The health of children of low-income families

Chandrakant P. Shah, MD, FRCPC, SM (Hyg), FACPM, FAAP
Meldon Kahan, MD, CCFP, MHSc
John Krauser, MA

Childhood poverty is common in Canada: 1 114 000 children under 16 years of age live below the poverty line. The incidence is highest among children of single mothers, unemployed parents, Canadian native peoples and recent immigrants, particularly refugees. Compared with the national average, the infant mortality rate is twice as high, deaths from infectious diseases are 2.5 times more common and accidental deaths are twice as common among children of low-income families. Other problems associated with poverty are iron deficiency anemia, dental caries, chronic ear infections, mental retardation, learning disabilities, poor school performance and increased suicide rates. Health care professionals can help address the poor physical and mental health associated with poverty in children by promoting a broad range of public policies.

Il y a beaucoup d'enfants pauvres au Canada, où 1 114 000 sujets de moins de 16 ans vivent sous le seuil dit de la pauvreté. Celle-ci sévit surtout chez les enfants de mères célibataires, de parents chômeurs, d'aborigènes et d'immigrants récents, particulièrement de réfugiés. Dans leurs familles, par rapport aux moyennes pancanadiennes, on note une mortalité infantile multipliée par 2, infectieuse par 2,5 et accidentelle par 2. On fait aussi le lien entre la pauvreté et l'anémie ferriprive, la carie dentaire, les otites chroniques, l'arriération mentale, les troubles de l'apprentissage, l'insuccès scolaire et un taux élevé de suicide. Les professionnels de la santé sont invités à combattre les mauvaises conséquences de la pauvreté pour la santé corporelle et mentale, en favorisant un vaste éventail de mesures d'intérêt public.

From the departments of Preventive Medicine and Biostatistics, Pediatrics, and Health Administration, the Faculty of Social Work and the Community Medicine Residency Program, University of Toronto, the Department of Pediatrics, Hospital for Sick Children, and the Ontario Medical Association, Toronto

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Reprint requests to: Dr. Chandrakant P. Shah, Department of Preventive Medicine and Biostatistics, McMurrich Building, University of Toronto, Toronto, Ont. M5S 1A8

Childhood poverty is less visible in Canada than in developing nations; nevertheless, it is common. In 1985 an estimated 1 114 000 children under 16 years of age (19.2% of all children) lived in poor families.[1] Although this figure signals a welcome respite in the upward trend from 1980–84,[2] poverty among children remains an important problem in Canada. Statistics Canada defines the poverty line as the income level at which a family must spend 58.5% or more of its gross income on food, shelter and clothing. The amounts vary according to residence (urban, semi-urban or rural); for example, in 1986 the poverty line for a family of three in a large city was $18 836 and in a rural area $13 813.[3]

Several groups are at particular risk for poverty. In 1983 Statistics Canada found that 49% of families headed by single mothers lived below the poverty line:[4] in metropolitan Toronto the average income for a single mother was $8771 (if under 35 years of age) and $14 813 (if over 35 years). In comparison, families with two parents and one child had an average income of $33 988.[5] Immigrants are another group at risk for poverty. In 1985 the poverty rate among children of immigrants in the Ottawa–Carleton region was 72.2% for Vietnamese, 48.6% for Arabs, 37.4% for Chi-

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nese and 27.0% for Greeks.[6] Native Canadians are also at risk. In 1981, 50% of native people were in the labour force, and the average income was two-thirds less for natives than for non-natives.[7] Despite these statistics poverty is not visible in Canadian society: we do not see starving children with kwashiorkor or marasmus. In developed countries the toll of poverty is subtle and its impact largely unrecognized.

Poverty and health

There are two problems with research into the association between poverty and the health of children. The first is that Canadian data are scarce and that we have had to rely on studies from other countries, primarily the United States and Britain. However, the impact of poverty on health can vary greatly between countries. For example, the absence of universal medicare in the United States creates problems in access to health care by the poor that are different from those in Canada.

The second, more fundamental, problem is that although the research has shown an association between poverty and health status, the nature of the association has not been elucidated. One of the possible mechanisms for this association is that a lack of income leads to ill health. Maslow[8] introduced the concept of a hierarchy of needs in human beings, the basic needs being food, clothing and shelter. In Western countries these needs are related to income; a parental lack of income could contribute directly to the burden of ill health among children. This may be mediated in a number of ways. Unsafe, crowded housing could increase the number of accidents and the incidence of communicable diseases. Low-quality food could lead to nutrition-related disorders. Lack of money for transportation and child care could affect the use of health care, and lack of money for medicine could affect treatment. Inadequate parental supervision and possibly ill health may arise if parents have to work long hours to maintain their income. In addition, lack of income may generate stress-related disorders.

