

## Hungry Students: Feeding the Body and Mind

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### **Abstract**

*Nutrition is a basic need that must be met for children to be successful. When students are inadequately nourished or food insecure, there are detrimental effects to physical health, mental wellness, and academic performance. To combat food insecurity in students, schools must support families to meet their nutritional needs. Supporting families through nutrition-based programming, such as breakfast and snack programs, connecting families to nutritional resources, and nutritional education are all ways that schools can ensure nutritional needs are met both in and out of school.*

For humans to be successful, there are basic human needs that must be met. Maslow (1954) categorized needs into physiological, safety, love and belonging, esteem, and self-actualization. Schools and learning environments are often able to fulfill needs of safety, belonging, esteem, and self-actualization, but struggle with the base of the hierarchy, physiological needs. Physiological needs are identified as food, water, warmth, and rest, needs that are ideally met in a student's home. Of all the physiological needs, food is the need that families struggle with most often at home. Providing adequate amounts of food is a need that schools are best equipped to help families with. Lack of access to food is often referred to as food insecurity and affects not only the physical and mental health of students, but also their academic performance (Fletcher & Frisvold, 2017). In 2018, 12.7% of Canadians were living with some degree of food insecurity (Statistics Canada, 2020, Table 13). Through education, the implementation of breakfast and nutrition programs, and connecting families with local nutritional resources, schools can start to combat the varying effects that food insecurity has on children.

### **Nutrition and Physical Health**

Diabetes, obesity, and heart disease are health conditions that can be linked directly to food insecurity. Childhood obesity has both immediate and long-term health consequences (Kuku et al., 2012), including cardiovascular disease, high blood pressure, and sleep apnea (Childhood Obesity Foundation, 2019). Children who experience food insecurity in the home are twice as likely as food secure children to be in poor health and are often affected by health concerns such as asthma and anemia (Gundersen & Ziliak, 2015). Food insecurity can also cause nutrient-deficiency in children. Families who experience food insecurity will often sacrifice the quality of food for quantity, resulting in energy-dense and nutrient-sparse foods (Anisef et al., 2017). This means students are often not exposed to fresh fruits and vegetables, which are a more expensive food. This lack of nutrients in a student's diet can lead to stunting, rickets, and bone abnormalities (Haimi & Lerner, 2014).

Children acquire and learn eating habits as they grow and develop. Implementing quality nutritional education in the school day can have positive effects on a student's interaction with nutrition (Pérez-Rodrigo & Aranceta, 2003). Schools are diverse learning environments and as extrafamilial influences become more important to students, they are more open to trying foods they would not have access to at home. Quality nutritional education relies on building upon what students already know and can do. This means that at an elementary level, nutritional education may involve discussing the differences between juice and water. Each beverage is often readily accessible in the home, but has different nutritional values. As students age,

nutritional education should focus on preparation of food as well as building further skills they will need later in life (Pérez-Rodrigo & Aranceta, 2003). Nutritional education in high school may involve preparing food budgets and navigating a grocery store to maximize nutritional value and cost of food. It is important to note that nutritional programming may look different in each school, so it should be tailored to meet community needs. While the incorporation of fresh fruits and vegetables should be the focus of nutritional education, incorporating community values, recipes, and cultural practices will increase community uptake.

### **Nutrition and Mental Health**

Students who experience food insecurity at home are more likely to miss school due to illness, and often suffer from depression, anxiety, or other mental wellness concerns (Seaton, 2017). The long-lasting effects of childhood hunger has also been linked to depression and suicidal ideation in late adolescence (Ke & Ford-Jones, 2015). Adolescents who experience food insecurity are twice as likely to report thoughts of dying and five times as likely to attempt suicide (Brinkman et al., 2021, pp. 102-103). These feelings of depression are linked not only to nutritional deficiencies, but to the stress and anxiety of food insecurity itself (McIntyre et al., 2017). Caloric restriction, which is often associated with food insecurity, increases cortisol secretion in the brain (Brinkman et al., 2021). Cortisol is the body's primary stress hormone, and it communicates with the brain regions responsible for mood, motivation, and fear (Mayo Clinic Staff, 2019). Increased stress levels may also be environmentally based (Brinkman et al., 2021). Increased stress may be experienced in the home from family members, and from the stigma of needing to access community resources to obtain food (McIntyre et al., 2017). Adolescent students are more likely to experience increased stress levels, depression, and anxiety, because they are more often aware of the families' financial circumstances (McIntyre et al., 2017). Students are also hesitant to access community programs because there is a fear of being different from one's peers (Seaton, 2017), further adding to the risk of anxiety and depression.

