Infant & Young Child Feeding n Nutrition in Perspective
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Approaches to complementary feeding: Parent-led, Baby-led or somewhere in between?

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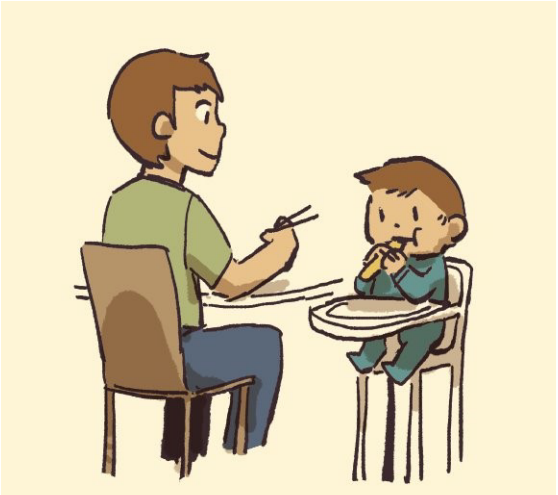
When discussing the introduction of complementary feeding with parents, it is prudent to stress that solid foods should be introduced by 6 months to ensure adequate nutrients and energy intake for appropriate growth and development.[1]



As Baby-led Weaning (BLW) has grown in popularity in the last decade or so as a way to introduce complementary feeding, it is likely that health professionals will encounter parents who contemplate practicing BLW.

What is Baby-led Weaning (BLW)?

The BLW movement, emerged in 2001,[2] has gained momentum after the publication of the global-selling book "Baby-led Weaning: Helping Your Baby to Love Good Food" by Rapley and Murkett in 2008.[3] BLW is an approach to the introduction of complementary solid foods that allows the infants to direct and control the self-feeding process from the very beginning, by deciding which foods to eat, how much and at what pace they will eat them[2,4]. BLW is essentially practised as follows:

- Infants eat with their families at mealtimes, so that parents can act as role models for food choices and mealtime behaviour.
- A variety of healthy foods from the family meals is presented to the infants, in pieces of whole finger foods with sizes and shapes that the infants can easily handle.
- Infants feed themselves from the beginning, first with their hands and later with cutlery.
- Milk feedings (breastfeeding or formula) will continue on demand, unconnected with mealtimes.
- BLW does not include feeding by an adult.

How is it different from the traditional approach?

Traditionally, complementary foods are introduced through graduated exposure to different textures. Infants are being fed with puréed foods by adults, before progressing to mashed and chopped foods.[1,5-10] 'Finger' foods and self-feeding do not contribute to a large part of the feeding until later in infancy.

In practice, many parents following a "baby-led" weaning approach are probably somewhere along the continuum of some spoon-feeding to total self-feeding, albeit much more at the latter end.

What are the perceived benefits of BLW?

Developmental readiness of infants to feed themselves using their hands, as well as their innate ability to respond appropriately to both appetite and satiety are the underpinning principles of BLW, according to its proponents.[2]

By 6 months of age, most infants are able to sit unsupported, bring finger foods to their mouth, chew and swallow them,[11] it is therefore suggested that the feeding of puréed foods may not be necessary.[2,4] Since the infant decides on the amount of solid food intake, it has been proposed that BLW may lead to better energy self-regulation and a lower risk of obesity.[12,13] The other implied advantages include favourable effects on parental feeding practices,[14] better diet quality with a variety of family food,[15] and more advanced motor and chewing skills.[2,4]

What are the potential risks?

Health professionals have raised several concerns with BLW, including an increased risk of nutritional deficiency, growth faltering and choking.[15,16] In BLW, although complementary foods are made available to the infants from 6 months of age, there are concerns that the foods may not be ingested until much later and the first foods being offered may be low in energy, iron and zinc. Moreover, the mastication and coordination skills of a 6-month-old to safely manage whole pieces of food are in doubt.

What is the evidence?

To date, there has only been one randomised controlled trial, the 2-year *Baby-Led Introduction to SolidS (BLISS) Study,* conducted in New Zealand to assess the efficacy and acceptability of a modified version of BLW. The BLISS approach aims to address the three key concerns of health professionals about BLW, namely insufficient iron intake, choking and growth faltering. [16-19] Most of the others are cross-sectional studies, mainly using self-report questionnaires or interview data to examine the effects of BLW.[12-15,19]

Is there an impact upon body weight?

In the BLISS study, the mean body mass index (BMI) z-score of infants who followed a modified version of baby-led weaning was not different at 12 or 24 months of age compared with those who followed

traditional spoon-feeding. There was no difference in the prevalence of overweight between the two groups.[17]

Is there an impact on eating behavior and parental feeding practices?

Children's Eating Behaviour Questionnaire (CEBQ), a psychometric instrument to measure satiety responsiveness (eating appropriately in response to appetite) and food responsiveness (eating in response to environmental food cues rather than hunger), among other parameters, has been used in the following studies. It has been postulated that high levels of food-responsiveness and low levels of satiety-responsiveness are associated with greater risk of childhood overweight.[13,17]

Infants in the BLISS intervention group were reported to be less satiety responsive at 24 months, less fussy / picky about food at 12 but not 24 months, and having more enjoyment of food at both 12 and 24 months.[17] In another observational study, infants weaned using a baby-led approach were rated as significantly less food-responsive and more satiety-responsive than those using the conventional approach.[13]

Mothers who followed a baby-led approach reported significantly lower levels of unfavourable parental feeding practices such as food restriction, pressure to eat, concern for child weight and monitoring in a study using a parent-completed Child Feeding Questionnaire.[14] However, a conclusion about causality cannot be drawn due to its cross-sectional design.

