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Development

Helping Children Develop Healthy Eating Habits

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Introduction

The first year of life is characterized by rapid developmental changes related to eating. As infants gain truncal control, they progress from sucking liquids in a supine or semi- reclined position to eating solid foods in a seated position. Oral motor skills progress from a basic suck-swallow mechanism with breast milk or formula to a chew-swallow mechanism with semi-solids, progressing to complex textures.[1,2] As infants gain fine motor control, they progress from being fed exclusively by others to at least partial self-feeding. Their diet extends from breast milk or formula, through purees and specially prepared foods, to the family diet. By the end of the first year of life, children can sit independently, can chew and swallow a range of textures, are learning to feed themselves and are making the transition to the family diet and meal patterns.

As children transition to the family diet, recommendations address not only food, but also the eating context. A variety of healthy foods promote diet quality, along with early and sustained food acceptance. Data gathered on infants and young children 6 to 23 months of age across 11 countries have demonstrated a positive association between dietary variety and nutritional status.[3] Exposure to fruits and vegetables in infancy and toddlerhood have been associated with acceptance of these foods at later ages.[4-6]

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Children’s eating patterns and food preferences are established early in life. When children refuse nutritious foods such as fruits or vegetables, mealtimes can become stressful or confrontational, and children may be denied both the nutrients they require and healthy, responsive interactions with caregivers. Caregivers who are inexperienced or stressed, and those who have poor eating habits themselves, may be most in need of assistance to facilitate healthy, nutritious mealtime behaviour with their children.

Subject

Problems associated with eating occur in 25% to 45% of all children, particularly when children are acquiring new skills and are challenged with new foods or mealtime expectations.[7] For example, infancy and toddlerhood are characterized by bids for autonomy and independence as children strive to do things themselves. When these characteristics are applied to eating behaviours, children may be neophobic (hesitant to try new foods) and insist on a limited repertoire of foods,[8] leading them to be described as picky eaters.

Most eating problems are temporary and easily resolved with little or no intervention. However, eating problems that persist can undermine children’s growth, development, and relationships with their caregivers, leading to long-term health and developmental problems.[9] Children with persistent eating problems whose caregivers do not seek professional advice until the problems become severe, may be at risk for growth or behaviour problems.

Problems

Eating patterns have developmental, family and environmental influences. As children become developmentally able to make the transition to family foods, their internal regulatory cues for hunger and satiety may be overridden by familial and cultural patterns. At the family level, children of caregivers who model healthy food intakes are likely to consume more fruits and vegetables than children of caregiver who do not, whereas children of caregivers who model less healthy, snack food intakes are likely to establish patterns of eating behaviours and food preferences that include excess amounts of fat and sugar.[10] At the environmental level, children’s frequent exposure to fast-food and other restaurants has led to increased consumption of high-fat foods, such as french fries, rather than more nutritious options, such as fruit and vegetables.[11] In addition, caregivers may not realize that many commercial products marketed for children, such as sweetened drinks, may satisfy hunger or thirst, but provide minimal nutritional benefits.[12]

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National surveys have reported excessive caloric intakes during toddlerhood,[13,14] and many children continue to consume alarmingly low quantities of fruit and vegetables and essential micronutrients.[15] By elementary school, many children receive over half their beverage intake from sweetened drinks,[16] a pattern that undoubtedly begins during the toddler and preschool years. These poor nutritional patterns (high fat, sugar and refined carbohydrates; sweetened drinks; and limited fruit and vegetables) increase the likelihood of micronutrient deficiencies (e.g., Iron Deficiency Anemia) and excess weight gain in young children.[17]

Research Context

Eating is often studied through observational studies or caregiver reports of mealtime behaviour. Some investigators rely on clinical samples of children with growth or eating problems, while others recruit normative children.

Key Research Questions

Key questions include the progression of eating behaviours from infancy through toddlerhood, methods children use to signal hunger and satiety, and why some children (the so-called “picky” eaters) have selective food preferences. Key questions for caregivers and families are how to promote healthy eating behaviours in young children, how to encourage children to eat healthy food, and how to avoid problems in feeding and growth.

Recent Research Results

Attachment and eating

Healthy eating behaviour begins in infancy, as infants and their caregivers establish a partnership in which they recognize and interpret both verbal and non-verbal communication signals from one another. This reciprocal process forms a basis for the emotional bonding or attachment between infants and caregivers that is essential to healthy social functioning.[18] If there is a disruption in the communication between children and caregivers, characterized by inconsistent, non-responsive interactions, the attachment bond may not be secure, and eating may become an occasion for unproductive, upsetting battles over food.

