⁷⁶](#)[HOPE Collaborative \(Oakland, CA\)³⁸¹](#)[IT'S TIME \(Chicago, IL\)*³⁸²](#)[Kohl's Safety Street \(St. Louis, MO\)³⁸³](#)[Learn To Be ... Tobacco Free \(Suffolk County, NY\)³⁸⁴](#)[Marin County Safe Routes to Schools \(Marin\)³⁸⁵](#)[Market Makeovers/Corner Store Conversions \(South Los Angeles, CA\)³⁸⁶](#)

[Mercury Challenge \(USA\)³⁸⁷](#)
[Niagara County Childhood Lead Poisoning Prevention Program \(Niagara County, NY\)³⁸⁸](#)
[PedNet Coalition \(Columbia, MO\)³⁸⁹](#)
[Play Streets with Strategic Alliance for Health \(SaFH\) \(East Harlem and South Bronx, NY\)*³⁸⁷](#)
[Project Live Active in Yancey \(PLAY\) \(Yancey\)³⁹⁰](#)
[Rum River Bicycle Classic \(Isanti County, MN\)³⁹¹](#)
[Safe Routes to School \(USA\)³⁹²](#)
[Safe Walk to School \(Oakland, CA\)³⁸⁹](#)
[Safer Homes Project \(Pacoima\)³⁹³](#)
[Seattle-King County Healthy Homes Project \(Seattle-King County, WA\)³⁹⁴](#)
[Smart Growth³⁹⁵](#)
[Step Forward, Erlanger \(Erlanger, KY\)³⁹⁰](#)
[Steps Program in Austin \(Austin, TX\)³⁹⁶](#)
[Sunday Parkways \(Chicago\)³⁹⁷](#)
[Urban Mold and Moisture Program \(Cuyahoga, OH\)³⁹⁸](#)
[Walking School Bus \(Cleveland, OH\)¹⁵⁸](#)
[Walking School Bus \(Houston, TX\)³⁹⁹](#)
[WalkSafe \(Florida\)⁴⁰⁰](#)

c. Gardens, etc.

[Backyard Gardens \(West Oakland, CA\)⁴⁰¹](#)
[Battery Urban Farm - Promoting Environmental Awareness through Food Production⁴⁰²](#)
[Be a Local Hero, Buy Locally Grown \(Massachusetts\)⁴⁰⁰](#)
[Children's Gardening Program⁴⁰³](#)
[Community Gardens Program \(Trenton, NJ\)³⁹⁹](#)
[Community Market Farms⁴⁰⁴](#)
[Community Market Farms \(West Oakland, CA\)⁴⁰⁰](#)
[Community Nutrition and Urban Gardening \(Riverdale, MD\)⁴⁰⁵](#)
[Drinking Water Nitrification Surveillance Program \(Lee County, FL\)⁴⁰⁶](#)
[Farm and Garden⁴⁰⁷](#)
[Food Corps New York⁴⁰⁸](#)
[Green Garden Child Development Center⁴⁰⁹](#)
[Green the Tenderloin \(San Francisco, CA\)⁴⁰⁵](#)
[Greening Canada's School Grounds Program \(Canada\)⁴¹⁰](#)
[Little Fingers in the Soil, Little Feet on the Trail, Little Tummys in the Kitchen⁴¹¹](#)
[Organic Vegetable Garden. Better Lives for Children⁴¹²](#)
[Project Youth Green \(San Fernando Valley, CA\)⁴¹³](#)
[Seattle Tith – Garden & Farm Education Programs for Kids & Teens⁴¹⁴](#)
[Stephanie Alexander Kitchen Garden Program⁴¹⁵](#)
[Veggie Project at the Monroe Carell, Jr. Children's Hospital at Vanderbilt \(Davidson\)⁴¹⁶](#)

d. Neighbourhoods, Place, Socioeconomic Status

[Acid Rain Kids Website](#)⁴¹⁷

[Collaborative Community Projects -healthy neighborhoods, healthy families](#)⁴¹⁸

[Community Action for a Renewed Environment](#)⁴¹⁹

[Environmental Health Leadership Training](#)³⁷³

[Travel Blending](#)⁴²⁰

[Turn it Off - Toronto's program to reduce car idling](#)⁴²¹

Appendix III.2.A: Home Visiting¹⁴

a. General

[Home visitation service delivery⁴²⁶](#)

b. Child Development and School Readiness

[Born to Learn](#)

[Child FIRST¹⁶²](#)

[Child Parent Enrichment Project](#)

[Early Start \(New Zealand\)](#)

[Family Check-Up](#)

[Home Instruction for Parents of Preschool Youngsters](#)

[Kindergarten Home Visit Project](#)

[Nurse-Family Partnership](#)

[Parents as Teachers](#)

[Play and Learning Strategies](#)

[Reach Out and Read](#)

c. Child Health

[Community Action Program for Children](#)

[Community Infant Program \(CIP\)⁴²²](#)

[Every Child Succeeds⁴²³](#)

[Healthy Beginnings Enhanced Home Visiting⁴²⁴](#)

[Healthy Child Manitoba](#)

[Healthy Steps](#)

[Healthy Smile Happy Child](#)

[Incredible Years](#)

[Seattle-King County Healthy Homes Project](#)

d. Maternal Health

[Canada Prenatal Nutrition Program](#)

[Healthy Families America¹²⁶](#)

[Healthy Families and Kwanlin Dun First Nation's Project⁴²⁵](#)

[Maternal, Infant, and Early Childhood Home Visiting Program⁴²⁷](#)

¹⁴ Selection of programs provided for topics; lists are not comprehensive and a program that relates to more than one topic (e.g., Nurse Family Partnership) is not repeated by topic.

e. Positive Parenting Practices

[Childhood Asthma Prevention Study](#)

[COPEing with Toddler Behaviour](#)

[Healthy Beginnings](#)

[MOM Program](#)

[Parent-Child Home Program](#)

[Pride in Parenting](#)

[Triple P Positive Parenting](#)

f. Reductions in Child Maltreatment

[Dare to be You](#)

[Nobody's Perfect](#)

[Project 12- Ways/SafeCare](#)

[SNAP under 12 outreach project](#)

g. Reduction in Juvenile Delinquency, Family Violence, and Crime

[Families and Schools Together](#)

[Fast Track](#)

h. Low income, Disadvantaged Mothers

[Born Equal – Growing Health](#)

[Early Head Start Home Visiting](#)

i. Teen Moms, At-Risk Moms

[SafeCare Model](#)

[Healthy Families and Kwanlin Dun First Nation's Project⁴²⁵](#)

[Families First \(Manitoba\)](#)

Appendix III.3.A: Community-Based Collaborative Programs

a. Coalitions, Hubs, Multisectoral Partnerships - Canada

[Blackfalds Neighbourhood Place⁴²⁸](#)[Braeburn Neighbourhood Place⁴²⁹](#)[Children First Regional Initiative⁴³⁰](#)[Hamilton Best Start⁴³¹](#)[Healthy Communities Approach⁴³²](#)[Integrated Early Childhood Services in Canada: Evidence from the Better Beginnings, Better Futures \(BBBF\) and Toronto First Duty \(TFD\) Projects⁴³³](#)[Lifeline:creating a community service hub for first nations children and families⁴³⁴](#)[Neighbourhood Place⁴³⁵](#)[Ontario Early Years Centres and Child and Family Centres⁴³⁶](#)[Otonabee Valley \(OV\) family hub⁴³⁷](#)[Rimbey Neighbourhood Place⁴³⁸](#)

b. Coalitions, Hubs, Multisectoral Partnerships – International

[Accogliere la Nascita \(Upholding Birth\)⁴³⁹](#)[Bultatzen⁴⁴⁰](#)[Campbelltown Communities for Children⁴⁴¹](#)[Centre for Youth and Families \(CJG\) and SPIL Centres⁴⁴²](#)[Challis Early Childhood Education Centre⁴⁴³](#)[Child and Family Hubs⁴⁴⁴](#)[CHILDREN 1st⁴⁴⁵](#)[Clowns without Borders⁴⁴⁶](#)[Common Language⁴⁴⁷](#)[Community Childcare Hubs⁴⁴⁸](#)[Community Connections: Macarthur Diversity Services Initiative⁴⁴⁹](#)[Coolaroo South Primary School and Kindergarten⁴⁵⁰](#)[Dandy Pals⁴⁵¹](#)[Familienzentren \(family centres\)⁴⁵²](#)[Family Support Hub⁴⁵³](#)[Family Support Hubs⁴⁵⁴](#)[Family Support Programme⁴⁵⁵](#)[FamilyZone Ingle Farm Hub⁴⁵⁶](#)[Integrated ECD Programme⁴⁵⁷](#)[Invest for Children⁴⁵⁸](#)[Neath Port Talbot Family Action Support Team \(FAST\)⁴⁵⁹](#)[Parenting Shop⁴⁶⁰](#)

[Parents' House](#)⁴⁶¹

[Partnerships in Early Childhood \(PIEC\)](#)⁴⁶²

[Portable playgroups the PlayStart way](#)⁴⁶³

[Prevention of Child Separation from Families](#)⁴⁶⁴

[Street Treats: UnitingCare Burnside](#)⁴⁶⁵

[Tambellup way](#)⁴⁶⁶

[Wyndham Early Learning Activity Centre \(WELA\)](#)⁴⁶⁷

[youngballymun](#)⁴⁶⁸

[Yummy Café](#)⁴⁶⁹

Appendix III. A. Summary of studies on factors that influence children’s healthy development (excluding blood lead) – Health and Safety

Reference	Title	Abstract
A. HEALTH AND SAFETY		
a. Abuse and Neglect		
Boivin et al. (2012)	Early childhood development: adverse experiences and developmental health	The Panel was given a mandate to consider a large body of scientific evidence that, if summarized for the public, would be helpful to their consideration of the issues surrounding early childhood development. While the RSC itself does not have an opinion on these matters, the Panel was struck as a service to Canadians, who would benefit from having a careful, balanced review of the publicly available evidence in this matter of critical importance to Canada.
Hertzman (2011)	Biological pathways between the social environment and health	Social environments ‘get under the skin’ early in life, and do so in ways that affect the course of human development. Early experiences can produce small changes in trajectories that can become magnified as the individuals develop in the form of heart disease, diabetes, obesity, depression, and substance abuse. Furthermore, different qualities of experience in a socially partitioned world create social gradients in human developmental trajectories across the life course. Systems allow pathways for early nurturant environment to be ‘biologically embedded’ through gene-by-environment-interactions that influence developmental trajectories.
Hertzman (2013)	The significance of early childhood adversity	Hertzman describes nine findings relating to the nature and significance of adverse experiences in early childhood.
b. Breastfeeding		
Arentz et al. (2004)	Breast-feeding and childhood obesity-- a systematic review	Breast-feeding seems to have a small but consistent protective effect against obesity in children [Systematic review]
Kramer and Kakuma (2001)	The optimal duration of exclusive breastfeeding: a systematic review.	The available evidence demonstrated no apparent risks in recommending, as a general policy, exclusive breastfeeding for the first 6 months of life in both developing and developed country settings. [Systematic review]
Renfrew et al. (2005)	Breastfeeding for longer – what	To enable women to breastfeed the evidence suggests that the following changes are needed: coordination of national

Reference	Title	Abstract
	works? Systematic review summary	with local policy; ongoing monitoring of rates of variation in infant feeding; requires the support of clinical professionals, community based workers, managers with responsibility for health and social services and staff, those with responsibility for collecting health and health service-related data , educators in the fields of health and social services, employers in large and small organisations, politicians and policy makers at local, regional and national levels , those with influence over public opinion, families and the public at large. [Systematic review]
Shulze and Carlisle (2010)	What research does and doesn't say about breastfeeding: a critical review	The authors review the research literature on breastfeeding benefits and promotion. Although breastfeeding confers numerous benefits to infants, mothers and society, the authors conclude that breastfeeding promotion efforts sometimes overstate or misrepresent what the research actually supports about the benefits of breastfeeding. Psychological or cognitive benefits, particularly for full-term healthy infants, may be overstated. In some studies, variables such as income, education and maternal IQ are not adequately taken into account. Studies that do take these variables into account often find little or no association between breastfeeding and cognitive outcomes except in the case of premature or low birth weight infants. Although often promoted as a benefit of breastfeeding, there is little support of the assertion that breastfeeding enhances bonding between mothers and their infants.
Sikorski et al. (2003)	Support for breastfeeding mothers: a systematic review	This review supports the conclusion that supplementary breastfeeding support should be provided as part of routine health service provision. There is clear evidence for the effectiveness of professional support on the duration of any breastfeeding although the strength of its effect on the rate of exclusive breastfeeding is uncertain. Lay support is effective in promoting exclusive breastfeeding although the strength of its effect on the duration of any breastfeeding is uncertain. Evidence supports the promotion of exclusive breastfeeding as central to the management of diarrhoeal illness in partially breast-fed infants. [Systematic review]
c. Dental Health, Oral Care		
Guarnizo-Herreno and Wehby (2012)	Children's dental health, school performance, and	Authors assessed the effects of dental health on school performance and psychosocial well-being in a nationally representative sample of approximately 42,000 children.

