The impact of poverty on the current and future health status of children

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Child poverty in Canada is a significant public health concern. Because child development during the early years lays the foundation for later health and development, children must be given the best possible start in life. Family income is a key determinant of healthy child development. Children in families with greater material resources enjoy more secure living conditions and greater access to a range of opportunities that are often unavailable to children from low-income families. On average, children living in low-income families or neighbourhoods have poorer health outcomes. Furthermore, poverty affects children's health not only when they are young, but also later in their lives as adults. The health sector should provide services to mitigate the health effects of poverty, and articulate the health-related significance of child poverty, in collaboration with other sectors to advance healthy public policy.

Key Words: *Child development; Child health; Family income; Health sector; Poverty*

Les répercussions de la pauvreté sur la santé actuelle et future des enfants

La pauvreté des enfants au Canada est une importante préoccupation en santé publique. Puisque le développement pendant la petite enfance jette les bases de la santé et du développement plus tard, les enfants doivent recevoir le meilleur départ possible dans la vie. Le revenu familial est un déterminant clé du développement d'un enfant en santé. Les enfants de familles ayant plus de ressources matérielles profitent de conditions de vie plus sécuritaires et d'un meilleur accès à toute une série de possibilités souvent inaccessibles aux enfants de familles à faible revenu. En moyenne, les enfants de familles à faible revenu ou de quartiers défavorisés ont de moins bonnes issues en santé. De plus, la pauvreté nuit à la santé des enfants non seulement lorsqu'ils sont jeunes, mais également plus tard, à l'âge adulte. Des services devraient être dispensés dans le secteur de la santé afin d'atténuer les effets de la pauvreté et d'en exposer la signification sur la santé, en collaboration avec d'autres secteurs, pour faire progresser les politiques en santé publique.

> "Every nation that permits people to remain under the fetters of preventable disease, and permits social conditions to exist that make it impossible for them to be properly fed, clothed and housed, so as to maintain a high degree of resistance and physical fitness, and that endorses a wage that does not afford sufficient revenue for the home, a revenue that will make possible the development of a sound mind and body, is trampling a primary principle of democracy." – *Dr Charles Hastings, Medical Officer of Health, City of Toronto (1910-1929), Speech to the American Public Health Association, 1918.*

The first few years of life are marked by development at a scale and pace that is unsurpassed later in childhood and sets the foundation for subsequent growth and development (1). By six years of age, significant preventable inequalities in development have also emerged (2). While many factors influence the healthy development of children, family income is recognized as a key determinant (3). Children in families with greater material resources enjoy more secure living conditions and attachments, as well as greater access to a range of opportunities often unavailable to children from low-income families. Given the importance of the early years, young children must be provided with the best possible start in life to maximize their potential.

Despite a unanimous House of Commons resolution in 1989 to end child poverty in Canada by the year 2000, significant numbers of Canada's children aged zero to six years continue to live in low-income families. The prevalence of low income is higher among families with children of all ages, but it is particularly higher among families with young children (4). It is also higher for families headed by lone female parents, immigrant and visible minority families, families with disabled children and Aboriginal families (5). Disparities in wealth, along with the persistence and depth of poverty, also have critical effects on child development and well-being (6,7). Income inequality is regarded as an important driver of health status in industrialized nations (8). Although Canada ranks favourably among other countries that are members of the Organization for Economic Co-operation and Development (OECD) with respect to absolute levels of affluence, its relative distribution of wealth is less equitable than in a number of other countries

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that have lower levels of absolute material well-being but higher levels of child health and well-being. A higher proportion of children in Canada live in poverty (defined as more than 50% below the national median household income) than in 14 other OECD countries, including Hungary, Greece and the Czech Republic (9).

Child poverty is not only an economic or political problem. It is also an ethical issue and a matter of social justice (10), and is increasingly recognized as a significant public health concern. Children's early experience with poverty affects their health not only when they are young, but also later in adulthood. The present article describes the health consequences of poverty and how it exerts its effects during childhood, as well as the long-term impact of childhood poverty on adult health. We also identify health sector strategies to address poverty experienced by families with young children.