Infants who do not provide clear signals to their caregivers or do not respond to their caregivers’ efforts to help them establish predictable routines of eating, sleeping and playing are at risk for regulatory problems that may include eating.[9] Infants who are premature or ill may be less

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responsive than healthy full-term infants and less able to communicate hunger or satiety. Caregivers who do not recognize their infants' satiety cues may overfeed them, causing infants to associate feelings of satiety with frustration and conflict.

The caregiver-child context of feeding

Variability in the caregiver-child feeding context is related to children's eating behaviour and growth.[19] The dimensions of parental structure and nurturance, which incorporate parents' perceptions of their child's behaviour, have been applied to the feeding context (Figure 1).[20,21,22] Responsive feeding reflects a reciprocal pattern in which caregivers provide guidance and developmentally appropriate responses to their child's signals of hunger and satiety. Unresponsive feeding is marked by a lack of reciprocity between the caregiver and child, often characterized by the caregiver taking excessive control of the feeding context (forcing/pressuring or restricting food intake), the child controlling the feeding context (e.g., demanding a limited repertoire of food, indulgent feeding), or the caregiver ignoring the child's signals or failing to establish mealtime routines (uninvolved feeding).[23,24]

Figure 1. The Caregiver-Child Feeding Context: Patterns of Parenting and Feeding

		NURTURANCE	
		HIGH	**LOW**
		AUTHORITATIVE	AUTHORITARIAN
		• Involved • Nurturing • Structured	• Forceful • Restrictive • Structured
HIGH		**Responsive**	**Controlling**
		INDULGENT	UNINVOLVED
		• Involved • Nurturing • Unstructured	• Unengaged • Insensitive • Unstructured
LOW		**Indulgent**	**Uninvolved**

A responsive feeding style, high in nurturance and structure, a derivative of authoritative parenting, represents caregivers who form a relationship with their child that involves clear demands and mutual interpretation of signals and bids for mealtime interaction. Responsive feeding is characterized by interactions that are prompt, contingent on the child's behaviour and developmentally appropriate with an easy give-and-take.[22,25,26]

A controlling feeding style, high in structure and low in nurturance, represents caregivers who use forceful or restrictive strategies to control mealtimes. Controlling feeding is embedded in an overall authoritarian pattern of parenting and may include over-stimulating behaviours, such as speaking loudly, forcing foods or otherwise overpowering the child.[27] Controlling caregivers may override their child's internal regulatory cues for hunger and satiety.[28] The innate capacity that infants have to self-regulate their energy intake declines during early childhood in response to family and cultural patterns.[29]

An indulgent feeding style, high in nurturance and low in structure, is embedded in an overall indulgent style of parenting, and occurs when caregivers allow children to make decisions around meals, such as when and what they will eat.[23] Without parental guidelines, children are likely to be attracted to high salt/high sugar foods, rather than to a more balanced variety including vegetables.[23] Thus, an indulgent feeding style may be problematic, given infants' genetic predispositions to prefer sweet and salty tastes.[30] Children of caregivers who display an indulgent feeding style are often heavier than children of caregivers who use non-indulgent feeding styles.[24]

An uninvolved feeding style, low in both nurturance and structure, often represents caregivers who have limited knowledge and involvement in their child's mealtime behaviour.[23] Uninvolved child feeding styles may be characterized by little or no active physical help or verbalization during feeding, lack of reciprocity between the caregiver and child, a negative feeding environment and a lack of feeding structure or routine. Uninvolved feeders often ignore both child feeding recommendations and their toddler's cues of hunger and satiety and may be unaware of what or when their toddler is eating. Egeland and Sroufe[31] found that children of uninvolved or psychologically unavailable caregivers were more likely to be anxiously attached when compared with children of available caregivers. An uninvolved feeding style is embedded in an overall uninvolved style of parenting.[23]

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Several recent systematic reviews report associations between parental feeding control and infant and early child weight gain and/or weight status.[24,32,33] Controlling feeding has been associated with increased weight gain (e.g., children of caregivers who use restrictive feeding practices tend to overeat)[34] and to decreased weight gain (e.g., children who are pressured to eat more, do not).[35] However, the cross-sectional design of most studies, along with a tendency to rely exclusively on caregiver behaviour, rather than consider the reciprocal nature of feeding interactions, has hindered the understanding of caregiver-child feeding interactions. A recent randomized controlled trial among infants in Australia found that providing anticipatory guidance regarding infant feeding behaviour led to healthier weight gain and higher rates of self-reported responsive feeding behaviour.[36] Additional trials are needed to better understand strategies to promote healthy feeding interactions and healthy growth.