Reference	Title	Abstract
	psychosocial well-being	Dental problems were significantly associated with reductions in school performance and psychosocial well-being. Preventing and treating dental problems and improving dental health may benefit child academic achievement and cognitive and psychosocial development.
d. Early Environment		
Carpenter and Stacks (2009)	Developmental effects of exposure to intimate partner violence in early childhood: a review of the literature	Early intervention with young children and caregivers living with Intimate Partner Violence (IPV) provides a significant buffer to the negative effects that witnessing IPV have on children's development and their relationships with caregivers.
Dozier and Bernard (2009)	The impact of attachment-based interventions on the quality of attachment among infants and young children	Interventions are effective in enhancing children's attachment quality. Interventions that target specific issues, most especially parental sensitivity, appear more effective than interventions with more global goals. Interventions that are brief are at least as effective as those that are of longer duration. Interventions that begin when attachment quality has begun to emerge (after about six months of age) appear more effective than those begun earlier. For the most part, intervention effects have not proven to be significantly different for different types of study populations. For example, intervention effects have been generally comparable across risk status and socioeconomic status.
Knafo et al. (2013)a	Evidence of gene–environment correlation for peer difficulties: disruptive behaviors predict early peer relation difficulties in school through genetic effects	Early disruptive behaviors, such as aggressive and hyperactive behaviors, known to be influenced by genetic factors, have been found to predict early school peer relation difficulties, such as peer rejection and victimization. The main goal of the present study was to examine the possible establishment of an emerging gene–environment correlation linking disruptive behaviors to peer relationship difficulties during the first years of school. As predicted, disruptive behaviors were concurrently and predictively associated with peer relation difficulties.
Knafo et al. (2013)b	The predictive significance of early caregiving experiences for symptoms of psychopathology through	A fundamental question in the discipline of developmental psychopathology is whether early interpersonal experiences influence maladaptation in enduring or transient ways. Authors examined data from the National Institute of Child Health and Human Development Study of Early Child Care and Youth Development on maternal sensitivity in the first 3 years of life and its association with symptoms of psychopathology

Reference	Title	Abstract
	midadolescence: enduring or transient effects?	through age 15. Results suggest that there may be enduring effects of early caregiving experiences on symptomatology as rated by teachers, although such effects were not found for maternal report. Additional analyses indicated that enduring associations found via teacher report could not be fully accounted for by continuity in caregiving experiences or by early contextual adversity.
Knafo et al. (2013)c	Childhood temperament: passive gene–environment correlation, gene–environment interaction, and the hidden importance of the family environment	The association between the home environment and children's temperament can be genetically or environmentally mediated. Furthermore, family environments may suppress or facilitate the heritability of children's temperament. This study comprised 807 twin pairs (mean age = 7.93 years) from the longitudinal Wisconsin Twin Project. Important passive gene–environment correlations emerged, such that home environments were less chaotic for children with high effortful control, and this association was genetically mediated. Children with high extraversion/surgency experienced more chaotic home environments, and this correlation was also genetically mediated. In addition, heritability of children's temperament was moderated by home environments, such that effortful control and extraversion/surgency were more heritable in chaotic homes, and negative affectivity was more heritable under crowded or unsafe home conditions.
Kok et al. (2013)	Maternal sensitivity and internalizing problems: evidence from two longitudinal studies in early childhood	The goal of this study is to clarify the relation between maternal sensitivity and internalizing problems during the preschool period. In a longitudinal model involving two large prospective, population-based cohorts, maternal sensitivity was repeatedly observed in mother–child interaction tasks and information on child internalizing problems was obtained from maternal reports. Modest but consistent associations between maternal sensitivity and internalizing problems were found in both cohorts, confirming the importance of sensitive parenting for positive development in the preschool years. Pathways from maternal sensitivity to child internalizing problems were consistently observed but child-to-mother pathways were only found in one cohort.
Raposa et al. (2013)	Early adversity and health outcomes in young adulthood: the role of ongoing stress	The current study examined the prospective effects of exposure to stressful conditions in early childhood on physical health in young adulthood, and explored continuing exposure to stressors, as well as depression, in adolescence as possible mechanisms of this relationship. Findings suggest that early adverse conditions have lasting implications for physical health, and that continued exposure to increased levels of

Reference	Title	Abstract
		both social and nonsocial stress in adolescence, as well as the presence of depression, might be important mechanisms by which early adversity impacts later physical health.
Slopen et al. (2013)	Childhood adversity and inflammatory processes in youth: a prospective study	Using longitudinal data from the Avon Longitudinal Study of Parents and Children, authors examined associations between acute adverse events at seven time points prior to age 8 and inflammation at ages 10 and 15. This study documents that exposure to adverse events prior to age 8 is associated with elevated inflammation at age 10 and in mid-adolescence. These findings provide prospective evidence for a biological mechanism by which early experiences may shape long-term health.
Theall et al. (2013)	Neighborhood disorder and telomeres: connecting children's exposure to community level stress and cellular response	As a way to examine children's exposure to community level stress and cellular response, authors explored the utility of salivary telomere length (sTL) as an early indicator of neighborhood-level social environmental risk during child development. Findings are consistent with previous studies in youth demonstrating an association between early life stress and sTL and offer increased support for the hypothesis that sTL represents a non-invasive biological indicator of psychosocial stress exposure (i.e., neighborhood disorder) able to reflect differences in stress exposure levels even in young children.
e. Injury Prevention		
Pearson et al. (2012)	Preventing unintentional injuries to children under 15 years in the outdoors: a systematic review of the effectiveness of educational programs	Authors present the findings of a systematic review about the effectiveness of programs that provided information, advice or education about the prevention of unintentional injuries to children under 15 years during outdoor play and leisure. Twenty-three studies met the inclusion criteria. There was a paucity of robust study designs. The majority of studies only reported a short-term follow-up of intermediate outcome measures. Only two studies measured injury rates; both reported a reduction, but both studies also had considerable methodological weaknesses. The five studies that measured the use of protective equipment reported mixed results, although there is some evidence that suggests that more extensive educational programs (such as health fairs and media campaigns) increase their use. The 20 studies that measured behaviour, attitude or knowledge outcomes reported highly mixed results. Methodological weaknesses of the included studies limit support for a particular course of

Reference	Title	Abstract
		action.
f. Nutrition		
Heim et al. (2011)	Can a community-based intervention improve the home food environment?	To examine changes in parental report of the home food environment during the course of a garden-based fruit and vegetable (FV) intervention for grade school children. Process evaluation results indicate children shared their garden experiences at home, and as a result, the children's home food environment became increasingly supportive of FV consumption. Community-based interventions that provide activities to engage parents may provide added benefit by improving the home food environment.
Manning (2013)	Promoting healthy food choices in early childhood: an ecological approach	The study objective was to assess the effectiveness of an ecological approach to promote healthy food choices in early childhood education through an educational workshop series. The work was undertaken in three YMCA child care centres located in the Greater Toronto Area: Newcastle, Unionville, and inner-city Toronto. Participants comprised of 19 children, 5 parents, and 9 ECEs. The ecological approach to the promotion of healthy food choices in early childhood education was demonstrated to be an effective health promotion strategy for children aged 3 to 5.
Peters et al. (2012)	Parental influences on the diets of 2–5-year-old children: systematic review of interventions	During the early years, parents have a major influence on their children's diets, food choices and development of eating habits. This paper presents a systematic review of intervention studies with parents of preschool children. The aim was to investigate the effectiveness of interventions that target parent nutrition knowledge and/or parenting practices with parents of young children aged two to five years in the development of healthy dietary habits. Seventeen studies were identified. Findings highlight the limited number of good quality studies in this age group. Limitations include design inconsistency and a lack of longitudinal data to evaluate sustainability. Research on parental understanding of healthy diets and specific parenting styles and feeding practices is lacking. Further insights into how parents can positively influence children's diets will come from quality longitudinal research examining both parent feeding practices and nutrition knowledge in this age group.
g. Physical/Mental Health (activity/inactivity, obesity)		

Reference	Title	Abstract
Barnes (2012)	Reducing childhood obesity in Ontario through a health equity lens	This paper sets out strategies to reduce childhood obesity in Ontario and its associated health problems by taking a health equity and social determinants of health approach.
Beets et al. (2009)	After-school program impact on physical activity and fitness: a meta-analysis	The majority of children do not participate in sufficient amounts of daily, health-enhancing physical activity. One strategy to increase activity is to promote it within the after-school setting. Although promising, the effectiveness of this strategy is unclear. A systematic review was performed summarizing the research conducted to date regarding the effectiveness of after-school programs in increasing physical activity. The limited evidence suggests that after-school programs can improve physical activity levels and other health-related aspects. Additional studies are required that provide greater attention to theoretical rationale, levels of implementation, and measures of physical activity within and outside the intervention.
Bleich et al. (2013)	Systematic review of community-based childhood obesity prevention studies	This study systematically reviewed community-based childhood obesity prevention programs in the United States and high-income countries. The strength of evidence is moderate that a combined diet and physical activity intervention conducted in the community with a school component is more effective at preventing obesity or overweight. More research and consistent methods are needed to understand the comparative effectiveness of childhood obesity prevention programs in the community setting.
Kesten et al. (2011)	A systematic review to determine the effectiveness of interventions designed to prevent overweight and obesity in pre-adolescent girls	Childhood overweight/obesity is recognized as an increasing health problem. The objective of this review was to determine the effectiveness of interventions designed to prevent overweight and obesity in pre-adolescent girls. Findings suggest that there is the potential for interventions aimed at pre-adolescent girls to reduce the risk factors associated with childhood overweight and obesity, although the sustainability of the effects of such interventions is less clear.
Williams et al. (2012)	A systematic review of associations between the primary school built environment and childhood	This systematic review considers current literature on the association between childhood overweight and obesity and the primary school built environment. The following elements of the built environment were found to have been investigated: playground availability and adequacy; gymnasium availability and adequacy; school field, showers