CONSEQUENCES OF POVERTY ON CHILDHOOD HEALTH

Research has shown that children living in low-income families or neighbourhoods in Canada have worse health outcomes, on average, than other children, as determined by a number of key indicators. Various pathways have been proposed through which poverty may influence health. However, further exploration and clarification of causal mechanisms is ongoing. Selected study results are described below, referencing Canadian data whenever possible.

Birth outcomes

Infant mortality is the most basic indicator of societal health and well-being, given its sensitivity not only to levels of wealth but also to its relative distribution (11). In 1996, Canada's infant mortality rate in the lowest-income urban neighbourhoods was 66% higher (6.5 deaths per 1000 live births) than in the highest-income urban neighbourhoods (3.9 deaths per 1000 live births) (12). Although low in absolute terms, Canada's average infant mortality rate of 5.4 deaths per 1000 live births reported between 2002 and 2003 conceals the sizeable differences between low- and high-income neighbourhoods. Furthermore, Canada's rate is greater than that of 20 other OECD countries for which data are available, including the Czech Republic, Portugal, Spain and Greece (9).

Babies born with a low birth weight are at increased risk of dying in the first year of life. As a group, they have higher rates of rehospitalization, below-normal growth, childhood illnesses, neurological problems, developmental problems and health-related limitations (13). In 1996, the low birth weight rate was 40% higher (7%) in Canada's lowest income urban neighbourhoods than in the highest income urban neighbourhoods (4.9%) (12). More recent studies, such as those by Luo et al (14) in Quebec and Luo et al (15) in British Columbia, show evidence of income discrepancies in birth outcomes by neighbourhood.

Differences in birth outcomes by income level may be due to a range of factors, depending on the specific outcome in question. Behavioural and lifestyle factors, such as poor maternal nutrition and health practices, along with lack of timely prenatal care, are just a few of the possible determinants of birth outcomes, but many questions involving the roles of other variables remain unanswered (16).

Asthma

Asthma is the most common chronic respiratory childhood condition in Canada and can result in suffering, disability and hospitalization (17). Moreover, its prevalence has increased steadily in recent years throughout Canada. A recent National Longitudinal Survey of Children and Youth (NLSCY) study (6) of disparities in asthma rates among young children (two to seven years of age) notes a strong socioeconomic component. Moreover, the risk of asthma appears to increase with duration of poverty (6).

Higher rates of asthma among children in lower income families and neighbourhoods may be due to higher rates of low birth weight and lower rates of breastfeeding (6), and differential access to, and utilization of, health care services (18), which may result in lower treatment rates (19). Housing quality and exposure to environmental pollutants have also been suspected, primarily through their link with air quality (eg, tobacco smoke and exposure to cockroach allergen) (20).

Overweight and obesity

Being overweight or obese carries a number of negative health consequences, ranging from poor self-esteem to asthma, obesity and type 2 diabetes (21,22). Childhood overweight and obesity rates in Canada are increasing (21). Data from several cycles of the NLSCY have consistently shown that higher proportions of children living in low-income families or neighbourhoods are overweight or obese. For example, the 1998 to 1999 NLSCY found that 25% of children two to 11 years of age who were living in low-income families were obese compared with 16% of children who were not living in low-income families (22). The 2000 to 2001 cycle yielded complementary results, with 35% of five- to 17-year-olds who were living in low socioeconomic status neighbourhoods considered to be overweight compared with 24% of children within the same age range who were living in high socioeconomic status neighbourhoods. The study also found that low socioeconomic status neighbourhoods were more likely to lack safe playgrounds and parks and to have fewer children participating in organized sports due to a lack of facilities and/or personal resources, all of which represent barriers to maintaining a healthy body weight (23).

Injuries

In Canada, injuries are a leading cause of death and hospitalization among children (24,25) and are estimated to cost $5.1 billion annually in direct and indirect costs, for children from birth to 14 years of age (26). Rates of childhood

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injury – both unintentional and intentional – are higher among socioeconomically disadvantaged families (27). In Ontario, from 2002 to 2003, the rates of injury-related emergency department visits and hospitalizations among children zero to 14 years of age were highest in low-income neighbourhoods (28). Differences in rates based on neighbourhood income level have also been observed in urban neighbourhoods in Manitoba. Throughout 1994 to 1995 and 1998 to 1999, children who were zero to 19 years of age in Manitoba's lowest-income urban neighbourhoods averaged a 2.5 times higher risk of hospitalization for injuries than children in the highest-income urban neighbourhoods. The risk of death due to injury also averaged 4.5 times greater between 1994 and 1997 among children zero to 19 years of age in Manitoba's lowest-income neighbourhoods (29).