Food preferences

Children who are raised with caregivers who model healthy eating behaviours, such as a diet rich in fruit and vegetables, establish food preferences that include fruit and vegetables.[4]

Food preferences are also influenced by associated conditions. Children are likely to avoid food that has been associated with unpleasant physical symptoms, such as nausea or pain. They may also avoid food that has been associated with the anxiety or distress that often occurs during meals characterized by arguments and confrontations.

Children also accept or reject food based on qualities of the food, such as taste, texture, smell, temperature or appearance, as well as environmental factors, such as the setting, the presence of others and the anticipated consequences of eating or not eating. For example, consequences of eating may include relief from hunger, participation in a social function or attention from caregivers. Consequences of not eating may include additional time to play, becoming the focus of attention or getting snack food instead of the regular meal.

Increasing familiarity with the taste of a food increases the likelihood of acceptance.[37,38] Caregivers can facilitate the introduction of new foods by pairing the new food with preferred food and presenting the new food repeatedly until it is no longer “new.”

Conclusions

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Eating patterns are established early in life in response to internal regulatory cues, caregiver-child interactions, mealtimes routines, foods offered and modeling from family members. Exposing children to fruits and vegetables early in life establishes a pattern of fruit and vegetable preference and consumption throughout life. Research is needed to investigate the individual, interactive and environmental determinants of the caregiver-child feeding context, relationships between responsive/unresponsive feeding and children's eating behaviour and weight gain and population-specific validated tools to measure responsive/unresponsive feeding.[24]

Early childhood eating behaviours are heavily influenced by caregivers and are learned through early experiences with food and eating. Education and support provided by health professionals (i.e., public health nurses, family physicians and pediatricians) and nutrition programs need to be strengthened to ensure that caregivers have the facilities needed to address issues of eating behaviours during childhood.

Caregivers should eat with children so modelling can occur and mealtimes are viewed as pleasant social occasions. Eating together lets children watch caregivers try new foods and helps children and caregivers communicate hunger and satiety, as well as enjoyment of specific foods.[39]

Caregivers control both the food that is offered and the mealtime atmosphere. Their "job" is to ensure that children are offered healthy food on a predictable schedule in a pleasant setting.[39] By developing mealtime routines, caregivers help children learn to anticipate when they will eat. Children learn that feelings of hunger are soon relieved and there is no need to feel anxious or irritable. Children should not graze or eat throughout the day, so they develop an expectation and an appetite around mealtime.[39]

Mealtimes should be pleasant and family-oriented, with family members eating together and sharing the events of the day. When mealtimes are too brief (less than 10 minutes), children may not have enough time to eat, particularly when they are acquiring self-feeding skills and may eat slowly. Alternatively, sitting for more than 20 or 30 minutes is often difficult for a child and mealtimes may become aversive.

When meals are characterized by distractions from television, family arguments or competing activities, children may have difficulty focusing on eating. Caregivers should separate mealtime from playtime and avoid using toys, games, or television to distract the child during mealtime. Child-oriented equipment, such as highchairs, bibs and small utensils, may facilitate eating and

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enable children to acquire the skills of self-feeding.

Implications

Implications can be directed to environmental, family and individual levels. At the environmental level, encouraging fast-food and other restaurants to also provide healthy, palatable food options that are appealing to young children may reduce some of the feeding problems that occur when children are repeatedly exposed to high-fat foods, such as french fries, rather than to nutritious options, such as fruit and vegetables. At the family level, guidelines for children's nutrition should include information on their nutritional needs and on strategies to promote healthy eating behaviour, including recognizing children's signals of hunger and satiety and use of appropriate feeding interactions, allocating time for meals, scheduling meals at relatively consistent times, promoting new foods through modelling and avoiding stress and conflict during meals. At the individual level, programs that help children develop healthy eating patterns by eating nutritious foods and eating to satisfy hunger, rather than to satisfy emotional needs, may prevent subsequent health and developmental problems.[40]

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