Parental characteristics

Another explanation for the association is that certain parental characteristics, such as age, marital status, physical health, educational and cultural backgrounds, and personality, may predispose to poverty and ill health in children. This assumes that lack of parental skills, time, dedication or knowledge can adversely affect the health of children. Poverty and ill health are not causally related but are outcomes of a more fundamental cause. For example, chronically ill parents who are poor may have less time and energy to provide proper care and supervision for their children. Mental illness and personality and behavioural disorders, such as substance abuse, may result in poverty and inadequate child care. Single parents may not be able to earn a living and care for children adequately. Parents of large families or of families with one or more ill or disabled child may have financial problems. Adolescent parents are usually poor and may lack maturity. Parents who have a limited educational background or a different cultural background may not know how to care for their child adequately or understand the health care system. However, we must not presume that all chronically ill, young or single people are inadequate parents.

Diet

The complexity of the association between poverty and health is illustrated by evidence on diet and income. Children of low-income families are usually fed lower-quality diets, which consist of more refined carbohydrates and fewer meats, fruits and vegetables.[9,10] Poor nutrition may be due in part to a lack of knowledge. A random survey of women in Guelph revealed that knowledge of nutrition varied directly with social class.[11] However, poor nutrition also results from lack of income. Karp and Green[12] found that poor people buy foods that seem to provide the most energy at the lowest cost. In the Nutrition Canada Survey the lowest income group usually ate more potatoes and less fruit, dairy products, meat and fish than the higher income groups.[13] During the 1973–76 recession in the United States, consumption of animal proteins decreased and consumption of vegetable products increased.[13] In addition, the effects of the recession on buying habits were more evident in a supermarket that served poor people than in one that served the middle class.[13] Another problem is that grocery stores in poor neighbourhoods usually have a limited selection and high prices.[14]

Health indices

We examined the available evidence in Canada that compared the health status of poor children with that of other children. For the mortality data we used two studies: one by Wigle and Mao[15] and the other by Dougherty.[16] In these studies data on Canadian urban census tracts were grouped according to median household income. Income levels were divided into quintiles, the first level being the highest income and the fifth the lowest. Mortality rates were compared among the groups.

Infant mortality rate

The effects of poverty on mortality begin at birth. In Canada the infant mortality rate for boys was 1.7 times higher in families with a level 5

income than in those with a level 1 income in 1981 and 2.0 times higher in 1971; the rate for girls was 1.3 times higher in poor families in 1981 and 1.9 times higher in 1971. These figures indicate a significant decrease for girls from 1971 to 1981.[15,16] The infant mortality rate was higher in families with a level 5 income than in those with incomes at other levels for all leading causes of death, including pneumonia, respiratory distress syndrome, immaturity, trauma due to labour or birth, and congenital anomalies of the nervous and circulatory systems.[15,16] In 1983 the mortality rate among native infants was 2 times higher for Indians and 4 times higher for Inuit than the national rate; the postneonatal rate was 3.5 to 4 times higher respectively.[17] Wigle and Mao[15] estimated that at birth boys of families with the highest income level have a life expectancy 6.2 years greater (girls 2.9 years greater) than those of families with the lowest level. They stated that eliminating this difference would increase life expectancy more than preventing all deaths from cancer. Differences in mortality rates among children in high and low social classes have also been observed in the United States[18] and the United Kingdom.[19]

Low birth weight is the single most important cause of infant death, especially in neonates (infants up to 28 days). A study of births in eight Canadian provinces revealed that deaths in the first week of life were inversely related to birth weight: 75% of the deaths were due to a low birth weight.[20] Compared with a birth weight of 3000 g or more, the odds ratio for death among infants of low birth weight was more than 8. Similar findings were confirmed for males by Dougherty.[16]

Because the incidence of low birth weight is inversely related to social class,[19,21] and since infants of the same weight tend to have the same neonatal mortality rate regardless of social class, the effects of poverty on infant death are mediated through low birth weight.[22,23] However, in the postneonatal period, infants of the same weight have a higher mortality rate in the lower socioeconomic groups.[24]