Income-related family factors often cited to explain these differences include family functioning and family structure (30), parenting practices and maternal age, health and educational attainment. Families under stress due to chronic material deprivation may contribute to greater risk of injury through lack of supervision and poor mental health. Inequities in injuries may also be attributed to differences in exposure to risk and disparities in parental reliance on preventive measures (31). There are also a number of potential neighbourhood influences, including substandard housing that lacks proper safety features, crime, which places children at greater risk of violence, as well as unsuitability of the built environment for safe activities of young children (eg, busy transportation routes, unavailability of green space and other recreational outlets) (30,32,33).

Children's mental health

Mental health problems in children are associated with poorer social relationships, lower academic achievement and reduced physical functioning (34). According to data from the NLSCY (1994 to 1995) (35), Canadian children in low-income families are more likely to have emotional and behavioural problems than other children. For instance, 40% of children ages four to 11 years from the lowest-income families exhibit high levels of indirect aggression (40%) compared with only 25% of children in the highest-income families. Children in the lowest-income families are also more likely to exhibit high levels of emotional disorder-anxiety (12% versus 7%) and to obtain high hyperactivity scores (20% versus 12%) (35). Physical aggression is also more prevalent among socioeconomically disadvantaged children (36). Depth of poverty also impacts children's mental health, with the very poorest children, whose families live on income at least 75% below the low income cut-off, having the highest rates of a number of poor mental health outcomes, including conduct disorder, hyperactivity and emotional disorders (7).

Overall, income influences the availability and presence of social relationships and connections that affect parental mental health and overall family functioning (37), both of which have been consistently associated with children's mental health (34).

Functional health

Children's level of impairment of functional health (eg, vision, hearing, speech or mobility) may affect their performance of certain activities and their ability to engage in activities with other children of the same age (38). Data from the NLSCY (1994 to 1995) reveal that Canadian children ages four to 11 years in the lowest-income families have more than 2.5 times greater risk of low functional health than children from the highest-income families (35).

Families with children who have special needs may also experience challenges when caring for these children. Financial pressures of low-income families are likely exacerbated, resulting in significant stressors that may negatively impact mental health. Moreover, the greatest levels of unmet need for supportive services are experienced by children who are living in socioeconomically disadvantaged families, and who are also the most likely to be affected by functional health problems (39).

Readiness to learn

Children from lower-income households tend to be less prepared for learning and formal schooling (2), and this lack of readiness can affect cognitive and psychosocial development and result in low academic achievement and grade attainment (40). The Early Development Instrument (EDI) is a widely used measure of children's readiness to learn and reflects levels of physical health and well-being, social competence, emotional maturity, language and cognitive development, and communication skills and general knowledge. In Canada, there are dramatic differences in children's readiness to learn according to socioeconomic status at the provincial level in British Columbia (41), as well as in urban centres such as Winnipeg (42), Toronto (43) and Vancouver (44). The Vancouver study found that 38% of kindergarten children living in the lowest-income neighbourhoods versus only 6% of children in the highest-income neighbourhoods were vulnerable on at least one dimension of the EDI (44).

School readiness, as measured by the EDI, is complemented by findings such as those by De Civita et al (45), who reported that source of income (welfare versus employment), in addition to level of income (poor versus never poor), predicts academic failure by grade 6. Moreover, children who were living in the deepest poverty scored the worst on vocabulary tests at three to four years of age, and on reading and math tests at four to six years of age and seven to eight years of age (46). A lack of opportunity to participate in organized activities and lessons (3,35,47), low parental education and aspirations, lack of educational resources in the home, as well as lone parenting (47), are among the complex array of factors that appear to undermine school readiness.

CHILD POVERTY AND ADULT HEALTH

Adult health is shaped throughout the life course. However, the early years are of special significance because

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childhood is a key stage in life for the development of physical and emotional health, cognitive and educational capabilities, and the formation of health-related behaviours, which provide the foundation for future health and development (48). There is increasing evidence that children's early experiences with poverty affect their health as adults. In addition to experiencing higher rates of adult mortality (49), children from economically disadvantaged backgrounds have poorer adult health in a number of areas (50), including physical disability, clinical depression and premature death (48).

