The Impact of Poverty on Educational Outcomes for Children

Abstract

Poverty remains a stubborn fact of life even in rich countries like Canada. In particular, the poverty of our children has been a continuing concern. In 1989, the Canadian House of Commons voted unanimously to eliminate poverty among Canadian children by 2000 (1). However, the reality is that, in 2003, one of every six children still lived in poverty. Not only have we been unsuccessful at eradicating child poverty, but over the past decade, the inequity of family incomes in Canada has grown (2), and for some families, the depth of poverty has increased as well (3). Canadian research confirms poverty's negative influence on student behaviour, achievement and retention in school (4).

Persistent socioeconomic disadvantage has a negative impact on the life outcomes of many Canadian children. Research from the Ontario Child Health Study in the mid-1980s reported noteworthy associations between low income and psychiatric disorders (5), social and academic functioning (6), and chronic physical health problems (7). Since that time, Canada has developed systematic measures that have enabled us to track the impact of a variety of child, family and community factors on children's well-being. The National Longitudinal Survey of Children and Youth (NLSCY) developed by Statistics Canada, Human Resources Development Canada and a number of researchers across the country was started in 1994 with the intention of following representative samples of children to adulthood (8). Much of our current knowledge about the development of Canadian children is derived from the analysis of the NLSCY data by researchers in a variety of settings.

One of the key areas influenced by family income is educational outcomes. The present article provides a brief review of the literature concerning the effects of poverty on educational outcomes focusing on Canadian research. Canadian data are placed in the perspective of research from other 'rich' countries. We conclude with some suggestions about what we can do, as advocates and practitioners, to work toward reducing the negative impact of economic disadvantage on the educational outcomes of our children.

POVERTY AND READINESS FOR SCHOOL

School readiness reflects a child's ability to succeed both academically and socially in a school environment. It requires physical well-being and appropriate motor development, emotional health and a positive approach to new experiences, age-appropriate social

knowledge and competence, age-appropriate language skills, and age-appropriate general knowledge and cognitive skills (9). It is well documented that poverty decreases a child's readiness for school through aspects of health, home life, schooling and neighbourhoods. Six poverty-related factors are known to impact child development in general and school readiness in particular. They are the incidence of poverty, the depth of poverty, the duration of poverty, the timing of poverty (eg, age of child), community characteristics (eg, concentration of poverty and crime in neighborhood, and school characteristics) and the impact poverty has on the child's social network (parents, relatives and neighbors). A child's home has a particularly strong impact on school readiness. Children from low-income families often do not receive the stimulation and do not learn the social skills required to prepare them for school. Typical problems are parental inconsistency (with regard to daily routines and parenting), frequent changes of primary caregivers, lack of supervision and poor role modelling. Very often, the parents of these children also lack support.

Canadian studies have also demonstrated the association between low-income households and decreased school readiness. A report by Thomas (10) concluded that children from lower income households score significantly lower on measures of vocabulary and communication skills, knowledge of numbers, copying and symbol use, ability to concentrate and cooperative play with other children than children from higher income households. Janus et al (11) found that schools with the largest proportion of children with low school readiness were from neighbourhoods of high social risk, including poverty. Willms (12) established that children from lower socioeconomic status (SES) households scored lower on a receptive vocabulary test than higher SES children. Thus, the evidence is clear and unanimous that poor children arrive at school at a cognitive and behavioural disadvantage. Schools are obviously not in a position to equalize this gap. For instance, research by The Institute of Research and Public Policy (Montreal, Quebec) showed that differences between students from low and high socioeconomic neighbourhoods were evident by grade 3; children from low socioeconomic neighbourhoods were less likely to pass a grade 3 standards test (13).

POVERTY AND EDUCATIONAL ATTAINMENT

Studies emanating from successive waves of the NLSCY have repeatedly shown that socioeconomic factors have a large, pervasive and persistent influence over school achievement (14–16). Phipps and Lethbridge (15) examined income and child outcomes in children four to 15 years of age based on data from the NLSCY. In this study, higher incomes were consistently associated with better outcomes for children. The largest effects were for cognitive and school measures (teacher-administered math and reading scores), followed by behavioural and health measures, and then social and emotional measures, which had the smallest associations.