Reference	Title	Abstract
	overweight and obesity	and covered playground availability. One intervention study was identified which utilized the built environment as an adjunct to a behavior change intervention. This systematic review identified minimal research upon the association between the school built environment and weight status and the current results are inconclusive.
Hesketh and Campbell (2010)	Interventions to prevent obesity in 0-5 year olds: an updated systematic review of the literature	The small number and recency of the early childhood obesity-prevention literature identified in a previous review of interventions to prevent obesity, promote healthy eating, physical activity, and/or reduce sedentary behaviors in 0–5 year olds suggests this is a new and developing research area. The current review was conducted to provide an update of the rapidly emerging evidence in this area and to assess the quality of studies reported. Current evidence suggests that behaviors that contribute to obesity can be positively impacted in a range of settings and provides important insights into the most effective strategies for promoting healthy weight from early childhood.
Mitchell et al. (2012)	Physical activity in young children: a systematic review of parental influences	The primary aim of this review was to identify and evaluate the strength of associations of the key parental factors measured in studies examining early childhood physical activity (PA). Further investigation is needed to clarify and understand the specific parental influences and behaviours that are associated with PA in young children. In particular, longitudinal research is needed to better understand how parental influences and PA levels of children during the formative preschool and early elementary school years are associated.
Niemeier et al. (2012)	Parent participation in weight-related health interventions for children and adolescents: a systematic review and meta-analysis	To review child and adolescent weight-related health intervention characteristics, with a particular focus on levels of parental participation, and examine differences in intervention effectiveness. This study suggests that weight-related health interventions that require parent participation more effectively reduce body mass indexes of child and adolescent participants. In addition, longer interventions that include parent participation appear to have greater success. Suggestions for future research and related interventions are provided.
Showell et al. (2013)	A systematic review of home-based childhood obesity prevention studies	The objective was to systematically review the effectiveness of home-based interventions on weight, intermediate (e.g., diet and physical activity [PA]), and clinical outcomes. The strength of evidence is low to support the effectiveness of

Reference	Title	Abstract
		home-based child obesity prevention programs. Additional research is needed to test interventions in the home setting, particularly those incorporating parenting strategies and addressing environmental influences.
Skouteris et al. (2012)	Parent–child interactions and obesity prevention: a systematic review of the literature	A literature review was conducted to locate empirical studies that measured parent–child interactions and child eating and child weight variables; five papers met the inclusion criteria and were included in the review. The findings of the review revealed that parent–child relationships are an important element in explaining the unhealthy trend of childhood obesity. We argue that prevention/intervention strategies must extend on the current models of parenting by targeting the family from a bi-directional perspective, and focusing, specifically, on the mutually responsive orientation that exists in the parent–child relationship.
Wen et al. (2012)	Effectiveness of home based early intervention on children's BMI at age 2: randomised controlled trial	To assess the effectiveness of a home based early intervention on children's body mass index (BMI) at age 2 by way of a randomised controlled trial. The home based early intervention delivered by trained community nurses was effective in reducing mean BMI for children at age 2.
h. Respiratory Health (asthma)		
Labre et al. (2012)	Public health interventions for asthma: an umbrella review	Asthma is a chronic respiratory disease increasingly prevalent in the U.S., particularly among children and certain minority groups. This umbrella review sought to assess and summarize existing systematic reviews of asthma-related interventions that might be carried out or supported by state or community asthma control programs, and to identify gaps in knowledge. Of 42 included reviews, 19 assessed the effectiveness of education and/or self-management, nine the reduction of indoor triggers, nine interventions to improve the provision of health care, and five examined other interventions. Several reviews found consistent evidence of effectiveness for self-management education, and one review determined that comprehensive home-based interventions including the reduction of multiple indoor asthma triggers are effective for children. Other reviews found limited or insufficient evidence because of study limitations. CONCLUSIONS: State or community asthma control programs should prioritize (1) implementing interventions for which the present review found evidence of effectiveness and (2) evaluating promising interventions that have not yet been adequately assessed.

Reference	Title	Abstract
Celano et al. (2012)	Home-based family intervention for low-income children with asthma: a randomized controlled pilot study	This study evaluated the efficacy of a home-based family intervention integrating asthma education and strategies to address stress using a community-based participatory research model. The results suggest that a home-based intervention addressing medical and psychosocial needs may prevent hospitalizations for children with poorly controlled asthma and caregivers under stress.
Crocker et al. (2011)	Effectiveness of home-based, multi-trigger, multicomponent interventions with an environmental focus for reducing asthma morbidity: a community guide systematic review	The purpose of this review was to evaluate evidence that interventions that target reducing these triggers through home visits may be beneficial in improving asthma outcomes. The interventions involve home visits by trained personnel to conduct two or more components that address asthma triggers in the home. Intervention components focus on reducing exposures to a range of asthma triggers (allergens and irritants) through environmental assessment, education, and remediation. Home-based, multi-trigger, multicomponent interventions with an environmental focus are effective in improving overall quality of life and productivity in children and adolescents with asthma.
Krieger et al. (2010)	Housing interventions and control of asthma-related indoor biologic agents: a review of the evidence	Subject matter experts systematically reviewed evidence on the effectiveness of housing interventions that affect health outcomes, primarily asthma, associated with exposure to moisture, mold, and allergens. This evidence review shows that selected interventions that improve housing conditions will reduce morbidity from asthma and respiratory allergies.
Nurmagambetov et al. (2011)	House dust mite avoidance measures for perennial allergic rhinitis: an updated Cochrane systematic review	A recent systematic review of home-based, multi-trigger, multicomponent interventions with an environmental focus showed their effectiveness in reducing asthma morbidity among children and adolescents. These interventions included home visits by trained personnel to assess the level of and reduce adverse effects of indoor environmental pollutants, and educate households with an asthma client to reduce exposure to asthma triggers. The purpose of the present review is to identify economic values of these interventions. The benefits from home-based, multi-trigger, multicomponent interventions with an environmental focus can match or even exceed their program costs.
Postma and Kieckhefer (2009)	Community health workers and environmental interventions for	Community health worker (CHW)-delivered, home-based environmental interventions for pediatric asthma were systematically reviewed. Overall, the studies consistently identified positive outcomes associated with CHW-delivered

Reference	Title	Abstract
	children with asthma: a systematic review	interventions, however, improvements in trigger reduction behaviors and allergen levels, hypothesized mediators of these outcomes, were inconsistent.
Welsh et al. (2011)	Home-based educational interventions for children with asthma.	While guidelines recommend that children with asthma should receive asthma education, it is not known if education delivered in the home is superior to usual care or the same education delivered elsewhere. The home setting allows educators to reach populations (such as the economically disadvantaged) that may experience barriers to care (such as lack of transportation) within a familiar environment. We found inconsistent evidence for home-based asthma educational interventions compared to standard care, education delivered outside of the home or a less intensive educational intervention delivered at home.

Appendix III. B. Summary of studies on factors that influence children’s healthy development (excluding blood lead) – Education

Reference	Title	Abstract
B. EDUCATION		
a. Early Care and Education (pre-school, kindergarten)		
Anderson et al. (2003)	The effectiveness of early childhood development programs. A systematic review	Programs such as Head Start are designed to close the gap in readiness to learn between poor children and their more economically advantaged peers. Systematic reviews of the scientific literature demonstrate effectiveness of these programs in preventing developmental delay, as assessed by reductions in retention in grade and placement in special education.
Barnett and Ackerman (2006)	Costs, benefits, and long-term effects of early care and education programs: recommendations and cautions for community developers	Participation in early care and education (ECE) programs has become the norm for this nation’s three- and four-year olds. This paper reviews the basis for claims related to the costs, benefits, and long-term effects of ECE programs, including effects on children’s learning and development and parental earnings. Evidence indicates that returns for public investments in the education for children in poverty or low-income families are higher. Yet, the nation currently invests too little in providing children who can benefit the most with access to preschool education and in ensuring that the programs accessed are of optimal quality.
D’Onise et al. (2010)a	Can preschool improve child health outcomes? A systematic review	Early childhood development interventions (ECDIs) have the potential to bring about wide ranging human capital benefits for children through to adulthood. Less is known, however, about the potential for such interventions to improve population health. The aim of this study was to examine the evidence for child health effects of centre-based preschool intervention programs for healthy 4 year olds, beyond the preschool years. The review found generally null effects of preschool interventions across a range of health outcomes, however there was some evidence for obesity reduction, greater social competence, improved mental health and crime prevention. We conclude that the great potential for early childhood interventions to improve population health across a range of health outcomes, as anticipated by policy makers worldwide, currently rests on a rather flimsy evidence base.
D’Onise et al. (2010)b	Does attendance at preschool affect adult health? A	Early child development interventions can set children on positive social and educational trajectories. The aim of this review was to examine the evidence for the adult health

Reference	Title	Abstract
	systematic review	impacts of centre-based preschool interventions for preschoolers. The reviewed articles provide some support for the role of early childhood interventions to improve health behaviours but not chronic disease outcomes.
Gray and McCormick (2005)	Early childhood intervention programs in the US: recent advances and future recommendations	Recent scientific reviews, long term outcome studies, and effectiveness trials of early childhood intervention programs in the US have important lessons for the future of these interventions in the US and internationally. Programs should (1) employ more center-based or mixed center-based and home visiting models, (2) monitor standards of quality, (3) become more family focused and culturally competent, and (4) broaden the focus of their evaluations. If these recommendations are followed then we will be in a better position to get the best return on our investments in early childhood.
Halgunseth and Peterson (2009)	Family engagement, diverse families, and early childhood education programs: an integrated review of the literature	The literature clearly indicates that in order to promote optimal development for all children, early childhood education programs and policy decisions must be respectful of the cultural and ethnic ideals of the families they serve.
Her Majesty's Government (UK) (2011)	Early intervention: the next steps	Early childhood development interventions (ECDIs) have the potential to bring about wide ranging human capital benefits for children through to adulthood. Less is known, however, about the potential for such interventions to improve population health. The aim of this study was to examine the evidence for child health effects of centre-based preschool intervention programs for healthy 4 year olds, beyond the preschool years.
Karoly et al. (2010)	Proven benefits of early childhood interventions. Research brief	The study focused on programs that provide child development services from the prenatal period until kindergarten entry and that had scientifically sound evaluations. A literature review identified twenty such programs, nineteen of which demonstrated favorable effects on child outcomes. These nineteen early intervention programs demonstrated significant and often sizable benefits in at least one of the following domains: cognition and academic achievement, behavioral and emotional competencies, educational progression and attainment, child maltreatment, health, delinquency and crime, social welfare program use, and labor market success. Home visiting or parent education: DARE to be You Developmentally Supportive Care: Newborn Individualized

Reference	Title	Abstract
		Developmental Care and Assessment Program* HIPPPY (Home Instruction Program for Preschool Youngsters) USA Incredible Years Nurse-Family Partnership Program Parents as Teachers* Project C ARE (Carolina Approach to Responsive Education) — without early childhood education Reach Out and Read* Home Visiting or Parent Education Combined with Early Childhood Education Carolina Abecedarian Project Chicago Child-Parent C enters Early Head Start* Early Training Project Head Start High/Scope Perry Preschool Project Houston Parent-Child Development Center Infant Health and Development Program Project CARE — with early childhood education Syracuse Family Development Research Program Early Childhood Education Only Oklahoma Pre-K
Pancer et al. (2013)	The Better Beginnings, Better Futures Project: long-term parent, family, and community outcomes of a universal, comprehensive, community-based prevention approach for primary school children and their families	Better Beginnings, Better Futures is a large-scale, multi-year, longitudinal research-demonstration project designed to reduce children's problems, promote healthy child development, and enhance family and community environments in three economically disadvantaged communities in the province of Ontario, Canada. Results suggest that the intervention did have some positive long-term effects on youths' parents and on their community environments. Results are discussed with respect to the importance of considering family and neighbourhood contexts in the development and evaluation of prevention programmes.
Reynolds and Temple (2008); Temple and Reynolds (2007)	Cost-effective early childhood development programs from preschool to third grade	This review summarizes evidence on the effects and cost-effectiveness of early childhood development programs and services from ages 3 to 9. Participation in preschool programs was found to have relatively large and enduring effects on school achievement and child well-being. High-quality programs for children at risk produce strong economic returns ranging from about \$4 per dollar invested to over \$10 per dollar invested. Relative to half-day kindergarten, the positive

Reference	Title	Abstract
		effects of full-day kindergarten have been found to be relatively small and generally do not last for more than a year.
b. Language, Literacy		
Anglin (2008)	Literature review: the role of families and communities in building children's literacy skills	Community-based Child Literacy Programs play an essential role in developing the literacy skills of both pre-school and school-aged children. These programs have a diversity of goals which range from building children's skills through literacy activities to building communities through promoting connections with parents and/or schools. Consistently, these programs support the school system by either promoting school-readiness for young children, or providing tutoring support to school-aged children.
Balla-Boudreau et al. (2011)	Results of a national survey of early literacy programs	An online survey comprised of forty-nine questions, both qualitative and quantitative, was distributed via email to 200 Canadian early literacy organizations. Findings indicate that the programs surveyed are doing an excellent job of supporting early literacy development in their communities; their programs are full and expanding, and they are establishing key partnerships in the process. However, lack of funds impacts their program delivery.