Two interconnected mechanisms have been proposed to explain the pathway between childhood family affluence and health later in life. With the first mechanism, childhood socioeconomic status may influence adult socioeconomic status and subsequent health through children's readiness to learn and success in school. For a variety of reasons, young children who grow up in low-income families are less prepared for learning (51). Lack of initial school success sets the stage for subsequent underachievement which, by the adolescent years, is associated with lower levels of educational attainment and literacy, and higher rates of school dropout. Children who lack social and educational capital are also more likely to invest in social identities such as early parenthood, which can affect their aspirations, achievements, chances of employment and type of occupation (48).

The second mechanism links childhood circumstances to later adult health primarily through children's physical, emotional and cognitive health and development (48). For example, children from socioeconomically disadvantaged backgrounds are more likely to be born with a low birth weight, which, in turn, places them at greater risk for health conditions in adulthood such as cardiovascular disease, noninsulin dependent diabetes, high blood pressure, obstructive lung disease, high blood cholesterol and renal damage (52). Growing up in socioeconomically disadvantaged circumstances is also associated with a greater risk of being overweight or obese. Children who are overweight or obese when they begin school are more likely to remain overweight or obese during their school years and into adulthood, and to experience health problems such as asthma, type 2 diabetes, hypertension and heart disease (22). Poor children also experience family-related stresses that can negatively affect their emotional well-being. They also have an increased risk of developing unhealthy behaviours such as smoking that can impact on adult health (48).

STRATEGIES TO ADDRESS CHILD POVERTY

Child poverty is a significant health concern. Considerable research evidence points to the negative impact of low socioeconomic status on child health including development and later adult health and well-being. It is critical that the public discourse on child poverty includes a discussion of its far-reaching impacts on the health of current and future generations of Canadians. Professionals and organizations working within the health sector are well-positioned to articulate the health-related significance of child poverty and to work collaboratively with other sectors to address child poverty.

Addressing the impact of child poverty on health requires two strategic approaches: the reduction of poverty through advocacy for healthy public policies and practices, and mitigation of the negative effects of low income on young children through a range of programs and services (10,53,54). To reduce child poverty, families must have adequate income that can be provided through direct transfers (eg, generous child benefits, increased social assistance rates), promotion of parental attachment to the labour force (eg, education, skill development training, adequate wages, good working conditions, benefits), and reductions in the costs of essential supports and services (eg, housing, child care, supplemental health benefits) (55).

All areas of the health sector have an important role in advancing public policies that identify and confront socioeconomic structural conditions as major contributors to poverty among families. In doing so, a key responsibility will be to educate communities and governments at all levels about actual and potential health impacts of policies and programs. Health care professionals and organizations can engage in advocacy on an individual basis, as well as through working in collaboration with coalitions, networks and their own professional associations to address child poverty (10).

In addition to advocacy, the health sector, through its programs and services, must strive to mitigate the negative health effects of poverty on families with young children. For instance, Toronto Public Health provides a range of programs and services that support low-income families by promoting optimal child development and functioning. Key activities include screening and assessment, education and skill building, counselling, service coordination, client advocacy and referral. Many Toronto Public Health programs also link families with a broad range of supports including income supports, employment resources, childcare, housing and health resources (55). In addition to delivering programs and services, the health sector must also work with other community partners to improve coordination and integration of services, and promote equitable access to services by guarding against and reducing barriers.

SUMMARY AND CONCLUSIONS

Child development during the early years occurs at a pace that is unsurpassed during later stages and lays the foundation for subsequent development. Given the importance of these early years, it is critical that young children be provided with the best possible start. There is ample evidence that family income is a key determinant of child health and development.

Child poverty is a significant public health concern in Canada. Children's early experience with poverty affects their health not only when they are young, but also later in their lives as adults. Children living in low-income families or neighbourhoods have worse health outcomes on average than other children on a number of key indicators, including

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infant mortality, low birth weight, asthma, overweight and obesity, injuries, mental health problems and lack of readiness to learn. Some groups, such as Aboriginal populations, suffer disproportionately from poverty and its consequences, such as excess infant mortality (20), higher risk of injuries, and higher rates of disabilities, respiratory conditions and obesity (56).

