Food insecurity and hunger: A review of the effects on children’s health and behaviour

Janice Ke MSc1, Elizabeth Lee Ford-Jones MD2

Food insecurity and hunger are significant problems in Canada, with millions of Canadians experiencing some level of food insecurity. The purpose of the present article is to review what is currently known about the effects of food insecurity and hunger on children. Longitudinal studies in Canada indicate that hunger is related to poor health outcomes, including a higher risk of depression and suicidal ideation in adolescents, and chronic conditions, particularly asthma. In addition, nutrient deficiencies, such as iron deficiency, are known to impair learning and cause decreased productivity in school-age children, and maternal depressive disorders. School-based nutrition programs and innovations, such as subsidized food (apples, cheese, soy nuts, carrots and broccoli), are an essential immediate need, but long-term solutions lie in adequate incomes for families.

Key Words: Children; Food insecurity; Hunger

In 2012, an estimated four million Canadians, including 1.15 million children, lived in households that experienced some degree of food insecurity (1). Food insecurity refers to the lack of nutritious foods in sufficient quantities to maintain good health. The measurement and monitoring of food insecurity in Canada focuses on a household’s experience of food insecurity, or the inadequate or insecure access to adequate food due to financial constraints (2). While children living in households classified as food insecure are not necessarily going hungry, 25% of students in grade 6 surveyed by the Public Health Agency of Canada reported that they sometimes went to bed hungry because there was not enough food in the house (3). Therefore, it is surprising that the effects of hunger on children are not well documented, and this remains an important area for further research.

The purpose of the present article is to review the immediate and long-term effects of hunger on children’s physical development, mental health and behaviour. We will also examine the indirect effects of maternal hunger on child development. A limitation of the present review is that food insecurity is inextricably linked to other social and environmental problems such as poverty and stress. Therefore, it is challenging to isolate the effects of food insecurity and hunger on children and mothers. Furthermore, much of the current research has been performed in the United States, and experiences of food insecurity may be different in Canada. In addition, there is a lack of research examining vulnerable groups, such as First Nations populations, who have unique food security considerations related to traditional food practices (4).

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Depressive disorders. In one study, low maternal hemoglobin status
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But parents themselves are also going hungry. Medical trainees
are forced to choose between expenditures, such as rent, and put-
Other studies have found food insecurity to be linked with higher
rates of a wide range of adolescent mood, behaviour and substance
abuse disorders (12). It has also been reported that food insecurity
early in life can weaken infants’ attachments to parents, which may
negatively affect children’s mental health later in life (8,13).
Chronic diseases
In 2012, the American Academy of Pediatrics released a report indic-
ing that children who are exposed to early life toxic stress are at
high risk for adverse health outcomes later in life, including cardio-
avascular disease, obstructive pulmonary disease, cancers, asthma,
autoimmune disease and depression (14). Toxic stress was defined as
extreme, frequent or extended activation of the stress response
accompanied by the absence of a supportive adult. The stress
response can be activated in early life by the lack of nurture and care
from an adult, poverty and trauma. It is important to note that health
outcomes in adulthood vary considerably among individuals who
were exposed to similar environments as a result of differences in
genetics, coping skills and developmental stage (14). Based on the
Canadian National Longitudinal Survey of Children and Youth,
Kirkpatrick et al (15) found that children who experienced hunger
were more likely to have poorer health and repeated episodes of
hunger were particularly toxic. Multiple episodes of hunger were also
associated with a higher likelihood of chronic conditions and of
asthma compared with those who were never hungry.
Overweight status
A few studies conducted in Canada and the United States have
reported a positive association between food insecurity and child-
hood obesity (16,17). It is hypothesized that food insecurity is
related to more restrictive and pressuring maternal feeding styles
compared with food-secure mothers. Controlling feeding styles
decrease the ability of children to self-regulate eating behaviours,
which may lead to future childhood obesity (18). Sex differences
also appear to be relevant, with significantly more food-insecure
girls at risk for obesity compared with boys (18). Additional
research is required for us to better understand the reported link
between food insecurity and children weight status.

EFFECTS ON MOTHERS
With high housing expenses in Canada, many low-income families
are forced to choose between expenditures, such as rent, and put-
ting food on the table (19). Not only are children going hungry,
but parents themselves are also going hungry. Medical trainees
participating in a new social paediatrics elective have reported
both parent and youth hunger (20,21).
Depression is common among mothers with young children.
Studies have suggested that ID may be a risk factor for maternal
depressive disorders. In one study, low maternal hemoglobin status
was associated with postpartum depression in a sample of American
mothers (22). Symptoms include fatigue, low energy and difficulty
concentrating on daily tasks. As a result, maternal depression is
associated with lower child health status, which may result from
unresponsive caregiving practices (3,23). In addition, maternal
depression has shown to have negative effects on early childhood
growth, particularly stunting, which results from chronic nutri-
tional deficiencies and is also associated with unresponsive care-
giving. The effects of unresponsive caregiving have also been
extended to delays in children’s cognitive development (3).
Furthermore, Weinreb et al (24) showed that mothers of
severely hungry school-age children were more likely to have a
lifetime diagnosis of post-traumatic stress disorder or substance
abuse, which can also negatively affect a mother’s ability to
respond to children’s physical and emotional needs.