Appendix III. C. Summary of studies on factors that influence children's healthy development (excluding blood lead) – Material Well-Being

Reference	Title	Abstract
C. MATERIAL WELL-BEING		
a. Low Income		
Conti and Heckman (2012)	Early childhood development: creating healthy communities with greater efficiency and effectiveness	Three important lessons emerge from recent research that should shape future policies to improve the health of individuals, communities, and the American economy. Lesson 1: develop the whole child; lesson 2: inequalities open up early in life; lesson 3: early intervention is far more effective than later remediation.
Geddes et al. (2011); Geddes et al. (2010)	A rapid review of key strategies to improve the cognitive and social development of children in Scotland	Inequalities in health and educational outcomes in Scotland show a strong and persistent socioeconomic status gradient. A rapid review was conducted of review level studies of early childhood interventions with outcome measures relating to child cognitive-language or social-emotional development, subsequent academic and life achievement. Early childhood intervention programmes can reduce disadvantage due to social and environmental factors. 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.
Miller et al. (2012)	Home-based child development interventions for preschool children from socially disadvantaged families	Social disadvantage can have a significant impact on early child development, health and wellbeing. This review sought to determine the effects of home-based programmes aimed specifically at improving developmental outcomes for preschool children from socially disadvantaged families. The quality of the evidence was difficult to assess as there was often insufficient detail reported to enable any conclusions to be drawn about the methodological rigour of the studies. This review does not provide evidence of the effectiveness of home-based interventions that are specifically targeted at improving developmental outcomes for preschool children from socially disadvantaged families.
Rijlaarsdam et al. (2013)	Economic disadvantage and young children's emotional and behavioral problems: mechanisms of risk	This study aimed to establish potential mechanisms through which economic disadvantage contributes to the development of young children's internalizing and externalizing problems. In the Generation R Study, current results suggest that interventions that focus solely on raising income levels may not adequately address problems in the family processes that emerge as a result of economic

Reference	Title	Abstract
		disadvantage. Policies to improve the mental health of mothers with young children but also their home environments are needed to change the economic gradient in child behavior.
Spencer et al. (2013)	Low income/socio-economic status in early childhood and physical health in later childhood/adolescence: a systematic review	This systematic review of the association of early childhood low income/SES with physical health status in later childhood and adolescence shows that, in contrast to the extensive literature on the impact of poor childhood social circumstances on adult health, the evidence base is limited. The literature points to some associations of early low income/SES with later poor health status, but many key research questions remain unanswered. Implications for further research are considered.
Weitzman (2007)	Low income and its impact on psychosocial child development	There is a voluminous body of literature to support the theory that family poverty adversely affects children's health, intellectual capabilities, academic achievement, and behaviour. By contrast, a small but growing body of literature has demonstrated how various policies and interventions can attenuate poverty's negative influence on child development.
Woolfenden et al. (2013)	Inequity in child health: the importance of early childhood development	Public health investment that aims to diminish negative environmental factors associated with social disadvantage, when used wisely, can produce measurable improvements in health (Mays and Smith, 2011). Population-level early intervention programmes such as home visiting, high-quality early child care and other early childhood development programmes have clear high-level evidence of effectiveness in reducing developmental vulnerability, preventing developmental delay and improving school readiness (Marmot, 2010; Anderson et al., 2003; Shonkoff, 2003). In the long term, they have been shown to reduce high school drop-out rates and criminal behaviour, increase employment and delay child rearing.
Ziol-Guest and McKenna (2013)	Housing improvements for health and associated socio-economic outcomes	This study assesses the consequences of housing instability during the first 5 years of a child's life for a host of school readiness outcomes. The findings show that moving three or more times in a child's first 5 years is significantly associated with increases in attention problems, and internalizing and externalizing behavior, but only among poor children.

b. Environmental Injustice, Housing

Reference	Title	Abstract
Albert (2013)	Building innovations in community-based services for children	Albert describes how a locally developed model of integrated, place-based service delivery is a solution to addressing the needs of vulnerable children and families in our communities.
Anderson et al. (2002)	Community interventions to promote healthy social environments: early childhood development and family housing: a	The sociocultural environment exerts a fundamental influence on health. Interventions to improve education, housing, employment, and access to health care contribute to healthy and safe environments and improved community health. The Task Force on Community Preventive Services (the Task Force) has conducted systematic reviews of early childhood development interventions and family housing interventions. The topics selected provide a unique, albeit small, beginning of the review of evidence that interventions do effectively address sociocultural factors that influence health. Based on these reviews, the Task Force strongly recommends publicly funded, center-based, comprehensive early childhood development programs for low-income children aged 3-5 years.
Evans (2004)	The environment of childhood poverty	Poor children confront widespread environmental inequities. Compared with their economically advantaged counterparts, they are exposed to more family turmoil, violence, separation from their families, instability, and chaotic households. Poor children experience less social support, and their parents are less responsive and more authoritarian. Low-income children are read to relatively infrequently, watch more TV, and have less access to books and computers. Low-income parents are less involved in their children's school activities. The air and water poor children consume are more polluted. Their homes are more crowded, noisier, and of lower quality. Low-income neighborhoods are more dangerous, offer poorer municipal services, and suffer greater physical deterioration. Predominantly low-income schools and day care are inferior. The accumulation of multiple environmental risks rather than singular risk exposure may be an especially pathogenic aspect of childhood poverty.
Landrigan et al. (2013)	Environmental justice and the health of children	Environmental injustice is the inequitable and disproportionately heavy exposure of poor, minority, and disenfranchised populations to toxic chemicals and other environmental hazards. Environmental injustice contributes to disparities in health status across populations of differing ethnicity, race, and socioeconomic status. Infants and

Reference	Title	Abstract
		<p>children, because of their unique biological vulnerabilities and age-related patterns of exposure, are especially vulnerable to the health impacts of environmental injustice. These impacts are illustrated by sharp disparities across children of different racial and ethnic backgrounds in the prevalence of 3 common diseases caused in part by environmental factors: asthma, lead poisoning, and obesity. Documentation of linkages between health disparities and environmental injustice is an important step toward achieving environmental justice.</p>
Masuda et al. (2008)	Environmental health and vulnerable populations in Canada: mapping an integrated equity-focused research agenda	<p>The uneven distribution of environmental hazards across space and in vulnerable populations reflects underlying societal inequities. This review provides an initial assessment of the state of the environmental health research field as specifically focused on vulnerable populations in Canada. Results reveal that there has been significant growth in Canadian research documenting the uneven distributions and impacts of environmental hazards across locations and populations since the 1990s, but its focus has been uneven. Areas for future research are recommended to resolve the environmental burden placed on vulnerable populations and to promote environmental health equity.</p>
Powell and Steward (2001)	Children. The unwitting target of environmental injustices	<p>Children have little control over where they live, what they eat, the financial circumstances of their families, or the developmental activities and behaviors that make them vulnerable to environmental contaminants. Minority and poor families disproportionately live in communities with landfills, hazardous waste facilities, incinerators, industrial plants, and old housing with poor indoor air quality and lead-based paint. Frequently, low-income and minority communities are perceived as less powerful, less organized, and ill equipped to defend against actual and potential sources of environmental contamination. Communities and advocacy groups play an important role in promoting healthier environments for children.</p>
Thomson et al. (2013)	Housing improvements for health and associated socio-economic outcomes	<p>The well established links between poor housing and poor health indicate that housing improvement may be an important mechanism through which public investment can lead to health improvement. Following a literature review, authors stated that housing investment which improves thermal comfort in the home can lead to health improvements, especially where the improvements are targeted at those with inadequate warmth and those with chronic respiratory disease. Best available evidence indicates</p>

Reference	Title	Abstract
		that housing which is an appropriate size for the householders and is affordable to heat is linked to improved health and may promote improved social relationships within and beyond the household. In addition, there is some suggestion that provision of adequate, affordable warmth may reduce absences from school or work.
c. Community-Based Participatory		
Alparone and Rissotto (2011)	Children's citizenship and participation models: participation in planning urban spaces and children's councils	Of all the forms of children's involvement in changing the city, the present work takes into account two models of children's participation: Children's Councils and Participation in Planning. A description is given of the positive effects on the child's personal and social development and factors are seen to be relevant to success are discussed.
Dockett et al. (2012)	Recognising young children's understandings and experiences of community	Since the introduction of the Child Friendly Cities Initiative in 1996, children and young people's participation in consultation has become an increasingly important element of the planning and community development strategies of many government and community organisations throughout Australia. We report the views of 90 children aged 2-6 years and five early childhood educators who mediated and implemented the project with these children. Findings indicated that children's participation was sometimes limited by the boundaries imposed by a restricted adult view of children's competence and experience. This, in turn, meant that the diverse ways in which young children demonstrated their sense of belonging to place and community were not always recognised.
Minkler et al. (2006)	Promoting environmental justice through community-based participatory research: the role of community and partnership capacity	Community-based participatory research (CBPR) increasingly is being used to study and address environmental justice. This article presents the results of a cross-site case study of four CBPR partnerships in the United States that researched environmental health problems and worked to educate legislators and promote relevant public policy. The authors focus on community and partnership capacity within and across sites. The four CBPR partnerships examined were situated in New York, California, Oklahoma, and North Carolina and were part of a larger national study. The importance of strong community (and community partner) leadership, participation, skills and resources to support the work, an ability to form and maintain social and organizational networks and coalitions, and shared values thus were among the

Reference	Title	Abstract
		capacity dimensions that resonated well with the partnerships examined.
O'Connor (2013)	Engaging young people? The experiences, challenges, and successes of Canadian Youth Advisory Councils	In recent years, various communities across Canada have recognized the need to include young people's input in community/urban decision-making processes. As a signatory to the United Nations Convention on the Rights of the Child (CRC), Canadian governments and policy makers are obligated to take young people's views into consideration when decisions about them are made. The aim of this chapter is to examine how some communities have attempted to involve young people in such decision making by creating youth advisory councils. Participants reported that youth councils provided young people with a voice on an array of issues ranging in scope from local to national/international. Despite these successes, the ability of young people to have a voice in decisions that affected them was hindered by the many challenges that youth councils faced (e.g., lack of adult support).
Ramanadhan et al. (2011)	Perceptions of evidence-based programs among community-based organizations tackling health disparities: a qualitative study	Academic–community partnerships using community-based participatory research (CBPR) principles may support increased dissemination of Evidence-based practices (EBP) to community-based organizations (CBOs). This qualitative study examined the EBP-related perceptions and needs of Community-based organisations targeting underserved populations. Important facilitators of EBP usage included: program supports for implementation and adaptation, collaborative technical assistance and perceived benefits of using established programs.
Roberts (2012)	Creating a Children's Village	The author discusses how the Children's Village was created.
Serrell et al. (2006)	An academic-community outreach partnership: building relationships and capacity to address childhood lead poisoning	We describe a successful academic-community partnership composed of the Dartmouth Toxic Metals Research Program, the Manchester (New Hampshire) Health Department, and the Greater Manchester Partners Against Lead Poisoning (GMPALP). Partners collaborated to translate science and best practices into social action and policy change to address childhood lead poisoning. Using the evolution of a childhood lead poisoning prevention initiative, we discuss how an academic-community relationship can be created and sustained. Our experience demonstrates that broad-based partnerships are enhanced by the attributes of community-based participatory research (CBPR). We observe that engaging in community collaborations that are not driven by research eliminates potential conflicts for academic and community

Reference	Title	Abstract
		partners. We identify four core values, namely, (1) adaptability, (2) consistency, (3) shared authority, and (4) trust, as being constructive when working in such partnerships.
Vaughn et al.(2012)	A review of community-based participatory research in child health	To review published studies that use an authentic community-based participatory research (CBPR) approach in child health to highlight the benefits, barriers, and scope of this approach with pediatric populations. The most common child health issue in these studies was obesity/diabetes. Other child health topics included health needs assessments, reproductive health, female health, HIV treatment, physical activity, mental health, maternal/child health, substance abuse, asthma, and youth with disabilities/special healthcare needs. Conclusion: CBPR offers a unique approach for translating evidence-based models and research knowledge from child health into effective and sustainable interventions.

