

Effective Education Strategies to Increase Food and Nutrition Knowledge in Children and Youth



Key Messages

- Childhood is a critical time to promote food literacy as this is the time when food preferences and eating patterns are developed. Fostering food literacy during childhood has the potential to build the foundation for healthy eating habits later in life.
- Child care centres and schools can be effective settings for nutrition education programs, and the home environment plays an important role in reinforcing the food and nutrition knowledge that children may gain in these settings.
- Teacher-led nutrition education that is cross-curricular and participatory in nature can be an effective way to increase food and nutrition knowledge in children.
- Registered dietitians can support capacity building of child care staff, early childhood educators, and teachers.
- Policy support is needed to ensure early childhood educators and teachers have adequate training and resources to incorporate food literacy education into the curriculum.

This evidence brief is part of a series that highlights effective approaches to increase food literacy in children and youth under 18 years of age and their parents. This evidence review can be used to support the development and implementation of food literacy programming and advance food literacy policy.

Background

Promoting food literacy is an essential strategy to support the development of healthy food preferences and dietary behaviours in children and youth (1–5). Food literacy includes five main interconnected components: food and nutrition knowledge; food skills; self-efficacy and confidence; food decisions; and external factors such as the food system, social determinants of health, and socio-cultural influences and eating practices – see Figure 1 (1). Improving food literacy during childhood is particularly important, as children are developing the eating patterns and skills that they will carry into adulthood and pass on to future generations (4,5).

This evidence brief focuses on effective ways to increase food and nutrition knowledge in children, because knowledge is both an attribute of food literacy and a foundation upon which healthy behaviours are built (6,7). Food and nutrition knowledge includes knowing about different types of food, its origins, and how the nutrients in food affect human health (1). It also means understanding the language

commonly used to describe the characteristics of food and food preparation (e.g., high fibre, low sodium, sauté, fold, etc.) (1). It is important to note that the interconnectedness of the various food literacy components combined with the way children learn makes it difficult to isolate food and nutrition knowledge from other attributes of food literacy (e.g., food skills, or self-efficacy/confidence). Furthermore, increasing knowledge may not be sufficient to instil lasting behaviour change (8,9). Environmental influences and family engagement play a significant role in facilitating and reinforcing children’s learning and decision making with respect to food (10).

The goal of this evidence brief is to describe effective strategies to increase food and nutrition knowledge in children and youth 18 years of age and their parents.

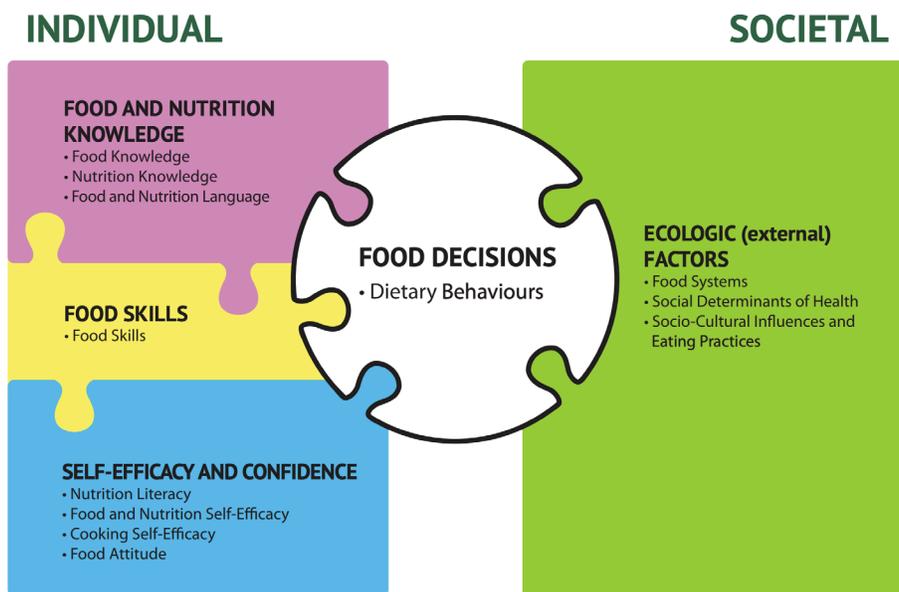


Figure 1: Attributes of food literacy (1).

