Advancement in Texture in Early Complementary Feeding and the Relevance to Developmental Outcomes

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A child's transition to independent eating is a protracted process that progresses over the course of many years. Although major health agencies, such as the World Health Organization (WHO), now offer clear guidance when to begin introducing solids, advice about how to safely transition to progressively challenging foods is varied and comes from a staggering number of sources. The varying, and often conflicting advice has resulted in parental confusion and anxiety about what foods are appropriate and when to advance to new textures. Common parental concerns include risks of choking, allergies, nutrition and food refusal/neophobia.

Research on early child feeding is bringing to light the delicate balance in pediatric feeding between providing textures that are challenging but safe. Introducing solids too soon increases the risks of choking, sudden infant syndrome and chronic diseases such as diabetes, obesity, asthma and celiac disease as well as food hypersensitivity [1]. In contrast, introducing solids too late increases the likelihood that a child may not learn to eat solid foods properly, become malnourished, develop iron deficiency anemia and not follow the normal growth curve. Despite these known risks, however, many children are being offered solids too early [1] while some are being offered them too late.

One challenge to developing a rigid, age-based timeline for advancing complementary feeding is the well-known differences among children in their rates of development. For this reason, many guidelines promote the conventional wisdom that food textures should be gradually upgraded based on infants' abilities. From a motor development perspective, a child's readiness for a given food will depend on the match between the developmental status of their oromotor system and the demands required to macerate and safely transport the food into the esophagus. Additional research is needed, however, to begin to stratify different foods along the continuum from easy to challenging to chew

taking the physical properties of the food and the oromotor readiness of the child into consideration.

To better understand oromotor readiness for different textures, we have begun to investigate the development of chewing biomechanics to evaluate the age appropriateness of solid foods that vary in texture [2–4]. The broad goals of this research include improving our understanding of (1) the development of chewing motor skills, (2) the factors that influence chewing development, such as the emergence of dentition, and (3) the interaction between a child's oromotor readiness and the physical properties of the food. In this work, we are recording jaw movement and muscle activity as young children (9–36 months) chew several commercially available products that vary in texture – Cheerios (General Mills), an oat-based cereal, and Rice Rusks (Hipp), a puffed rice-based cracker. Our preliminary findings suggest that chewing behavior varies among the two foods. Overall, a more mature chewing pattern was observed for the Cheerios than for the Rice Rusks, suggesting that Rice Rusks biscuits were mechanically challenging for beginning chewers. Additional studies are required that test a larger number of textures that vary in their physical properties. The information from these studies will be essential for providing caregivers science-based guidance regarding the safety and appropriateness of new foods, identifying children at risk for choking or feeding impairments, designing new developmentally appropriate foods, and redesigning foods that pose a high risk [5].

References

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