These Canadian findings are accompanied by a large number of studies in the United States that have shown that socioeconomic disadvantage and other risk factors that are associated with poverty (eg, lower parental education and high family stress) have a negative effect on

cognitive development and academic achievement, smaller effects on behaviour and inconsistent effects on socioemotional outcomes (17–19). Living in extreme and persistent poverty has particularly negative effects (18), although the consequences of not being defined below the poverty line but still suffering from material hardship should not be underestimated (20). Furthermore, American studies found strong interaction effects between SES and exposure to risk factors. For instance, parents from disadvantaged backgrounds were not only more likely to have their babies born prematurely, but these prematurely born children were also disproportionately at higher risk for school failure than children with a similar neonatal record from higher income families (18).

It is worth noting that international studies have consistently shown similar associations between socioeconomic measures and academic outcomes. For example, the Progress in International Reading Literacy Study (PIRLS) assessed the comprehensive literacy skills of grade 4 students in 35 countries. The Programme for International Student Assessment (PISA) assessed reading, math and science scores of 15-year-old children in 43 countries (21). At these two different stages of schooling, there was a significant relationship between SES and educational measure in all countries. This relationship has come to be known as a 'socioeconomic gradient'; flatter gradients represent greater 'equity of outcome', and are generally associated with better average outcomes and a higher quality of life. Generally, the PISA and the NLSCY data support the conclusion that income or SES has important effects on educational attainment in elementary school through high school. Despite the results shown by the PISA and the NLSCY, schools are not the ultimate equalizer and the socioeconomic gradient still exists despite educational attainment. Test results can be misleading and can mask the gradient if the sample does not account for all children who should be completing the test. A study (13) completed by the Institute of Research and Public Policy demonstrated only small differences between low and high socioeconomic students when test results were compared in those students who sat for the examination. However, when results were compared for the entire body of children who should have written the examination, the differences between low and high socioeconomic students were staggering, mainly due to the over-representation of those who left school early in the low socioeconomic group.

Longitudinal studies carried out in the United States have been crucial in demonstrating some of the key factors in producing and maintaining poor achievement. Their findings have gone well beyond a model that blames schools or a student's background for academic failure. Comparisons of the academic growth curves of students during the school year and over the summer showed that much of the achievement gap between low and high SES students could be related to their out-of-school environment (families and communities). This result strongly supports the notion that schools play a crucial compensatory role; however, it also shows the importance of continued support for disadvantaged students outside of the school environment among their families and within their communities (22).

A Human Resource Development Canada study (23) titled "The Cost of Dropping Out of High School" reported that lower income students were more likely to leave school without graduating, which agrees with international data. In a nonrandom sample for a qualitative study, Ferguson et al (24) reported that one-half of Ontario students leaving high school

before graduating were raised in homes with annual incomes lower than $30,000. Finally, in Canada, only 31% of youth from the bottom income quartile attended postsecondary education compared with 50.2% in the top income quartile (25). Once again, the evidence indicates that students from low-income families are disadvantaged right through the education system to postsecondary training.

REVERSING THE EFFECTS OF POVERTY

The negative effects of poverty on all levels of school success have been widely demonstrated and accepted; the critical question for us as a caring society is, can these effects be prevented or reversed? A variety of data are relevant to this question, and recent research gives us reason to be both positive and proactive.

Early intervention

There is a direct link between early childhood intervention and increased social and cognitive ability (26). Decreasing the risk factors in a child's environment increases a child's potential for development and educational attainment. Prevention and intervention programs that target health concerns (eg, immunization and prenatal care) are associated with better health outcomes for low-income children and result in increased cognitive ability (27). However, it is the parent-child relationship that has been proven to have the greatest influence on reversing the impact of poverty. Both parenting style (28) and parental involvement, inside and outside of the school environment (29), impact on a child's early development. Characteristics of parenting such as predictability of behaviour, social responsiveness, verbal behaviour, mutual attention and positive role modelling have been shown to have a positive effect on several aspects of child outcome. Parental involvement, such as frequency of outings (29) and problem-based play, creates greater intellectual stimulation and educational support for a child, and develops into increased school readiness (26).

Interventions act to advance a child's development through a range of supports and services. Their underlying goal is to develop the skills lacking in children, that have already developed in other children who are of a similar age. There is general agreement that interventions should be data driven, and that assessments and interventions should be closely linked. A primary evaluation of a child and family support systems is, therefore, pivotal in the creation of individualized interventions to ensure success in placing children on a normative trajectory (30). Ramey and Ramey (30) determined that interventions have sustained success for children when they increase intellectual skills, create motivational changes, create greater environmental opportunities and/or increase continued access to supports.