Two interconnected mechanisms have been proposed to explain the pathways between childhood family affluence and health in later life. According to the first mechanism, adult health is influenced primarily through the connection between socioeconomic status in childhood and in adulthood. With the second pathway, socioeconomic circumstances in early life affect the child's health and development, along with the formation of health-related behaviours which, in turn, lay the basis for adult socioeconomic position and health.

Given the negative impacts of poverty on child and lifelong health and well-being, the health sector must continue to articulate its implications for child health and society's future health and productivity. Also, the health sector must take a more active role in advancing healthy public policies that address the socioeconomic conditions that contribute to poverty.

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REFERENCES

1. National Research Council and Institute of Medicine. Executive Summary. In: From Neurons to Neighbourhoods: The Science of Early Child Development. National Academy Press: Washington, 2000.
2. Hertzman C, Kershaw P, Irwin L, Trafford K, Wiens M. Seven uses of the EDI: The Case of British Columbia. [Colloquium presentation]. Human Early Learning Partnership. Vaudreuil, April 26 to 28, 2006.
3. Canadian Council on Social Development. The Progress of Canada's Children and Youth 2006. Ottawa, April 2006.
4. Liu J, Kerr D, Beaujot R. Children and youth in Canada: Recent demographic changes. Discussion paper no. 06-07. <http://sociology.uwo.ca/popstudies/dp/dp06-07.pdf> (Version current at September 12, 2007).
5. Campaign 2000. Oh Canada! Too many children in poverty for too long...2006 report card on child and family poverty in Canada. <http://www.campaign2000.ca/rc/rc06/06_C2000NationalReportCard.pdf> (Version current at September 18, 2007).
6. Lethbridge LN, Phipps SA. Chronic poverty and childhood asthma in the Maritimes versus the rest of Canada. Can J Public Health 2005;96:18-23.
7. Offord DR, Lipman EL. Emotional and behavioural problems. In: Human Resources Development Canada, Statistics Canada, eds. Growing up in Canada: National Longitudinal Survey of Children and Youth. Ottawa: Statistics Canada, 1996;119-126.
8. Ostry A. Globalization, Labour Markets, and Health in Developed Nations. Canadian Institute of Advanced Research Working Paper PHWP-83, December, 2000. Vancouver: Department of Health Care and Epidemiology, University of British Columbia, 2000.
9. UNICEF. Child poverty in perspective: An overview of child well-being in rich countries, Innocenti Report Card 7, 2007. Florence: UNICEF Innocenti Research Centre, 2007.
10. Ontario Public Health Association. Towards a Public Health Approach to Reducing Child Poverty and Enhancing Resiliency. <http://www.opha.on.ca/ppres/1998-01_ppres.pdf> (Version current at September 24, 2007).
11. Devarajan S, Miller MJ, Swanson EV Goals for development: History, prospects and costs. Policy research working paper 2819. <http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2002/04/26/000094946_02041804272578/Rendered/PDF/multi0page.pdf> (Version current at September 25, 2007).
12. Wilkins R, Houle C, Berthelot JM, Ross N. The changing health status of Canada's children. ISUMA Can J Policy Res 2000;1:57-63.
13. Hack M, Klein NK, Taylor HG. Long-term developmental outcomes of low birth weight infants. Future Child 1995;5:176-96.