RECOMMENDATIONS TO
DECREASE FOOD INSECURITY

While food banks are an attempt to address unmet food needs,
they are not a solution because the food provided is low in nutri-
ents. There is no fresh milk or produce available in food banks
and their existing food supply is limited (25). In addition, a study con-
ducted in Toronto (Ontario) indicates that participation rates are
extremely low among low-income families and that food banks are
only considered at times of desperation as opposed to a routine
service for food acquisition (26). Based on these findings, food
banks should not be considered in any way an adequate compon-
et of our social safety net. In contrast, subsidized food may be a
solution that could help improve the quality of people’s diets and
significantly reduce hunger. As for housing, there is a potential for
subsidized food with foods such as apples, cheese, soy nuts, carrots
and broccoli to be provided at all food stores at a fixed low price.
Canada is the only G8 country that does not have a national
feeding program in schools. A national food supplementation
program could strengthen household food security by providing
breakfast, lunch and/or snacks either at no cost or at a reduced
price in schools. This would free up household resources that could
be used to feed other family members and provide other necessi-
ties. The program would also reduce substantial stress for children
who do not know when they will have their next meal in addition
to meeting a portion of their food needs (27). Roustit et al (28)
found that the association between household food insecurity and
scholastic difficulties in adolescents was no longer present among
those who benefitted from school food supplementation programs.
However, these immediate solutions to urgent and compelling
needs will not solve the issue of hungry infants and toddlers who
are below school-age, nor after-school, weekend, holiday and par-
ent nutrition needs. Therefore, we also need to target the issue of
poverty. One way of doing this would be by advocating for an
increase in minimum wage and also ensuring that fresh groceries
are affordable. In addition, we need to educate society about mak-
ing healthy food choices for their children and how they can
ensure their children are getting sufficient nutrients. Health pro-
fessionals are an important point of contact at which education
should occur, and it is important for food security to be addressed
during routine checkups. Children and adolescents who are
experiencing recurrent hunger can be identified efficiently by a
brief verbal assessment. This provides health professionals with the
opportunity to link families to the appropriate social services. For
example, doctors should ask their patients whether they have
eaten today and yesterday, and provide resource brochures to tar-
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TABLE 1
Potential findings associated with food insecurity and hunger*

<table>
<thead>
<tr>
<th>Infant</th>
<th>Child</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased risk of weakened attachment to parents (8,13)</td>
<td>Poor performance on language comprehension tests (3)</td>
</tr>
<tr>
<td></td>
<td>Inability to follow directions over the first five years of age (3)</td>
</tr>
<tr>
<td></td>
<td>Delays in socioemotional, cognitive and motor development (3)</td>
</tr>
<tr>
<td></td>
<td>Higher level of hyperactivity/inattention and poor memory (7,8)</td>
</tr>
<tr>
<td>Youth</td>
<td>Higher frequency of chronic illnesses (14,15)</td>
</tr>
<tr>
<td>Depression and suicidal ideation (11)</td>
<td>Increased risk of childhood obesity (16,17)</td>
</tr>
<tr>
<td>Maternal and family</td>
<td>Increased risk for maternal depressive disorders (19)</td>
</tr>
<tr>
<td></td>
<td>Mothers of severely hungry school-age children more likely to have a lifetime diagnosis of post-traumatic stress disorder or substance abuse (24)</td>
</tr>
<tr>
<td></td>
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</tr>
</tbody>
</table>

*Causality not necessarily confirmed

REFERENCES


CONCLUSION

Household food insecurity is a significant problem in Canada that affects an estimated one in every six children (1). It is shocking that food insecurity continues here, especially given the plethora of wide-ranging effects – reduced learning and productivity, mental health, chronic diseases and effects on mothers (Table 1). School food supplementation programs and subsidized food are an essential immediate need and we need to advocate for these at a national level. However, these solutions are not sufficient on their own. Health professionals are an important point of contact to educate parents about making healthy food choices for their family and to link patients who are experiencing recurring hunger to the appropriate services. It is clear from our review that there are gaps in the literature regarding the effects of food insecurity and hunger on children, and limitations to existing studies. Therefore, we should continue to improve our understanding of hunger through future research in Canada, but we also must act now.

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Food insecurity among children in Canada