Discussion

Content and design of food and nutrition education interventions

Effective interventions to increase the food and nutrition knowledge of children include content that is age and culturally appropriate and consider the children's experiences (9,11). This allows students to relate to the lessons and strengthens their knowledge. Effective interventions targeting young children (<6yrs) typically focus on exposure to new foods (e.g., touching, feeling, tasting) and basic food skills (e.g., cutting) (12,13). As children get older, they start to learn about the basic food groups and how to plan healthy meals. This knowledge can be built upon as children grow and content can be incorporated into other age-appropriate curricula and materials allowing for multi-component programs and interventions (7,11,14).

Many successful interventions incorporate behavioural theory into their planning and implementation, specifically Social Cognitive Theory. This theory incorporates personal, behavioural and environmental factors and appears to be effective at influencing behaviour change in children (15,16). It is important for nutrition education to focus on behaviour and action, rather than simply knowledge alone (9). Furthermore, essential components of nutrition education include motivation and goal setting as well as creating an environment that supports action (9).

Setting of nutrition education interventions

For young children (<6 years), pre-school or child care centres appear to be favourable settings to build the foundation for food literacy (12). Neophobia, the fear of trying new foods, is largely driven by taste aversion and is common

in children between two and five years of age (5). Pre-school activities designed to increase children's willingness to try and accept new foods appear to be a promising way to increase the effectiveness of food literacy interventions later in life (5,13,17).

For school-age children (>6 years), schools appear to be an ideal setting for food and nutrition education. Almost all children attend school and there are opportunities to incorporate nutrition education into subjects beyond nutrition itself (e.g. math, languages, art) (11). After school programs offered through child care or in other community settings (e.g. summer camps, kids clubs, community programs) reach a smaller proportion of the population and appear to be less effective at increasing children's food and nutrition knowledge(14,18). However, community-based interventions can still be impactful if designed effectively with adequate training and support (7,15). Evidence suggests that children are less likely to enjoy didactic, classroom-style learning outside of the traditional school day; therefore, hands-on food skills interventions may be more effective in these settings, rather than focusing on knowledge alone (15,18).

The effectiveness of food literacy programming in all settings is limited by funding and resources. Funding concerns may be especially relevant to programming in community settings because of high staff turnover (and the resulting need to re-train new staff and volunteers) and the need for financial support and resources (e.g., to pay for staff, food ingredients, teaching materials) (18). Socio-economic or cultural barriers that decrease participation in community-based programs may also limit the success of these

interventions (15). School settings do not share the same barrier of staff turnover but there is still a need for teacher training and financial resources that may limit the effectiveness of nutrition education interventions (16). The socio-economic barriers that prevent many disadvantaged youth from accessing food literacy programming in the community can be reduced with curricular and policy support for this type of programming in schools (11).

It is important to note that regardless of the primary setting for nutrition education interventions, the home is an important place for reinforcing the lessons learned by children and encouraging healthy eating habits (13,15). Aspects of family involvement include stimulating awareness, gaining parental support, encouragement of healthy dietary behaviour, and ensuring that healthy foods are available at home (11,13). Support in the home environment can motivate children and reinforce knowledge gained in school or through community programs (19).

Facilitators and educators for nutrition education

Evidence suggests that early childhood educators and teachers are well positioned to deliver nutrition education curricula and interventions in schools (12,16). Compared to visiting professionals (e.g., registered dietitians, chefs), who generally lead one-time interventions, teachers and early childhood educators can facilitate learning over an extended period of time. One study found that it took 10-15 hours to increase knowledge in elementary school children and over 50 hours to bring about lasting behaviour change (16). The same study also noted that teachers require training to deliver specific food and nutrition information, but once they have this knowledge and support they can continue to

incorporate materials and exercises throughout the school year and repeat lessons year after year, thus exposing a larger number of children to food literacy programming (16). Once teachers are trained to implement nutrition education and are provided the necessary resources, they can serve as role models and leaders for inspiring healthy dietary behaviours (16). In these ways, teacher-led interventions are potentially the most cost-effective and sustainable facilitators for nutrition education.