14. Luo ZC, Wilkins R, Kramer MS. Effect of neighbourhood income and maternal education on birth outcomes: A population-based study. CMAJ 2006;174:1415-20.
15. Luo ZC, Kierans WJ, Wilkins R, et al. Disparities in birth outcomes by neighborhood income: Temporal trends in rural and urban areas, British Columbia. Epidemiology 2004;15:679-86.
16. Shah P, Ohlsson A. Literature review of low birth weight, including small for gestational age and preterm birth. Evidence Based Neonatal Care and Outcomes Research. Department of Pediatrics, Mount Sinai Hospital. Toronto: Toronto Public Health, 2002.
17. Canadian Institute for Health Information, Canadian Lung Association, Health Canada, Statistics Canada. Respiratory Disease in Canada. OttawaHealth: Canada, 2001.
18. Blais L, Beauchesne MF, Levesque S. Socioeconomic status and medication prescription patterns in pediatric asthma in Canada. J Adolesc Health 2006;38:607.e9-16.
19. Kozyrskyj AL, Hildes-Ripstein GE. Assessing health status in Manitoba children: Acute and chronic conditions. Can J Public Health 2002;93(Suppl 2):s44-9.
20. Human Resources Development Canada, Health Canada. The well-being of Canada's young children: Government of Canada report. Ottawa, 2003.
21. Willms JD. Early childhood obesity: A call for early surveillance and preventive measures. CMAJ 2004;171:243-4.
22. Statistics Canada. The Daily: National longitudinal survey of children and youth: Childhood obesity. <http://www.statcan.ca/Daily/English/021018/d021018b.htm> (Version current at September 12, 2007).
23. Oliver LN, Hayes MV. Neighbourhood socio-economic status and the prevalence of overweight Canadian children and youth. Can J Public Health 2005;96:415-20.
24. Pan SY, Ugnat AM, Semenciew R, Desmeules M, Mao Y, MacLeod M. Trends in childhood mortality in Canada, 1979-2002. Inj Prev 2006;12:155-60.
25. Public Health Agency of Canada. Leading causes of death and hospitalization in Canada in 1997. <http://www.phac-aspc.gc.ca/publicat/lcd-pcd97/pdf/hos_mrt_e.pdf> (Version current at September 25, 2007).
26. SmartRisk. Ending Canada's invisible epidemic: A strategy for injury prevention. <http://www.injurypreventionstrategy.ca/downloads/NS-Eng.pdf> (Version current at September 25, 2007).
27. Birken CS, Macarthur C. Socioeconomic status and injury risk in children. Paediatr Child Health 2004;9:323-5.
28. Macpherson AK, Schull M, Manuel D, Cernat G, Redelmeier DA, Laupacis A. Chapter 1: General description of injuries in Ontario. In: Injuries in Ontario. ICES Atlas. <http://www.ices.on.ca/file/injuries_chp1_final.pdf> (Version current at September 25, 2007).
29. Brownell M, Friesen D, Mayer T. Childhood injury rates in Manitoba: Socioeconomic influences. Can J Public Health 2002;93(Suppl 2):s50-s56.
30. Soubhi H. The social context of childhood injury in Canada: Integration of the NLSCY findings. Am J Health Behav 2004;28(Suppl 1):S38-S50.
31. MacKay M, Reid DC, Moher D, Klassen T. Systematic review of the relationship between childhood injury and socio-economic status. <http://www.phac-aspc.gc.ca/dca-dea/publications/pdf/injury_e.pdf> (Version current at September 12, 2007).
32. Scholer SJ, Hickson GB, Mitchel EF Jr, Ray WA. Predictors of mortality from fires in young children. Pediatrics 1998;101:E12.
33. Soubhi H, Raina P, Kohen D. Effects of neighbourhood, family, and child behaviour on childhood injury in Canada. <http://www.hrsdc.gc.ca/en/cs/sp/sdc/pkrf/publications/research/2001-000067/iw-01-1-6e.pdf> (Version current at September 12, 2007).