The effects of poverty on birth weight may be due to several factors. Adolescent mothers are at increased risk for having infants of low birth weight.[25] Another factor is smoking.[26] McIntosh[27] estimated that between 20% and 29% of the incidence of low birth weight is attributable to smoking. An Ottawa study revealed that single women who smoked and had a low socioeconomic status were less likely to stop smoking during pregnancy than other women.[28] Poor nutrition may be a third factor. The Nutrition Canada Survey[13] divided its sample into three groups based on income. Pregnant women in the lowest income group had lower intakes of all nutrients measured: vitamin A (83% lower), folate (62%), vitamin C (48%) and riboflavin (41%). The mean intake of vitamin A for the lowest income group was below the recommended standard.[29]

Several epidemiologic studies have shown that a poor diet, particularly during the last half of pregnancy, is associated with low birth weight and adverse outcomes.[30] However, other studies have not shown this association, and Zlatnick[30] noted that they had several methodologic weaknesses, including the failure to correlate diet with initial maternal weight or weight gain. Several intervention studies also had methodologic problems,[21,30] including nonrandom allocation of subjects. In a matched case-control study Kennedy and Kotelchuck[31] compared the effect of supplements on birth weight in 418 pregnant women who received a supplement and nutritional education with 418 control women, who were matched for age, race, parity and income. The babies of the women who received the supplement had slightly higher birth weights (by 107 g, $p = 0.012$) and a 4% lower incidence of low birth weight ($p = 0.059$). Similar results were found by Rush.[32]

Childhood mortality rate

In 1971 and 1981 the mortality rates were higher for children of families with a level 5 income than for those of families with a level 1 income. For boys aged 1 to 14 years the rate was 1.9 times higher in the lowest than in the highest income group.[15,16] For girls who were poor the rate was 1.5 times higher in 1971; this increased to 2.5 times in 1981. In 1982 the mortality rate was almost three times higher for native Indian children aged 1 to 4 years than for non-native children of the same age (1.6 versus 0.5 per 1000).[17]

Accidents and violent deaths

Accidents are the main cause of death among children in developed countries, especially those in the lowest social class.[18,33] Dougherty[16] found that the mortality rate among pedestrians involved in motor vehicle accidents was 4.6 times higher in the lowest income level than in the highest for boys aged 1 to 14 years and 4.9 times higher for girls. The incidence of drowning was 3.4 times higher for poor boys of low-income families than for those of high-income families; there was no difference among girls. The accidental death rate for native children aged 5 to 14 years was three times higher than the national average.[34] Overcrowding and a lack of safe play areas contributed to the higher mortality rates among the poor.[35-37]

Suicide and homicide rates were 2.6 times higher for boys and 4.1 times higher for girls 1 to 14 years of age who were poor than for those who were not poor.[16] For boys 15 to 19 years of age the suicide rate was 1.9 times higher and the homicide rate 3.4 times higher in the lowest than in the highest income group.[16] Native adolescents aged 10 to 19 years had a suicide rate 11 times higher than the national average.[38] In 1983 the suicide

rates for Indian, Inuit and all Canadian children aged 15 to 19 years were 66.0, 256.3 and 13.4 per 100 000 respectively.[39]

Cancer

In 1981 the risk of death from cancer among Canadian children aged 1 to 14 years was 2.0 times as high for girls and 2.3 times as high for boys in the lowest income group as for those in the highest income group.[16] Whether this reflects incidence or prognosis is unclear. For example, nodular sclerosis and other types of Hodgkin's disease[40] and lymphoblastic leukemia[41] are more common among children of high-income families; however, the prognosis of acute lymphoblastic leukemia may be better for these children than for those of low-income families. McWhirter and associates[42] found that the 2-year survival rate for children with lymphoblastic leukemia was 28% for those in a low socioeconomic group and 51% for those in a high socioeconomic group. The outcome for poor children may be due to such factors as more advanced disease at the time of diagnosis, inadequate access to health care, poor compliance with therapy or poor nutrition.

Infectious diseases

Children of low-income families are also at greater risk for infectious diseases. In 1981 the mortality rate for respiratory diseases, especially pneumonia, in children 1 to 14 years of age was 2.0 times higher among boys and 6.1 times higher among girls of low-income families than among those of high-income families.[16]

Morbidity rate

After infancy the general measures of health status may be inversely related to social class. The National Health Interview Survey in the United States revealed that parents of low-income families had lower ratings of general health and their children had slightly more days of restricted activity, bed rest and absence from school than the members of high-income families.[43] To our knowledge such published data are unavailable for Canadian children.