Interventions facilitated by visiting professionals (e.g., registered dietitians, chefs) are generally one-time events and as such don't provide children with the long-term exposure and reinforcement that has shown to be effective (20). However, role models and leaders are highly influential for children, and community members with expertise in the field of food and nutrition may be positioned to play an important role in motivating and encouraging children (13,16, 20). Community-based professionals also have an important role in designing and supporting effective nutrition education programs, materials, and training sessions for teachers, early childhood educators, and volunteers (12,21).

Peers are highly influential for both children and youth therefore including a peer lead component can help reinforce healthy decisions in children and youth under 18 years of age (13,14,22). For example, some evidence suggests that communication with peers through an online nutrition education platform was effective for encouraging learning (23).

Format and delivery of interventions

Regardless of the setting, experiential and active learning techniques are highly effective for increasing food and nutrition knowledge

in children (11,13,19). While specific activities depend on the age of the student and content being taught, experiential learning opportunities have been shown to increase knowledge retention and influence behaviour change (19). For young children, exposure to new foods is important and sensory activities (i.e., touching, feeling, or smelling new foods) can help to reduce neophobia (12,13,17). As children grow older, incorporating age-appropriate hands on experiential learning and food skills activities (e.g., cutting, cooking, gardening) can help facilitate knowledge gains and these activities seem to be well-received by students (13–15,20). Community cooking or gardening classes may be a good format for these lessons if time is not available for food programming in schools (15). One study found that encouraging skill development through homework activities (e.g., cooking a healthy meal) was effective because it promoted parental engagement and ongoing consciousness about healthy eating in between sessions (15). Integrating similar homework activities into school-based food and nutrition education curriculum may be similarly effective while also reaching a larger subset of the population than through community-based programs (11).

Cross-curricular approaches have been shown to be more effective for food and nutrition education than teaching a separate health and nutrition curriculum (19, 20). Given that teachers have limited time and resources, this result is promising in that nutrition information can be incorporated into other subjects (e.g., math, history, geography) (20). However, it is necessary for teachers to receive sufficient training, resources, and curricular supports to effectively incorporate this content into their existing lessons (16, 20). Online platforms, apps, or games can help engage children and encourage them to apply their knowledge,

allowing food and nutrition education to continue beyond the limited classroom time (14,18, 23).

Summary and Conclusions

For young children (<6 years), child care centres appear to be favourable settings to build the foundation for food literacy (12). For children and youth (>6 years) evidence has shown that teachers in schools may be the most sustainable and cost-effective way to deliver food and nutrition education, but training and resources are required in order for them to deliver evidence-based information. Due to the lack of time available in the school day, curricular support and easily accessible lesson plans would facilitate uptake and effectiveness of food and nutrition education in schools.

Cross-curricular approaches in schools appear to be the most effective way to increase food and nutrition knowledge in children. Interventions should be grounded in a behavioural theory to optimize knowledge intake and retention and include hands-on experiential components to encourage behaviour change and to help develop other attributes of food literacy such as food skills, self-efficacy and food attitudes. Information delivered should be age-appropriate, based on the children and youth's knowledge and experience, and be culturally appropriate.

The home environment is instrumental in encouraging children and catalyzing their learning. As such, parental engagement is key for increasing food and nutrition knowledge, as well as other related food literacy attributes such as food skills and self-efficacy. This is particularly important in young children where parents can act as positive role models and provide opportunities for children to make healthy food decisions and be involved in

preparing food in the home.

Implications for Policy and Practice

While child care centres and schools appear to be promising settings for cost-effective and sustainable food literacy programming, educators need to be supported with training and resources. Registered dietitians can support capacity building of child care staff, early childhood educators and teachers. Policy support is needed to incorporate food literacy education into the provincial curriculum for both child care centres and schools. Universal food literacy policy would ensure that all children and youth receive consistent, evidence-based lessons that are cross-curricular and participatory in nature. Food literacy policy would also create more opportunities for educators to receive the training and resources required to deliver effective programs.

Limitations of this Review

This evidence brief may be limited by the non-exhaustive search and review of the literature. Many of the studies included were unable to assess the long-term effectiveness due to the lack of follow up assessments.

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