Appendix III. D. Summary of studies on factors that influence children’s healthy development (excluding blood lead) – Family and Peer Relationships

Reference	Title	Abstract
D. FAMILY AND PEER RELATIONSHIPS		
a. Parent Education, Supportive Parenting		
Odgers et al. (2012)	Supportive parenting mediates neighborhood socioeconomic disparities in children's antisocial behavior from ages 5 to 12	From the Environmental Risk Longitudinal Twin Study, authors report a graded relationship between neighborhood socioeconomic status (SES) and children's antisocial behavior that (a) can be observed at school entry, (b) widens across childhood, (c) remains after controlling for family-level SES and risk, and (d) is completely mediated by maternal warmth and parental monitoring.

Appendix III. E. Summary of studies on factors that influence children’s healthy development (excluding blood lead) – Participation

Reference	Title	Abstract
E. PARTICIPATION		
a. After School Programs, Arts		
Nayar Consulting and Amanda Parriage Associates (2011)	An opportunity for every child: realizing the potential of after- school programming for children ages 6 – 12 in Toronto	This report offers additional information to the City of Toronto to continue to participate in the process of developing a provincial strategy for the critical after-school hours in Ontario. Suggested Next Steps for the City of Toronto: Enhance awareness of after-school programming among key stakeholders; Work with provincial groups to advocate for a Provincial After-School Strategy; Advocate for the sustainability of an accessible quality after-school system by encouraging the provincial government to provide ongoing core funding and subsidies to support a network of community-based programming for children ages 6 to 12.
Vandell and Reisner (2007)	Study of promising after-school programs: key findings from new research on the benefits of high-quality after-school programs	Authors report that regular participation in high-quality afterschool programs is linked to significant gains in standardized test scores and work habits as well as reductions in behavioral problems and substance use. These benefits can help offset the negative impact of unsupervised conditions in the afterschool hours. The two-year study followed almost 3,000 low-income, ethnically-diverse elementary and middle school students from eight states in six major metropolitan centers and six smaller urban and rural locations. About half of the young people attended high-quality afterschool programs at their schools or in their communities. Programs offered an age-appropriate mix of academic enrichment, tutoring, recreational, arts, community-based service, and other activities.
Zief et al. (2006)	The impacts of after-school programs on student outcomes: a systematic review for the Campbell Collaboration	While this review has included the most rigorous studies conducted of after-school programs that are currently of great policy interest due to their inclusion of academic support components, reviewers note that the collected evidence is not sufficient to make any policy or programming recommendations. While some areas of promise do exist—supervision and participation in activities—these pooled impacts need to be tested with further research.

Appendix III. F. Summary of studies on factors that influence children’s healthy development (excluding blood lead) – Subjective Well-Being

Reference	Title	Abstract
C. SUBJECTIVE WELL-BEING		
a. Mental Health, Well-Being, Anxiety		
Boivin et al. (2012)	Early childhood development: adverse experiences and developmental health	The report’s key focus is the role of early childhood adversity in shaping risk of addiction and mental health problems in adolescent and young adulthood. The report summarizes a significant body of evidence (longitudinal, etc.) regarding early life experiences and mental health.
Center for the Study of Social Policy (2012)	Results-based public policy strategies for promoting children’s social, emotional and behavioral health	In order for children to meet developmental milestones, learn, grow and lead productive lives, it is critical that they be healthy. Good social-emotional and mental health is a key component of children’s health and healthy development. There are, however, some factors that have been shown to have particular impact children’s social, emotional and mental health. They include: poverty, trauma, and inadequate treatment.
Fisak et al. (2011)	The prevention of child and adolescent anxiety: a meta-analytic review	The purpose of this study was to provide a comprehensive review of the effectiveness of child and adolescent anxiety prevention programs. Significant moderators of program effectiveness were found including provider type (professional versus lay provider) and the use of the FRIENDS program. In contrast, program duration, participant age, gender, and program type (universal versus targeted) were not found to moderate program effectiveness.
b. Play		
Lifter et al. (2011)	Overview of play: its uses and importance in early intervention/early childhood special education	This article presents a review about the importance of play in early intervention, early childhood special education and early childhood education and how play is regarded and used within these contexts.

Appendix III. G. Summary of studies on factors that influence children’s healthy development (excluding blood lead) – Behaviours and Risks

Reference	Title	Abstract
G. BEHAVIOURS AND RISKS		
a. Internalizing or Externalizing Behaviour, Aggression, Bullying, Crime		
Strohmeier and Noam (2012)	Evidence-based bullying prevention programs for children and youth	Chronic involvement in bullying is associated with many intrapersonal, interpersonal, and academic problems, and even sporadic experiences of bullying are harmful. During the last two decades, several prevention and intervention programs have been developed by research teams all over the world. Many of these programs have been adopted in the United States. This volume introduces five evidence-based anti-bullying programs developed in European countries, where much of the early innovations and adaptations have occurred.
b. Substance Abuse, Anxiety		
Broning et al. (2012)	Selective prevention programs for children from substance-affected families: a comprehensive systematic review	Children from substance-affected families show an elevated risk for developing own substance-related or other mental disorders. We conducted a comprehensive systematic review to identify and summarize evaluations of selective preventive interventions in childhood and adolescence targeted at this specific group. There was preliminary evidence for the effectiveness of the programs, especially when their duration was longer than ten weeks and when they involved children's, parenting, and family skills training components.
Jackson et al. (2012)	Interventions to prevent substance use and risky sexual behaviour in young people: a systematic review	A systematic review was performed to identify experimental studies of interventions to reduce risk behaviour in adolescents or young adults and that reported on both any substance (alcohol, tobacco and illicit drug) use and sexual risk behaviour outcomes. There is some, albeit limited, evidence that programmes to reduce multiple risk behaviours in school children can be effective, the most promising programmes being those that address multiple domains of influence on risk behaviour. Intervening in the mid-childhood school years may have an impact on later risk behaviour, but further research is needed.
Karki et al. (2012)	The effects of interventions to prevent substance use among	The aim of this systematic review is to describe and evaluate the effects of interventions used for preventing or reducing substance use among adolescents under 18 years of age. Results showed that family-based interventions and combined

Reference	Title	Abstract
	adolescents: a systematic review	interventions have significant outcomes for substance use among adolescents. Similarly, school-based interventions were effective in providing knowledge about substance use, which eventually reduced the substance use. Further research should be conducted in different cultures as well as on computer-based interventions targeting both genders.

Appendix III. H. Summary of studies on factors that influence children’s healthy development (excluding blood lead) – Environment

Reference	Title	Abstract
H. ENVIRONMENT		
a. Air Quality		
Emmons (2001)	Intervention and policy issues related to children's exposure to environmental tobacco smoke	Children's exposure to environmental tobacco smoke (ETS) is unacceptably high. This paper presents a review of the literature that evaluates interventions designed to reduce ETS exposure among young children. The literature review demonstrates the dearth of studies in the literature targeting ETS reduction among children. In one study, participants were noted to face a number of challenges to smoking, such as high prevalence of nicotine dependence, high prevalence of living with other smokers, and socioeconomic and stress-related barriers. The policy implications of this research are discussed, and recommendations are made for future research.
Dozor (2013)	Children’s environmental health	In 1993, the National Academy of Sciences published a landmark report, Pesticides in the Diets of Infants and Children, which emphasized that children are both more exposed and particularly vulnerable. Exposures in utero and in the first few years of life have disproportionate effects. Relative to their body weight, children breathe more air, drink more water, and eat more food than adults. Children are closer to the ground, play vigorously outdoors, and their higher body surface to volume ratio and normal hand to mouth behavior increase their exposure. Young children have immature immune systems and may be less able to metabolize toxicants or ameliorate the potential effects of carcinogens, including ionizing radiation. Malignancies, cardiovascular, and neurodegenerative diseases may take decades to develop, so young children have the longest lifetime for consequences of early exposures to become apparent. The growing appreciation of epigenetics raises concerns that environmental exposures may effect not just today’s children, but also our children’s children.
Gascon et al. (2013)	Effects of persistent organic pollutants on the developing respiratory and immune systems: a systematic review	Disruption of developing immune and respiratory systems by early-life exposure to persistent organic pollutants (POPs) could result into reduced capacity to fight infections and increased risk to develop allergic manifestations later in life. The objective of this systematic review was to look at the epidemiologic literature on the adverse effects of early-life exposure to POPs on respiratory health, allergy and the immune system in infancy, childhood and adolescence. This review of 41 studies finds limited evidence for prenatal

Reference	Title	Abstract
		<p>exposure to DDE, PCBs and dioxins and risk of respiratory infections. Current epidemiological evidence suggests that early-life exposure to POPs can adversely influence immune and respiratory systems development. Heterogeneity between studies in exposure and outcome assessment and the small number of studies for any given exposure–outcome relationship currently make comparisons difficult and meta-analyses impossible.</p>
Kaur (2012)	Children's environmental health in agricultural settings	<p>Children residing in rural settings may encounter environmental hazards derived from agricultural production activities. Health consequences of organic dusts, farm chemicals including pesticides, machinery noise, excess sun exposure, and zoonotic infectious agents have been clearly described among farm-working adults. The author reviews the related evidence base on child health with a life-stage perspective on their differential exposure and vulnerabilities. There is suggestive but more limited evidence for respiratory health consequences from air contaminants associated with confined animal feeding operations and hearing deficits for children exposed to machinery-related noise. Many contaminants of concern for children in these environments remain largely understudied—diesel exhaust, biomass burning, solvents, veterinary antibiotics, and silica-containing particulate matter. Overall, the state of knowledge and programmatic activities on agriculturally derived environmental contaminants and child health is immature and much less complete than for working adults.</p>
Saravia et al. (2013)	Particulate matter containing environmentally persistent free radicals and adverse infant respiratory health effects: a review	<p>Infants are also at significant risk for exposure. Infants are affected differently than adults due to drastic immaturities, both physiologically and immunologically, and it is becoming apparent that they represent a critically understudied population</p>
Temple and Johnson (2011)	Provision of smoke-free homes and vehicles for kindergarten children: associated factors	<p>To describe the factors associated with providing a smoke-free home (PSFH) and vehicle (PSFV) for kindergarten children, a cross-sectional descriptive study was conducted in Manitoba, Canada. In the bivariate analysis, being better educated, living with a partner, and having a higher income were associated with PSFH. In the multivariable logistic regression analysis, the variables most predictive for PSFH were living with a partner and the mother's self-efficacy, and for PSFV, the most predictive variables were the mother's self-efficacy and ETS knowledge. Smoking behaviors are complex and must be</p>

Reference	Title	Abstract
		considered broadly within all levels of influence if nurses are to assist parents in protecting their children.
b. Built Environment		
Dunn (2012)	Levels of influence in the built environment on the promotion of healthy child development	This article has argued that there is a great deal of interest in ensuring that built environments are safe for children and have features that promote their healthy development; this interest has existed for a long time. But in order for the built environment to be an effective target for child health promotion, we need to get beyond relatively simple models that state that factors at different levels matter to healthy child development; we must specify which factors at which levels matter to which aspects of healthy child development. Based on evidence from a study in Vancouver of the effects of the household and neighbourhood scales on kindergarten children's readiness to learn (Oliver et al. 2007), there are now clues to tell us what attributes matter at what levels to what aspects of healthy child development. These clues suggest that there are initiatives that can be undertaken at the neighbourhood level and that such efforts should target language and cognitive skills, communication skills and physical health and well-being. These can also be targeted at older children (i.e., age three years and up), which is appropriate because children of this age have a greater geographical range than younger children. For promoting healthy child development among younger children, the focus must be directed to the household level and on outcomes related to social knowledge and competence and emotional health and maturity. It will be challenging for public policy to address housing affordability, quality, security and design issues. But even more challenging will be penetrating into the domestic lives of families to ensure that very young children get the kind of early stimulation needed to promote healthy child development.
Geller (2003)	Smart Growth: a prescription for livable cities	This article focuses on the Smart Growth movement to look at communities not only as places to live but as vehicles to promote health and well-being. The low-density suburban growth or sprawl has four dimensions. A population that is widely dispersed in low-density development. Rigidly separated homes, shops, and workplaces. A network of roads marked by huge blocks and poor access. And a lack of well-defined, thriving activity centers. Sprawl has been criticized for being a financial and social drain. Outlying suburbs often require more costly infrastructure. Suburban development