Karoly et al (31) reported the magnitude of effects that early intervention programs have on children. Measured at school entry, they found a pooled mean effect size of around 0.3, with many programs having effect sizes between 0.5 and 0.97. This means that for many interventions, children in the program were, on average, one-half to a full standard deviation

above their peers who were not in the program. Interestingly, they found that interventions that combined parent education programs with child programs had significantly higher effect sizes. Furthermore, interventions that continued beyond the early years showed significantly lower fade-out effects. The results strongly support the notion that early interventions should include the whole family and be continued beyond the early years. Constant evaluation of interventions should be completed to ensure that the benefits for children are maximized using these key components.

Highly regarded early interventions

The High/Scope active learning approach is a comprehensive early childhood curriculum. It uses cooperative work and communication skills to have children 'learn by doing'. Individual, and small and large group formats are used for teacher-and-child planned activities in the key subject areas of language and literacy, mathematics, science, music and rhythmic movement. There has been ongoing evaluation of the approach since 1962 using 123 low-income African-American children at high risk of school failure (32). Fifty-eight children received high-quality early care and an educational setting, as well as home visits from the teachers to discuss their developmental progress. By 40 years of age, children who received the intervention were more likely to have graduated high school, hold a job, have higher earnings and have committed fewer crimes.

Similar positive effects of preschool intervention were found in the evaluation of the Abecedarian project (33). This project enlisted children between infancy and five years of age from low-income families to receive a high-quality educational intervention that was individualized to their needs. The intervention used games focused on social, emotional and cognitive areas of development. Children were evaluated at 12, 15 and 21 years of age, and those who had received the intervention had higher cognitive test scores, had greater academic achievement in reading and math, had completed more years of education and were more likely to have attended a four-year college. Interestingly, the mothers of children participating in the program also had higher educational and employment status after the intervention.

One of the oldest and most eminent early intervention programs is the Chicago Child Parent Center program. The intervention targets students who are between preschool and grade 3 through language-based activities, outreach activities, ongoing staff development and health services. Importantly, there is no set curriculum; the program is tailored to the needs of each child (34). One crucial feature of the program is the extensive involvement of parents. Multifaceted parental programs are offered to improve parental knowledge, their engagement in their children's education and their parental skills. An evaluation of the Chicago Child Parent Center Program was completed by Reynolds (34) using a sample of 1106 black children from low-income families. They were exposed to the intervention in preschool, kindergarten and follow-up components. Two years after the completion of the intervention, the results indicated that the duration of intervention was associated with greater academic achievement in reading and mathematics, teacher ratings of school adjustment, parental involvement in school activities, grade retention and special education placement (34). Evaluation of the long-term effects of the intervention was completed by Reynolds (35) after

15 years of follow-up. Individuals who had participated in the early childhood intervention for at least one or two years had higher rates of school completion, had attained more years of education, and had lower rates of juvenile arrests, violent arrests leaving school early.

Later intervention

A common question concerns the stage at which it is too late for interventions to be successful. Recent findings (N Rowen, personal communication) from an uncontrolled community study in Toronto, Ontario, have suggested that a multisys-temic intervention as students transition to high school can produce dramatic results. The Pathways to Education project began because of a community (parents) request to a local health agency to help their children succeed in high school. The community consisted mainly of people from a public housing complex, with the majority of families being poor, immigrants and from visible minority groups. The Pathways project grew out of a partnership between the community, the health centre and the school board, and was funded by a variety of sources. The core elements of the program include a contract between the student, parents and project; student-parent support workers who advocate for the student at school and connect parents to the project and/or school; four nights a week of tutoring (by volunteers) in the community; group and career mentoring located in the community; and financial support, such as money for public transit and scholarship money for postsecondary education dependent on successful academic work and graduation. The Pathways project has been running for six years, and the results for the first five cohorts of students have been exciting. In comparison to a preproject cohort, the absentee and academic 'at-risk' rate (credit accumulation) has fallen by 50% to 60%, the 'dropout' rate has fallen by 80% to a level below the average for the board of education and the five-year graduation rate has risen from 42% to 75%. Of the graduates, 80% go on to college or university, compared with 42% before the Pathways project. While these initial results must be replicated in other communities, they suggest that, even at the high school level, interventions can be startlingly effective, even in a community with a long history of poverty, recent immigration and racism. As the proponents of Pathways move to replication, they will need to be careful to untangle the effects of community commitment, school board collaboration and the rich set of collaborations that have been a hallmark of this first demonstration project. Nevertheless, Pathways has made it clear that Canadian communities possess the capacity to change the education outcomes of their children and youth. While it takes resolve and resources to achieve such effects, initial analysis suggests that over the lifetime of the students, each dollar invested will be returned to Canada more than 24 times (36)!