In 1977 the number of hospital admissions of native Indians because of infectious and parasitic diseases was about seven times higher than the national average.[34] One study in southern Ontario revealed that the incidence of pneumonia was 8.3 times higher among 91 Indian children 2 years of age than among 238 non-Indian children of the same age.[44] Chronic otitis media is common among Inuit children; estimates of its prevalence have ranged from 13% to 42%.[45] The incidence of meningitis among Indian and Inuit children in the Northwest Territories is 7% in the first 8 years of life, approximately 200 times higher than in the general population.[46] Other infectious diseases known to have a higher prevalence among Indians than among non-Indians include gastroenteritis,[47] tuberculosis,[48] diphtheria[49] and rheumatic fever.[50]

Nutritional disorders

The Nutrition Canada Survey[13] revealed that the mean intake of all nutrients, especially vitamin C, folate, vitamin A and calcium, by children aged 1 to 4 years and adolescents aged 12 to 19 years varied directly with the family income level. The intake by children aged 5 to 11 years was not consistently related to income. The incidence and duration of breast feeding was greater among women in the middle and upper socioeconomic classes than among those in the lower socioeconomic classes.[51,52]

The US National Health and Nutrition Examination Survey showed that children of low-income families were most likely to have iron deficiency anemia.[53] Evers and Rand[44] found that the incidence of iron deficiency anemia was 7.6 times higher among 2-year-old Indian children than among non-Indian children of the same age. Iron deficiency anemia in infants may be associated with developmental problems.[54,55] Disorders due to vitamin D deficiency, including rickets, are still prevalent in our native population.[56,57]

Height, weight and head circumference have been found to vary inversely with socioeconomic status at different ages in many countries, including Canada.[58] The differences between the lower and higher income groups in Western countries are about 0.5 kg for weight, 2 cm for height and 1 cm for head circumference at 7 years of age. However, adolescent girls of low-income families tended to become more obese than girls of high-income families; this trend is similar for adults.[59]

Dental caries

Two surveys of randomly selected 13- and 14-year-old children in Alberta[60] and Quebec[61] showed that dental caries, as measured by the decayed/missing/filled teeth (DMFT) index, varied inversely with the socioeconomic status. The ratio of filled teeth to the DMFT index, which reflects the amount of dental care received, was directly related to social status. The social status gradient was largest in Quebec, with an F:DMFT ratio of 65.1% for the highest socioeconomic group and 17.4% for the lowest.

Mental health

The literature on the psychologic effects of poverty is vast, and we could not do it justice by

summarizing it here. However, we refer to one study to make the reader aware of this dimension.

Offord and collaborators[62] described the association between poverty and mental health among 392 children of low-income families who lived in Ottawa in subsidized housing complexes and 212 control subjects of middle-income families, who were matched for age and sex. School performance was assessed by means of parent–teacher interviews and questionnaires. School performance and mental health were substantially worse for the low-income group than for the control group with almost every criterion used, including failed grades, need for remedial classes, problems in conduct, hyperactivity and removal from the home for emotional, behavioural or learning problems.

Access to health care

Less frequent use of health care by the poor may also contribute significantly to the negative impact of poverty on health. Canadian studies have shown conflicting results on this issue because of different definitions of benefits and services, different population units (families versus individuals) and lack of controls for confounding factors such as age and sex.[63,64] Manga[63] found that the cost of medical services per capita in Ontario did not vary significantly with income. Low-income families visited physicians more often, but the cost of services per visit was lower, and a large proportion of the visits were at the hospital rather than at the office. Manga found that with children, except for those of families in the lowest income group, benefits and average health care costs increased directly with income.

Conclusions

One in five children in Canada lives below the poverty line. There is ample evidence to state that poor children have poor health. Research is required to elucidate the complex relation between poverty and health. However, we must act now to improve the health status of poor children so that as adults they can help build a healthy nation rather than perpetuate social weakness. With regard to the inaction of scientific communities Court[65] aptly stated that "the omission has been [their] reluctance to speak truth to power, to move beyond scientific inquiry and professional care to advocate publicly those changes in policy to which the facts point". Scientifically informed, comprehensive initiatives in various fields of public policy must be advocated to improve the health status of poor children (see page 481 of this issue).

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The rights belong to whom?

It used to be believed that the parent had unlimited claims on the child and rights over him. In a truer view of the matter, we are coming to see that the rights are on the side of the child and the duties on the side of the parent.

— William G. Summer (1840-1910)