Reference	Title	Abstract
		composed primarily of housing often lacks the tax base necessary to cover the costly infrastructure.
Howell (2013)	Planning for healthy communities in Nova Scotia: the current state of practice	There is a growing recognition of the importance of the built environment in mediating people's health related decisions, such as whether to walk rather than drive, or what types of food to purchase. The built environment has been identified as a significant determinant of health by the World Health Organization and many other organizations across the globe. This has spurred research on how and to what extent community design impacts health. Most research in Canada has been focused on major urban centres. Research in rural contexts on the connection between planning and health is limited. Through an online survey with planners in Nova Scotia, the question of whether and how rural planners should address health issues is explored. This research found that planners indicated that health is important to address in planning practice, which confirms recent national level research. However, each respondent's interpretation of health and how it related to planning practice was slightly different. Working with public health workers and agencies was supported as a way to improve community health, but most participants saw themselves as consultants to public health staff concerning projects and initiatives to support healthy communities rather than as collaborators. Provincial government "silos" were cited as the biggest barrier to implementation of planning practices to address health issues like physical inactivity. Results confirm what has been identified in the literature as barriers to rural planners addressing community health issues.
Jackson and Sinclair (2012)	Designing healthy communities	The author looks at the impact our built environment has on key public health indices – obesity, diabetes, heart disease, asthma, cancer and depression. He connects bad community design with burgeoning health costs, then analyzes and illustrates what citizens are doing about this urgent crisis by looking upstream for innovative solutions.
McAllister (2009)	Child Friendly Cities and land use planning: implications for children's health	The environment surrounding us sends strong messages about how to behave and what to perceive. The living environment and its associated messages can greatly influence the physical, social and mental health of all residents. Since children are just learning about the world, their living environment will profoundly influence almost all aspects of their lives. This puts responsibility on the shoulders of planners, who need to balance a number of different issues in urban design to make places more child-friendly. Four major issues that are critical to

Reference	Title	Abstract
		<p>the creation and maintenance of a child-friendly community are: safety, greenspace, access and integration. The benefits of child-friendly community design range from the promotion of healthier lifestyles, to improving the quality of social interactions to the long-term sustainability of natural spaces. The United Nations Children’s Fund (UNICEF) program Child Friendly Cities promotes child friendly community design and inclusive decision-making. Waterloo, Ontario, a mid-sized Canadian city, has many positive and community-oriented attributes, but could benefit greatly from incorporating child-friendly design procedures and participatory decision-making.</p>
Moore (2012)	The impact of neighbourhood physical and social environments on child and family well-being	<p>This paper concentrates instead on the evidence regarding the impact of neighbourhood physical and social environments on child and family well-being, and on the evidence regarding the efficacy of efforts to address adverse environmental impacts. There is evidence of the importance of geography and physical environment for children’s health and well-being; that place matters for children; that social support and networks matter for people’s well-being; that locational disadvantages lead to poorer outcomes for children.</p>
Pabayo et al. (2012)	Understanding the determinants of active transportation to school among children: evidence of environmental injustice from the Quebec longitudinal study of child development	<p>The objective of this study is to examine the combined influence of poverty and dangerousness of the neighborhood on active transportation (AT) to school among a cohort of children followed throughout the early school years. Results: At age 6 years, insufficient household income, having an older sibling, and living in a neighborhood that is not excellent for raising children, or characterized with high decay were predictive of greater likelihood of using AT and remained unchanged as children progressed from kindergarten through grade 2. Conclusion: A public health concern is children experiencing environmental injustice. Since AT is most likely to be adopted by those living in poverty and because it is also associated with unsafe environments, some children are experiencing environmental injustice in relation to AT. Interventions may be implemented to reduce environmental injustice through improvements in road safety.</p>
Quynh et al. (2013)	Exposure to public natural space as a protective factor for emotional well-being among young people in Canada	<p>Some population studies have suggested positive effects of green space on various indicators of health. However, there are limited large-scale epidemiological studies assessing this relationship, specifically for populations of young people and in the Canadian context. The objective of this study was to examine the relationship between exposure to public natural space and positive emotional well-being among young adolescent Canadians. Results: Over half of Canadian youth</p>

Reference	Title	Abstract
		reported positive emotional well-being. Relationships between measures of natural space and positive emotional well-being were weak and lacked consistency overall, but modest protective effects were observed in small cities. Positive emotional well-being was more strongly associated with other factors including demographic characteristics, family affluence, and perceptions of neighbourhood surroundings. Conclusion: Exposure to natural space in youth's immediate living environment may not be a leading determinant of their emotional well-being.
Unicef (2004)	Building Child Friendly Cities: a framework for action	This document provides a framework for defining and developing a Child Friendly City. It identifies the steps to build a local system of governance committed to fulfilling children's rights. The concept of Child Friendly Cities is equally applicable to governance of all communities which include children, large and small, urban and rural.
Whitzman and Mizrachi (2012)	Creating child-friendly high-rise environments: beyond wastelands and glasshouses	Melbourne, like many cities around the world, is in the midst of reshaping its central city landscape. However, there are concerns, particularly in Australia, that "contemporary strategic planning has almost become child-blind, with the new higher density centres being built essentially for the childless in mind" (Randolph, 2006, p. 5). The 'Vertical Living Kids' research project interviewed children aged 8–12 to elicit their views on local environments. Public housing children had high levels of independent mobility, but low levels of satisfaction with local play spaces. The private housing children, in contrast, had low levels of independent mobility but enjoyed a much greater range of attractions. Based on a typology developed by Kyttä (2004), the public housing children are characterised as living in 'wastelands' and the private housing children are characterised as living in 'glasshouses'. The authors suggest urban planning policies that might address both types of environments.
Yiannakoulis et al. (2011)	Child pedestrian injuries and urban change	This study looks at the effects of urban change on the risk of child pedestrian injury in Edmonton, Alberta, a city that has experienced large economic and population growth following the expansion of the oil and gas industry in Canada. Results: The incidence of child pedestrian injury was stable, but the incidence of severe injury increased over the study period. Areas with higher proportions of families on low incomes had higher injury incidence. While new residential development is associated with a lower incidence of injury in most areas, in poor areas, new residential development is associated with a higher incidence, even after controlling for urban planning features and traffic intensity. Conclusion: While suburban areas

Reference	Title	Abstract
		<p>have a lower incidence of child pedestrian injury, residential development in poorer areas is associated with a higher child pedestrian injury risk. Child pedestrians may be less able to adapt to changes in the urban environment due to rapid growth and increasing income, and as a result, may be at greater risk of injury.</p>
c. Gardens, etc		
Blair (2009)	The child in the garden: an evaluative review of the benefits of school gardening	<p>The author reviewed the U.S. literature on children's gardening, taking into account potential effects, school gardening outcomes, teacher evaluations of gardens as learning tools, and methodological issues. Quantitative studies showed positive outcomes of school-gardening initiatives in the areas of science achievement and food behavior, but they did not demonstrate that children's environmental attitude or social behavior consistently improve with gardening. Validity and reliability issues reduced general confidence in these results. Qualitative studies documented a wider scope of desirable outcomes, including an array of positive social and environmental behaviors.</p>
McCormack et al. (2010)	Review of the nutritional implications of farmers' markets and community gardens: a call for evaluation and research efforts	<p>The development and promotion of farmers' markets and community gardens is growing in popularity as a strategy to increase community-wide fruit and vegetable consumption. Despite large numbers of farmers' markets and community gardens, little is known about their influence on dietary intake. This review examines the current scientific literature on the implications of farmers' market programs and community gardens on nutrition-related outcomes. In total, 16 studies were identified for inclusion in this review. Seven studies focused on the impact of farmers' market nutrition programs for Special Supplemental Nutrition Program for Women, Infants, and Children participants, five focused on the influence of farmers' market programs for seniors, and four focused on community gardens. Findings from this review reveal that few well-designed research studies have been completed.</p>

SECTION III: RESULTS (continued)

(1) *Family in-home visits aimed at improving early childhood development and children’s health outcomes*

Reference	Title	Abstract
A. ECD HOME VISITING		
Background		
Bilukha et al. (2005)	The effectiveness of early childhood home visitation in preventing violence: a systematic review	In early childhood home visitation programs, parents and children are visited at home during the child's first 2 years of life by trained personnel who provide some combination of information, support, or training about child health, development, and care. Home visitation has been used to meet a wide range of objectives, including improvement of the home environment, family development, and the prevention of child behavior problems. The Task Force on Community Preventive Services (the Task Force) has conducted a systematic review of scientific evidence of the effectiveness of early childhood home visitation for preventing violence, with a focus on violence by and against juveniles. The Task Force recommends early childhood home visitation for preventing child abuse and neglect, on the basis of strong evidence of effectiveness. The Task Force found insufficient evidence to determine the effectiveness of early childhood home visitation in preventing violence by visited children, violence by visited parents, or intimate partner violence in visited families.
Bull et al. (2004)	Ante- and post-natal home-visiting programmes: a review of reviews. Evidence briefing	This review undertook several questions: Can home visiting improve child health outcomes? • There is insufficient evidence to suggest that home visiting programmes can have a beneficial impact on low birth weight or other pregnancy outcomes. • There is inconclusive evidence for any impact of home visiting on child abuse • There is good evidence to suggest that home visiting can have an impact in reducing rates of childhood injury. • There is some evidence to suggest a beneficial impact of home visiting on measures of intellectual development in children; these effects appear to be most apparent among children with identified problems associated with low birth weight or failure to thrive. • There is insufficient evidence to determine the influence or effect of home-visiting interventions on immunisation or hospital admission rates. • Evidence suggests that home visiting has the potential to encourage and support breastfeeding but more evidence is

Reference	Title	Abstract
		<p>needed. • There is some weak evidence to suggest a positive effect of home-visiting interventions on children’s diets, but further research is needed to assess this effect in the light of methodological issues.</p> <p>Can home visiting improve the quality of parenting? • There is some good evidence to suggest that home visiting can produce positive effects on various dimensions of parenting or mother-child interaction. Further work is needed to evaluate which types of programme, or which programme components, are likely to replicate these impacts and to develop measures which limit bias in results.</p> <p>Can home visiting improve outcomes for mothers? • There is some evidence for a positive effect of home visiting on the detection and management of postnatal depression. Issues of measurement and report bias need careful consideration in future trials. • There is insufficient evidence to prove any long-term benefit of home visiting on access to social support. • There is insufficient evidence to prove any long-term benefit of home visiting on maternal life course development such as participation in education or employment, or the spacing of subsequent pregnancies.</p> <p>How are home visiting programmes best delivered? • Evidence suggests that home-visiting interventions that are restricted to the pursuit of only a narrow range of outcomes are less effective than those with a more comprehensive approach in which the multiple needs of families are addressed. • There is some evidence to suggest that more intensive programmes of home visiting have greater impact than others, but there is no clear answer to the exact prescription for the intensity and duration of home visiting programmes to be found within existing evidence. • Current evidence is not clear on the issue of whether home visiting is more effective when professionals rather than lay people provide it.</p>
Ferguson and Vanderpool (2013)	Impact of a Kentucky maternal, infant, and early childhood home-visitation program on parental risk factors	The purpose of this study was to assess the impact of families' participation in a home-visitation program offered by a central Kentucky health department on parental risk factors. Findings suggest that families who were deemed at-risk for adverse pregnancy and child health outcomes benefit from participation in the home-visitation program. Programs designed to promote positive pregnancy outcomes and child development may benefit from providing social support, fostering parental knowledge, skill development and problem solving, insuring proper medical care, and connecting parents with community resources.
KidsFirst	How effective is	This review looked at key findings on paraprofessional and