Schools make a difference

Canadian and international research on educational outcomes has revealed important data on the effects of schools and classrooms. Frempong and Willms (37) used complex analyses of student performance in mathematics to demonstrate that Canadian schools, and even classrooms, do make a difference in student outcomes (ie, students from similar home backgrounds achieve significantly different levels of performance in different schools). Furthermore, schools and classrooms differ in their SES gradients (ie, some schools achieve

not just higher scores, but more equitable outcomes than others). These general findings were corroborated by Willms (38) using reading scores from children in grade 4 and those 15 years of age from 34 countries. Once again, it was demonstrated that schools make a difference and that some schools are more equitable than others. According to Thomas (10), activities other than academics, such as sports and lessons in the arts, have been shown to increase student's school readiness despite SES. These activities should be encouraged in all schools to maximize school readiness. A key to making schools more effective at raising the performance of low SES students is to keep schools heterogeneous with regard to the SES of their students (ie, all types of streaming result in markedly poor outcomes for disadvantaged children and youth).

WHAT CAN WE DO?

Balancing the consistent evidence about the pervasive negative impact of poverty on educational outcomes with the hopeful positive outcomes of intervention studies, what can we do in our communities to attenuate the effects of poverty and SES on academic success? Here are some important actions:

- Advocate for and support schools which strive to achieve equity of outcomes;
- Advocate for and support intervention programs that provide academic, social and community support to raise the success of disadvantaged children and youth;
- Make others aware of the short-, medium- and long-term costs of allowing these children and youth to fail or leave school;
- Never miss a personal opportunity to support the potential educational success of the children and youth who we come into contact with;
- Advocate for system changes within schools to maximize educational attainment (eg, longer school days and shorter summer vacations); and
- Advocate for quality early education and care to minimize differences between children's school readiness before entering school.

Paediatricians and family doctors have many opportunities to influence readiness for school and educational success in primary care settings. Golova et al (39) reported intriguing results from a primary care setting. They delivered a literacy promoting intervention to low-income Hispanic families in health care settings. At the initial visit (average age 7.4 months), parents received a bilingual handout explaining the benefits of reading aloud to children, literacy-related guidance from paediatric providers or an age-appropriate bilingual children's board book. Control group families received no handouts or books. At a 10-month follow-up visit (mean age 17.7 months), there was no difference between groups on a screening test for language scores; however, intervention families read more often to their children, reported greater enjoyment of reading to children and had more children's books in their homes.

Given this suggestive finding, there are a number of points that paediatricians and family doctors should consider as they deliver primary care:

- Observe and encourage good parenting – mutual attention and contingency of interaction (taking turns and listening to each other), verbal behaviour (amount of talking and quality), sensitivity and responsiveness (awareness to signs of hunger, fatigue, boredom and providing an appropriate response), role modelling and reading to their children;
- Encourage parents to increase their knowledge of child development, particularly age-appropriate needs of and activities for their children. Explain to them, for instance, how ear infections can severely affect a student's language development, and that good nutrition and hygiene can lower the frequency and severity of infections;
- Encourage parents who do not have their children in institutionalized care to attend parent-child centres and programs. These programs usually do not charge fees and require no formal arrangements. Examples are the Ontario Early Years Centres, the Aboriginal Head Start Program in Northern communities, and programs related to the Alberta Children and Youth Initiative;
- Indicate the importance of parental support and networks – keep a message board in your office and post a list of community-based organizations in your neighborhood; and
- Keep in mind that poverty is not always obvious. One in five low-income families is headed by a parent who works full-time all year; thus, it is often difficult to tell if a family is in need (40).