Is there a risk of nutritional deficiency?

In the BLISS study, parents in the intervention group were given advice to offer energy-dense and high-iron foods at every meal. There was no significant difference in intake of energy, macronutrients, iron and zinc between the intervention and control groups.[17,18] However, a high prevalence of inadequate iron intakes in both BLISS and conventional weaning groups were observed. Since BLISS is a modified version of BLW, no conclusions can be made about the risk of iron and zinc deficiency in infants following unmodified BLW.[18]

Is there a choking risk?

A total of 35% of infants choked at least once between 6 and 8 months of age, with no significant group differences in the BLISS study. Foods with a choking risk had been offered to 52% of infants at 7 months, and 95% at 12 months for both groups. The culprit included apple slices, crackers and sausages.[19] Besides, in a semi-structured interview, 30% of a group of mothers who practised BLW reported an episode of choking.[12]

What should health professionals advise?

While global health authorities support the common principles of introducing safe and appropriate complementary foods around 6 months of age, feeding the infants in a responsive way and encouraging self-feeding, sole dependence on infant self-feeding in transitioning to solid food has not been recommended. Global guidance recommends that infants be initially offered smoothly blended foods, progressing in texture[1,5-10,20] until family foods are eaten by 12 months of age.[1]

Finger foods are recommended alongside purées, from the start of introducing complementary foods in the United Kingdom[5,20], from six months of age in Canada[6], from 7 months in New Zealand[7], from six to eight months in the United States[8], and when the baby reaches out for the foods in Hong Kong[9,10], rather than as the main component of the diet.[1]

Health professionals may inform parents that self-feeding by infants can be part of the approach to complementary feeding. Most families will find an approach somewhere along the spectrum of various combinations of adult-led and baby-led feeding that works well for them.

Whichever approach to complementary feeding is used, parents should be reminded of the fundamental goals of ensuring adequate nutrients and energy intake for the infant while making mealtime enjoyable for everyone in the family. Strategies to achieve these include eating with the family, providing a variety of nutritious foods, following the infant's pace and satiety cues, encouraging self-feeding and prevention of choking.

How do health professionals support parents when they opt for infant self-feeding as the sole approach?

If parents opt for total reliance on infant self-feeding as the approach to the introduction of complementary foods, health professionals should consider the following:

1. Discuss with parents the potential risks and benefits, and their evidence as outlined above
2. Help parents to look for the signs of readiness of introducing solid foods[19,20], and/or signs where this approach is inappropriate (See Table 1)
3. Discuss general principles to encourage self-feeding with a variety of healthy food, making reference to the BLISS study (See Table 2)

Table 1: Babies for whom BLW is inappropriate

Although probably achievable for most infants and families, BLW will not suit all. It is not appropriate if the ability of infants to feed themselves cannot keep pace with their need for additional nutrients. Examples are infants who have developmental delay, failure to thrive, nutritional deficiencies, feeding difficulties or sensory sensitivity.[2,4,11]

Table 2: The BLISS general principles in encouraging self-feeding in infants[16]:

Preparation of finger-foods:

1. Offer a variety of foods. Choose 3 food types in each meal – an iron-rich food, an energy-rich food and a fruit or vegetable. Offer the baby foods from the family meals whenever possible.
2. The foods offered should be at least as long as the child's fist, on at least one side of the food.
3. Test foods before they are offered to ensure they are soft enough to mash with the tongue on the roof of the mouth or large and fibrous enough that small pieces do not break off when sucked and chewed.
4. Avoid foods with choking hazards such as very small foods, raw vegetables, raw apples, hard fruits, citrus fruits, whole nuts, popcorn, sausages, round carrots, etc.
5. Avoid offering dry foods that form a crumb and become lost in the mouth, e.g. rice crackers, potato crisps, corn chips.
6. Avoid foods with added salt or sugars.

Self-feeding:

1. Include the infant at family mealtimes. Offer food when the infant is happy and content.
2. Ensure the infant is sitting upright when eating.
3. Always have the infant supervised by an adult when they are eating. Never leave the infant alone with food.
4. Whole foods are not put into the infants' mouth. The infants feed at their own pace and under their own control.

Key Messages:

In giving advices to parents on complementary feeding, health professionals should emphasize the fundamental goals of ensuring adequate nutrients and energy intake for the infant while making mealtime enjoyable for the family.

Strategies to achieve these goals include eating with the family, providing a variety of nutritious foods, following the infant's pace and satiety cues, encouraging self-feeding and prevention of choking.

Self-feeding by infants can form part of the approach to complementary feeding. Parents will find the most suitable approach for their infants anywhere on the spectrum of various combinations of "adult-led" and "infant-led" feeding.

醫護人員在給家長建議時，應該強調引進固體食物的基本目標為確保嬰兒攝入充足營養和能量，同時讓一家人共享進餐。

實現這些目標的策略包括與家人一起進食，提供各種營養食物，跟從嬰兒的步調和飽餓信號，鼓勵嬰兒自我餵食和防範食物窒息等。

嬰兒自我餵食可以成為引進副食品模式的其中一環。家長可以從「成年人主導」到「嬰兒主導」進食的領域中，結合各種引進固體食物的模式，為他們的嬰兒挑選最合適的方法。

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