Reference	Title	Abstract
Regina (2011)	home visiting? Findings from a focused literature review of home visiting interventions similar to KidsFirst	professional home visiting programs in the United States and Canada since 1990 in outcome areas including prenatal, child abuse and neglect, child health and safety, child development, parenting, maternal self-sufficiency, and family functioning, and examined the relevance of these findings for the KidsFirst program. There is no consensus view about the success of home visiting programs. The review showed varying, mixed or inconsistent results. On the whole, the benefits to children and their parents were usually modest. In areas such as prenatal outcomes, signs of improvement due to programs similar to KidsFirst were rare.
Korfmacher et al. (2008)	Parent involvement in early childhood home visiting	This review provides an overview of an important aspect of early childhood home visiting research: understanding how parents are involved in program services and activities. There is a strong need to move from the simple question of whether or not home visiting works to exploring what occurs inside and around home visiting interventions (Gomby et al. 1999). Understanding parent involvement is central to this exploration. Having a better understanding of why and how families choose to spend their time in home visiting services will guide home visitors to identify strategies that keep parents participating and engaged in services that help them support their young children's development.
Lynn (2011)	Child and family outcomes of a long-term nurse home visitation programme: a randomised controlled trial	To investigate the impact of a long-term nurse home visiting programme, embedded within a universal child health system, on the health, development and well-being of the child, mother and family. This sustained nurse home visiting programme showed trends to enhanced outcomes in many, but not all, areas. Specifically, it resulted in clinically enhanced outcomes in breastfeeding duration and, for some subgroups of mothers, women's experience of motherhood and children's mental development.
Moore et al. (2012)	Sustained home visiting for vulnerable families and children: a literature review of effective processes and strategies	This literature review considers service delivery processes and strategies, and effective methods of engaging with vulnerable families that are associated with better outcomes for these families. It complements a recent literature review undertaken by the Centre for Community Child Health (CCCH) (CCCH, 2012) that examined Australian and international research evidence regarding the most effective components of sustained nurse home visiting programs. This review was intended to inform the development of an Australian sustained nurse home visiting program to improve outcomes for vulnerable families and children. The current literature review considers: 1. The importance of how services are delivered, as distinct from

Reference	Title	Abstract
		<p>what is delivered – what features of the process of service delivery are associated with better outcomes?; and 2. Working with vulnerable families – what is known about effective ways of engaging and working with vulnerable parents and families?</p>
Peacock et al. (2013)	Effectiveness of home visiting programs on child outcomes: a systematic review	<p>The effectiveness of paraprofessional home-visitations on improving the circumstances of disadvantaged families is unclear. The purpose of this paper is to systematically review the effectiveness of paraprofessional home-visiting programs on developmental and health outcomes of young children from disadvantaged families. Significant improvements to the development and health of young children as a result of a home-visiting program are noted for particular groups. These include: (a) prevention of child abuse in some cases, particularly when the intervention is initiated prenatally; (b) developmental benefits in relation to cognition and problem behaviours, and less consistently with language skills; and (c) reduced incidence of low birth weights and health problems in older children, and increased incidence of appropriate weight gain in early childhood. However, overall home-visiting programs are limited in improving the lives of socially high-risk children who live in disadvantaged families. CONCLUSIONS: Home visitation by paraprofessionals is an intervention that holds promise for socially high-risk families with young children. Initiating the intervention prenatally and increasing the number of visits improves development and health outcomes for particular groups of children.</p>
Russell et al. (2007)	The promise of primary prevention home visiting programs: a review of potential outcomes.	<p>This review of home visiting outcomes underscores that some positive effects on children and families have been documented but that continued success will depend in large part on better documentation of impact.</p>
Supplee and Adirim (2012)	Evidence-based home visiting to enhance child health and child development and to support families	<p>Home visiting can be an effective mechanism to reach the highest risk families. Home visiting should be viewed as one of several service strategies embedded in a comprehensive, high-quality early childhood system that promotes maternal, infant and early childhood health, safety and development; strong parent-child relationships; and responsible parenting among mothers and fathers. Through collaborative efforts with partners, the Maternal, Infant and Early Childhood Home Visiting Program (MIECHV) program has the opportunity to effect changes that will improve the health and well-being of vulnerable populations by addressing child development within the framework of life course development and a socioecological perspective.</p>

Reference	Title	Abstract

SECTION III: RESULTS (continued)

(2) *Community-based collaborative interventions aimed at improving early childhood development and children’s health outcomes at a population level*

Reference	Title	Abstract
A. ECD COMMUNITY-BASED COLLABORATIVE		
Background		
Abrahamsson and Samarasinghe (2013)	Open pre-schools at integrated health services - A program theory	Family centres in Sweden are integrated services that reach all prospective parents and parents with children up to their sixth year, because of the co-location of the health service with the social service and the open pre-school. The personnel on the multi-professional site work together to meet the needs of the target group. The article explores a program theory focused on the open pre-schools at family centres. Findings: The compliance of the professionals was the most significant element that explained why the open access service facilitated positive parenting. The professionals act in a compliant manner to meet the needs of the children and parents as well as in creating good conditions for social networking and learning amongst the parents. Conclusion: The compliance of the professionals in this program theory of open pre-schools at family centres can be a standard in integrated and open access services, whereas the organisation form can vary. The best way of increasing the number of integrative services is to support and encourage professionals that prefer to work in a compliant manner.
Armstrong et al. (2006)	Multi-sectoral health promotion and public health: the role of evidence	A collaborative approach to gathering and applying evidence is crucial to implementing effective multi-sectoral health promotion and public health interventions for improved population outcomes. This paper presents an argument for the development of multi-sector evidence and discusses both facilitators and challenges to this process. Conclusions Decisions in health promotion and public may benefit from consideration of the ways in which disciplines and sectors can work together to inform policy and practice.
Ball (2008)	Centring community services around early childhood care and development: promising practices	Noted communities are creating programs that are relevant and appropriately utilized by community members and that are helping to revitalize Indigenous knowledge and languages. All of the communities have committed to some degree of integrated service delivery consistent with their understanding

Reference	Title	Abstract
	in Indigenous communities in Canada	of needing to support the 'whole child' in the context of family-centred and community-centred practice.
Centre for Innovation in the Early Years	Study visit to Swedish family centres and ECEC: some summarizing thoughts and memories to remember	The main purpose of the study visit was to gain insight in the family policy in Sweden, and more specifically in (1) the integrated family centres and (2) the early childhood education and care in Swedish cities. We aspired that the study visit is a source of inspiration for both policymakers and practitioners in order to develop high quality and universally accessible integrated family support and educational services that are available to all families in Brussels.
Danaher (2011)	Reducing health inequities: enablers and barriers to inter-sectoral collaboration	Addressing systemic health disparities and their underlying social determinants are complex and challenging social and policy problems. One increasingly important direction that addresses the dynamic and inter-dependent nature of the social determinants of health has been through collaboration across different policy and program sectors. Based upon extensive key informant interviews and a review of existing literature, this study identifies the enablers and barriers for inter-sectoral collaboration that can ameliorate the impact of health disparities and contribute to the policy and social changes needed to address their underlying social determinants. These key success conditions are: <ul style="list-style-type: none"> • a powerful shared vision of the problem to be addressed and what success would look like in solving it; • strong relationships among partners, as well as the most effective mix of partners; • leadership, both in advancing shared purposes and sustaining the collaboration; adequate, sus-tainable and flexible resources; and • efficient structures and processes to do the work of collaboration.
Edvardsson et al. (2012)	Improving child health promotion practices in multiple sectors - outcomes of the Swedish Salut Programme	To improve health in the population, public health interventions must be successfully implemented within organisations, requiring behaviour change in health service providers as well as in the target population group. The purpose of this study was to examine the outcomes of a child health promotion programme (The Salut Programme) on professionals' self-reported health promotion practices, and to investigate perceived facilitators and barriers for programme implementation. Self-reported health promotion practices and collaboration were improved in all sectors at follow up. Main facilitators for programme implementation included cross-sectoral collaboration and sector-specific work manuals/questionnaires for use as support in everyday practice. Main barriers included high workload, and shortage of time and staff.

Reference	Title	Abstract
Farrell et al. (2004)	Building social capital in early childhood education and care: an Australian study	The research reported in this article bridges research on the social capital of children, their families and community members in the context of a state-wide initiative (in Queensland, Australia) of integrated early childhood and family hubs. Children's social capital was found to be higher in the urban community than in the rural community, highlighting the potential of child and family hubs to strengthen children's social capital in those communities with few social facilities.
Goodall and Vorhaus (2011)	Review of best practice in parental engagement	The evidence of the impact of family literacy, language and numeracy programmes on children's academic and learning related outcomes is extensive and robust, particularly in the case of literacy. There are some outstanding models of family literacy and numeracy interventions, including the Mother-Child Education Programme in Turkey. Family literacy and numeracy programmes can have a positive impact on the most disadvantaged families, including the academic outcomes of the children. Partnership and multi-agency arrangements are an essential component of a comprehensive strategy for parental engagement. An evidence-based model that looks to build relationships across the family, the school, and the community can improve outcomes for low-income and socially culturally marginalised families.
Hayes et al. (2012)	Collaboration between local health and local government agencies for health improvement	In many countries, national, regional and local inter- and intra-agency collaborations have been introduced to improve health outcomes. Evidence is needed on the effectiveness of locally developed partnerships which target changes in health outcomes and behaviours. The objective of this systematic review was to evaluate the effects of interagency collaboration between local health and local government agencies on health outcomes in any population or age group. Collaboration between local health and local government is commonly considered best practice. However, the review did not identify any reliable evidence that interagency collaboration, compared to standard services, necessarily leads to health improvement. A few studies identified component benefits but these were not reflected in overall outcome scores and could have resulted from the use of significant additional resources. Although agencies appear enthusiastic about collaboration, difficulties in the primary studies and incomplete implementation of initiatives have prevented the development of a strong evidence base. It is possible that local collaborative partnerships delivering environmental interventions may result in health gain but the evidence base for this is very limited. The results demonstrate that collaborative community partnerships can be established to deliver interventions but it is important

Reference	Title	Abstract
		to agree on goals, methods of working, monitoring and evaluation before implementation to protect programme fidelity and increase the potential for effectiveness.
Head and Stanley (2007)	Evidence-based advocacy. The Australian Research Alliance for Children and Youth (ARACY)	The Australian Research Alliance for Children and Youth (ARACY) was established in 2002 by leading stakeholders from three sectors - research, government policy, and professional practice - concerned to tackle the major issues affecting the wellbeing of Australia's children and young people. This is a network-based organisation, with major emphasis on collaboration across these three sectors. Strong emphasis is placed on promoting an evidence-based approach, focussing on a manageable number of key topics, building and disseminating the knowledge base, and translating knowledge into positive solutions that have support across these sectors. This network approach is making a difference in attracting support for evidence-based advice about effective early intervention in areas of particular concern for the wellbeing of young people, such as mental health, drugs and alcohol use, juvenile justice, and vocational skills training.
Henderson (2011)	Family-school-community partnerships 2.0. collaborative strategies to advance student learning	In local communities across the US, National Education Association affiliate members and leaders are working closely with parents, families, and community members to close achievement gaps, improve low-performing schools, and transform relationships between schools and their communities. This report identifies and describes key partnerships that Association members have forged in 16 communities and includes the Association perspective on these efforts. Part I of this report reviews recent research on school and family collaboration and presents 10 key strategies for creating effective family- school-community partnerships that are focused on advancing student learning. Part II contains profiles for each of the 16 partnership programs. These profiles demonstrate very clearly that family-school-community partnerships with a central focus on advancing student learning can have a powerful impact.
Hicks (2011)	Promoting healthy child development: the role of data, evidence and evaluation	The Children's Outcomes Project (COP) promotes the work of integrated, multi-sector place-based initiatives to improve the health and well-being of children. The COP learning community includes state- and community-based initiative teams and select national program and advocacy experts. The COP has two purposes: (1) to help the place-based, multi-sector teams advance innovative prevention and health promotion policies and practices for the children in their communities and states; and (2) to influence federal policy to better support multi-