A school wide breakfast program can be used to improve the mental health of students. Breakfast consumption has been shown to lower the probability of marginal food insecurity in students, as well as reducing food-related concerns (Brinkman et al., 2021). Eating breakfast is associated with a declining trend in suicide among students from both food secure and insecure families. Using a breakfast program that is accessible to all students not only improves mental health, but also removes the stigma associated with needing to access it. Students who have fewer peer relationships experience more severe food insecurity, often due to a lack of connectedness to their school community (Brinkman et al., 2021). Students who experience food insecurity are more likely to be suspended from school and have an inability to get along with their peers (Sampasa-Kanyinga & Hamilton, 2016). Breakfast is often considered to be a social meal and a school-based breakfast program provides students an opportunity to meet and talk with peers before class, strengthening their feeling of belonging. This feeling of belonging directly impacts students' mental health, because they no longer feel isolated due to their lack of access to food at home. School breakfast programs have also been seen to improve student attendance (Bartfeld et al., 2019), because students have a reason to come to school earlier than they would normally. As well, a school breakfast program introduces students to a variety of foods that they may not have access to at home. This increased access enables students to have a more nutrient-dense diet, which helps with healthy brain development (Georgieff et al., 2018).

### **Nutrition and Academic Performance**

Not only does food insecurity have detrimental effects on healthy development, but a child's academic success can also be negatively affected (Faught et al., 2017). The more instances of

food insecurity a child faces at a young age, the greater the academic delays experienced (Johnson & Markowitz, 2018). Students who attend school despite food insecurity are often faced with cognitive developmental delays and an inability to concentrate on schoolwork (Anisef et al., 2017; Fletcher & Frisvold, 2017; Hecht et al., 2020). Without the proper cognitive foundation, students continue to struggle in their later school years. An inability to concentrate and hyperactivity in older students has been linked to continued nutritional deficiencies (Ke & Ford-Jones, 2015). Students who experience these conditions often struggle in a classroom setting and begin to fall behind in their academic performance. As a child ages, the academic gap grows and becomes more difficult to close. Very low food security is negatively associated with achievement on standardized tests, with only 16% of food insecure grade 5 students meeting grade level expectations in language arts and math (Faught et al., 2017, p. 2781). This is comparable to 84% of food secure grade 5 students meeting grade level expectations (Faught et al., 2017, p. 2781). When children continue to experience food insecurity and hunger throughout their schooling, their risk of dropping out increases (McIntyre et al., 2018). Students who drop out of school are more likely to remain in poverty and continue the cycle of food insecurity for their families.

One of the most common complaints from students during instructional times is that they are hungry and unable to focus on the lesson. Snacks play an important role in managing hunger and boosting nutrition, while giving students the energy boost they need during the day (Gavin, 2015). Providing students with nutritious snacks throughout the day will enable students to fulfill their hunger, while also remaining engaged in the class activities. Because some students require 3 meals and 2 snacks a day, providing school-based snacks also ensures that students meet their nutritional needs each day. Using snacks to incorporate more fruits and vegetables into a student's diet has positive effects on academic performance (Burrows et al., 2016). There are multiple ways in which a school snack program can be implemented in the classroom. In elementary classrooms, teachers may have snacks behind their desk, because younger students are more likely to confuse boredom and tiredness with hunger (Gavin, 2015). When a student asks for a snack, teachers have the opportunity to recognize whether a student's hunger is the primary cause of the student's feelings. While this is very useful in younger classrooms, it is not as successful in adolescents as students are aware of the stigma of asking for assistance. In older classrooms, a communal snack area or fruit bowl can be used as a way to promote independence and reduce hunger in the classroom. Students are able to take whatever they need from the snack area, without asking the teacher and drawing attention to themselves.

### **Schools and Local Nutritional Resources**

Due to the COVID-19 pandemic and loss of income due to shutdowns, further financial strain has been put on families already experiencing food insecurity. Many schools have implemented home nutritional programs to combat further food insecurity. Prior to the closure of schools due to COVID-19, millions of children relied on school-based nutrition programs. In order to ensure that students' nutritional needs would still be met, many schools began to provide grocery gift certificates or food boxes to families (Wong, 2020). In addition to food boxes, many schools developed school-based food banks (Fong, 2020), where families could order and pick up supplies. Schools also became a place where families could come to be connected with local food banks and other food relief programming. Continuing to provide food to families in an accessible way ensures that students and their families meet their nutritional needs while at home.

## Conclusion

People must have their basic needs met to be successful (Maslow, 1954), including the need to access appropriate amounts of food. The inability for families to secure food has detrimental effects on not only a child's physical and mental well-being, but the child's academic performance as well. When students are unable to secure food at home, the school is able to support this need. Through nutritional education, schools can provide students with the knowledge they need to make healthy eating choices and provide them with the skills to improve physical health. The implementation of a schoolwide breakfast program not only fulfills a student's need for food, but also provides a sense of belonging with the student's peers. This results in lower suicidal ideation and an overall improvement of the student's mental health. Providing students with snacks throughout the day and connecting families with local nutritional programs ensures that daily nutritional needs are being met both in and out of school.

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### **About the Author**

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