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34. Thomas H, Boyle M. Improving the mental health of young children in Toronto: Needs assessment and literature review. Toronto: Toronto Public Health, 2002.
35. Ross DP, Roberts P. Income and child well-being: A new perspective on the poverty debate. <http://www.ccsd.ca/pubs/inckids/outcomes.htm> (Version current at September 12, 2007).
36. Tremblay RE, Boulerice B, Harden PW, et al. Do children in Canada become more aggressive as they approach adolescence? In: Human Resources Development Canada, Statistics Canada, eds. Growing up in Canada: National Longitudinal Survey of Children and Youth. Ottawa: Statistics Canada, 1995;127-138.
37. Adams GR, Ryan BA. Applied Research Branch, Human Resources Development Canada. A longitudinal analysis of family relationships and children's school achievement in one- and two-parent families – June 2000. <http://www.hrsdc.gc.ca/en/cs/sp/sdc/pkrf/publications/research/2000-000180/page00.shtml> (Version current at September 13, 2007).
38. Ross D, Roberts P, Scott K. Family income and child well-being. ISUMA Canadian Journal of Policy Research 2000;1:51-4.
39. Maag E. Unmet Service Needs of Children with Disabilities. U.S. Department of Health and Human Services. Office of Disability, Aging and Long-Term Care Policy (DALTCP) and the Urban Institute, 2000.
40. Guo G, Brooks-Gunn J, Harris KM. Parental labor force attachment and grade retention among urban black children. Sociol Educ 1996;69:217-36.
41. Kerkshaw P, Irwin L, Trafford K, Hertzman C. The British Columbia Atlas of Child Development. Human Early Learning Partnership, 1st edn. Victoria, 2005.
42. Human Resources Development Canada. Understanding the early years: Early childhood development in Winnipeg (School Division No 1). <http://www.hrsdc.gc.ca/en/cs/sp/sdc/pkrf/publications/nlscy/uey/community/2001-000069/winnipeg-english.pdf> (Version current at September 25, 2007).
43. Toronto Data Analysis Coordinators, Mothercraft. Early Development Instrument (EDI) 2005/06 Toronto Results. <http://www.torontodacs.net/uploads/docs/2005-06%20Toronto%20EDI%20Report%20Jan.2007.pdf> (Version current at September 13, 2007).
44. Hertzman C, McLean SA, Kohen DE, Dunn J, Evans T. Human Early Learning Partnership. Early development in Vancouver: Report of the community asset mapping project (CAMP). <http://secure.cihi.ca/cihiweb/products/ecd_van_e.pdf> (Version current at September 25, 2007).
45. De Civita M, Pagani LS, Vitaro F, Tremblay RE. Does maternal supervision mediate the impact of income source on behavioral adjustment in children from persistently poor families? J Early Adolesc 2007;27:40-66.
46. Smith JR, Brooks-Gunn J, Klebanov PK. Consequences of living in poverty for young children's cognitive and verbal ability and early school achievement. In: Duncan GJ, Brooks-Gunn J, eds. Consequences of Growing Up Poor. New York: Russell Sage Foundation, 1997:132-89.
47. Thomas, EM. Statistics Canada. Children and youth research paper series: Readiness to learn at school among five-year-old children in Canada. Catalogue no. 89-599-MIE. No. 004. <http://www.statcan.ca/english/research/89-599-MIE/89-599-MIE2006004.pdf> (Version current at September 13, 2007).
48. Graham H, Power C. Health Development Agency. Childhood disadvantage and adult health: A lifecourse framework. <http://nice.org.uk/page.aspx?o=507885> (Version current at September 13, 2007).
49. Kuh D, Hardy R, Langenberg C, Richards M, Wadsworth ME. Mortality in adults aged 26-54 years related to socioeconomic conditions in childhood and adulthood: Post war birth cohort study. BMJ 2002;325:1076-80.
50. Power C, Hertzman C, Mathews S, Manor O. Social differences in health: Life cycle effects between ages 23 and 33 in the 1958 British birth cohort. Am J Public Health 1997;87:1499-503.
51. Brooks-Gunn J, Duncan GJ, Britto PR. Are socioeconomic gradients for children similar to those of adults? Achievements and health of children in the United States. In: Keating DP, Hertzman C, eds. Developmental Health and the Wealth of Nations: Social, Biological, and Educational Dynamics. New York: The Guilford Press, 1999:94-124.
52. Alderman H, Behrman, JR. Estimated economic benefits of reducing low birth weight in low-income countries. HNP Discussion Paper. Washington: The World Bank: The International Bank for Reconstruction and Development, 2004.
53. Ontario Public Health Association. Public health responds to the challenge to reduce poverty and enhance resiliency in children and youth. <http://www.opha.on.ca/ppres/2004-05_pp.pdf> (Version current at September 13, 2007).
54. Ross DP. Canadian Institute for Health Information. Policy approaches to address the impact of poverty on health – A scan of policy literature. Poverty and Health. CPHI Collected Papers. <http://www.cihi.ca/cihiweb/dispPage.jsp?cw_page=GR_323_E> (Version current at September 13, 2007).
55. Toronto Public Health. Impact of poverty on children's current and future health: Board of Health Report, September 14, 2006. <http://www.toronto.ca/legdocs/2006/agendas/committees/hl/hl060914/it001.pdf> (Version current at August 28, 2006).
56. Human Resources Development Canada, Health Canada. The well-being of Canada's young children: Government of Canada report. <http://142.236.154.12/ecd/2002/reportb-e.pdf> (Version current at September 13, 2007).

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