Reference	Title	Abstract
		sector, place-based initiatives focused on the health and well-being of children.
Johns (2010)	Early childhood service development and intersectoral collaboration in rural Australia	There is a paucity of research into the development of intersectoral collaborations designed to support early childhood development in rural communities. Drawing on findings from a qualitative study conducted in three small rural communities in Tasmania, this paper will examine community-based intersectoral collaborations involving government and non-government organisations from the health and allied health, education and community service sectors. The paper analyses the process of developing intersectoral collaborations from the perspective of early childhood health and wellbeing. The specific focus is on collaborations that build family and community capacity. Findings indicate that three groups of factors operate interdependently to influence collaborations: social capital, leadership and environmental factors. Each community has different leadership sources, structures and processes, shaped by levels of community social capital, and by environmental factors such as policy and resources. Effective models of early childhood development require strong local and external leadership. Rural communities that are able to identify and harness the skills, knowledge and resources of internal and external leaders are well positioned to take greater ownership of their own health and wellbeing. The paper provides guidelines for developing and enhancing the capacity of rural communities at different stages of collaborative readiness.
Milton et al. (2012)	The impact of community engagement on health and social outcomes: a systematic review	Community engagement is central to national strategies for promoting health, yet there have been few attempts to systematically review the evidence on the impact of initiatives that aim to engage communities. This rapid review fills this gap by exploring the population impact of initiatives which sought to address social determinants of health. It took a novel approach to synthesizing a sample of the enormous UK literature on community engagement. The synthesis found no evidence of positive impacts on population health or the quality of services, but initiatives did have positive impacts on housing, crime, social capital and community empowerment. Methodological developments are needed to enable studies of complex social interventions to provide robust evidence of population impact in relation to community engagement.
Moore and Fry (2011)	Place-based approaches to child and family services.	This paper synthesizes the conceptual and empirical literature on place-based approaches to meeting the needs of young children and their families. What has emerged has been a

Reference	Title	Abstract
	a literature review	framework for a comprehensive community-based approach with these characteristics: universal; tiered, multi-level; place-based; relational; partnership-based; governance-structure.
Ontario Literacy Coalition (2010)	Partnership Framework for Integrated Family Literacy Planning. Research findings	Family literacy programs in Ontario are provided by multiple types of organizations, receive funding from various sources and fall under different policy frameworks, which has resulted in a patchwork of programs with diverse program models, accountability structures and reporting requirements. This makes it difficult to assess program outcomes including the extent to which programs meet local needs, providing little knowledge about the extent to which public funds are allocated effectively, efficiently, and equitably. Ontario's Best Start strategy and its plan to shift to an increasingly coordinated and integrated system of child and families supports through CFCs may correct some of this chaos. However, since many family literacy programs are not part of the Best Start policy framework, namely communitybased organizations that receive grant funding from federal, provincial, local, and other sources, there is a need to ensure that the CFC approach will be inclusive of these organizations in some way. There is therefore a leadership opportunity for the Provincial Government to promote dialogue and build expertise on how to embed and align family literacy in order to create more literate communities.
Purcal et al. (2011)	Does partnership funding improve coordination and collaboration among early childhood services? : experiences from the Communities for Children programme	This article examines the impact of mandated funding provision for partnerships in large scale programmes. Though collaboration - or integration - among service providers is an important aspect of human service delivery, there is little research on their outcomes in cases where they are mandated and funded. The article investigates findings from the evaluation of the Australian Government's Communities for Children (CfC) programme, and reports on the number and quality of partnership activities, factors contributing to improved partnerships, organisational and practical factors, and challenges and barriers.
Saewyc and Stewart (2006)	Evidence review: healthy child and youth development	Although the evidence base for population-focused interventions to promote healthy child and youth development is still limited, and most interventions incorporate measures of risk reduction or prevention rather than actual measures of protective factors or healthy development, the evidence does suggest a number of strategies are effective: 1. Family connectedness is a strong protective factor that has been the focus of very little intervention research. Interventions to promote family connectedness and positive family

Reference	Title	Abstract
		<p>environments for children and youth should be developed or, where they already exist, should be rigorously evaluated; 2. Single-strategy interventions, especially health education strategies focused on increasing knowledge and/or changing attitudes, are common but not consistently effective in achieving behavioural change or positive child and youth development outcomes; 3. Mentorship programs are one of the few single-strategy interventions with consistently positive effects on healthy child and youth development in a variety of developmental task areas; 4. Interventions should incorporate skill building for more effective and sustained behaviour change; 5. Policy approaches to promote healthy child and youth development should be evidence-based; not just evidence for the outcome the policy aims for, but also that the mechanism implemented in the policy has scientific evidence of its effectiveness in achieving the stated aims. More policy evaluations are needed to document intended and unintended consequences of health policy and laws; 6. Multi-strategy approaches, especially those which incorporate environmental change strategies such as community development/coalition building, intersectoral collaboration, and policy development, appear to be more effective than single strategies, although it is important to weigh the cost and complexity against expected gains.</p>
Sanders et al. (2009)	Enhancing outcomes for children and young people: the potential of multi-layered interventions	<p>This paper will examine the way in which multi-layered interventions contribute to enhanced outcomes for families and neighborhoods. This paper will consider the potential of programs that blend early childhood education, parent development and community development practice for enhancing outcomes for stressed and vulnerable children and young people. It will consider the case of a neighborhood-based community centre which has adopted this broad-based approach to support focusing on indicators of success in delivery and outcomes.</p>
Wilder (2010)	Characteristics of effective collaboration among innovative early childhood intervention programs	<p>Recent research has shown that early childhood intervention programs have a greater impact on the life chances of children when there is effective collaboration between the program, parents, and the community. This research aimed to identify characteristics of effective collaboration within two early childhood intervention programs that differed in size, program structure, and demographics of families and communities served. Results showed that collaborative relationships were formed and maintained through effective communication with parents and community partners. Effective communication included ongoing routine communication, as well as face-to-</p>

Reference	Title	Abstract
		face regular interactions where participants spent time discussing the needs of the families and children served by the program. Strong leadership was essential to creating an atmosphere of collaboration at each intervention site and when leadership changed, collaborative relationships among the program, parents, and community dissolved.
Yang et al. (2013)	Collaborative practice in early childhood intervention from the perspectives of service providers	Effective early childhood intervention (ECI) relies on collaboration among agencies, service providers, and families. This article investigates service providers' understanding of and reflections on their actual experiences of being engaged in collaborative service delivery. The findings explain the practices and emphasize the value of working together with families to achieve effective collaborative.

SECTION III: RESULTS (continued)

(4) Health Equity Research

Reference	Title	Abstract
C. ECD HEALTH EQUITY		
World Health Organization (2006)	Levelling up (part 1): a discussion paper on concepts and principles for tackling social inequities in health	This document (Part I) covers these concepts: What is the difference between variations in health and social inequities in health?; Fairness and human rights; Inequality and inequity are synonymous; So what is equity in health?; Widespread inequities throughout Europe; A widening health divide; The phenomenon of the social gradient; Social inequities in access to health services; What does equitable health care look like?; Different goals for equity in health and in health care. Part II includes ten principles for policy action.
Network of Inner City Community Services Society (NICCSS)	Inner City Response Team (Note: this initiative has been renamed as Inner City Childhood Development Response Team; New url: http://www.niccss.ca/what-we-do/what-we-do)	<p>NICCSS provides a number of programs using a collaborative community building model. The programs are designed and carried out with the involvement of residents of the inner city. NICCSS embraces diversity in all of programs and accordingly has arranged to provide services in several languages. NICCSS provides a number of programs using a collaborative community building model including:</p> <ul style="list-style-type: none"> • Home Support and Supervised Access Services • Capacity Links Seniors Program • Roving Leaders Children and Youth Program • HUB Family Support Program • iRENT Bank • Bright Family Futures (BFF) <p>[Formerly, the Inner-City Response Team brought together community members and service providers to focus on achieving successful outcomes for children living in Vancouver’s inner city. Vancouver’s inner city includes Canada’s poorest postal code. It is home to many Aboriginal and First Nations families, as well as to non-English speaking and immigrant populations. Children living in the inner city are exposed to a high level of violence and social disorder. Families struggle with poverty, drug abuse, violence, street crime, and disorder. The project sought to build a safety net around the child—involving both family and community—working across traditional service silos. The teams were organized around four major key result</p>

Reference	Title	Abstract
		areas: Child Health, Child Development, Family Functioning, and Improved Systems of Care. This was a place-based strategy.]
	Sheway [program]	Sheway is a community outreach program for childbearing women and their children who live in the Downtown Eastside of Vancouver. The program aims to: help women access prenatal care and a range of other supports during pregnancy; provide education, referral and support to women to help them reduce risk behaviour (particularly the reduction or abstinence from alcohol and drug use during pregnancy); support mothers in their capacity as parents and caregivers; and promote the health, nutrition and development of children born to women accessing prenatal care at Sheway in the period up to 18 months following birth.
	Healthy Baby Manitoba [program]	Healthy Baby is a financial assistance program for nutrition during pregnancy. Healthy Baby is a two-part program that offers financial assistance and community programs to expectant and new families. The program offers friendly, informal prenatal and postnatal outreach programs, which center around nutritional and health information. The community programs offer social support and educational classes to encourage early, regular prenatal care and promote infant development. Pregnant women who live in Manitoba and have a net family income of less than \$32,000 are eligible to participate in the program. Healthy Baby sends monthly checks to expectant mothers during pregnancy. There is a sliding scale based on income that is used to calculate benefits. In addition to monthly checks, additional information is included inviting women to participate in programs in the community, basic nutrition, and healthy messages
	KidsFirst [program]	KidsFirst is a federally-funded, provincially-run intervention program launched in 2002 that provides support and services to vulnerable families with young children (aged 0-5) in Saskatchewan. It is offered in nine areas of the province that were identified as having high levels of need when the program was established. There are KidsFirst programs in Meadow Lake, Moose Jaw, Nipawin, Northern Saskatchewan, North Battleford, Yorkton and selected neighbourhoods in Prince Albert, Regina and Saskatoon.
	Rimbey Neighbourhood Place	Neighbourhood Place has been in Rimbey, Alberta, since 2000. The program strives to be at the fore front of Community Capacity Building in Rimbey and the surrounding area. Foci are: 1. The ECMap Project (which

Reference	Title	Abstract
		stands for Early Childhood mapping). “This project involves evaluating preschoolers on many different functional levels and then taking that information and planning programs and supports for the areas that fall short. The reasons are many: Because we recognize the value of the early years and the role that the community plays in a child's early development and supporting parents. We believe there is a sense of urgency for us to have as much impact as we can in the small window of time in the first five years of life. We believe that together we are stronger, if we collaborate rather than compete we can achieve more. If we share resources we all succeed.”
	Blackfalds Neighbourhood Place	Neighbourhood Place has partnered with many agencies, groups and organizations to create resources in the community of Blackfalds, Alberta. With many partners, a goal is to be able to meet local needs with local services and programs. One of the partners, Lacombe, manages Community Housing for Low-Income Families-Lacombe Foundation which operates 15 community social housing units in Lacombe. Other initiatives include: immigrants and refugees support, rural community awareness, volunteer and interpreter program and a seniors program.
	Munchkinland Discovery Centre	Munchkinland Discovery Centre French Creek (located in Coombs) is supported by Community Partners PacificCare Child Care Resource and Referral (CCRR) and Arrowsmith Recreational Team (A.R.T.). Both organizations have been significant long term supporters of children and families throughout School District 69 Qualicum.

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