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Feeding in the first year of life

Emerging benefits of introducing complementary solids from 4 months

Background

Current World Health Organization guidelines recommend exclusive breastfeeding for the first 6 months of life. Breastfeeding conveys clear benefits to both mother and child. These benefits are likely to be amplified by prolonged feeding.

Objective

This article outlines the emerging evidence that suggests possible benefits from introducing complementary solids from 4 months of age in developed countries.

Discussion

The human gut may have a critical early window during which it has an opportunity to develop immunological tolerance. Introducing complementary solids from 4 months of age may decrease the risk of food allergy and coeliac disease – immunological illnesses that have become a public health priority.

The new draft National Health and Medical Research Council guidelines recommend introducing solids at around 6 months (22–26 weeks). However, given recent evidence, it may be appropriate to recommend the introduction of solids from 4 months of age in the Australian context.

Keywords

child, health; women's health; breastfeeding

Before 2003, the National Health and Medical Research Council (NHMRC) breastfeeding recommendations for Australia were exclusive breastfeeding for 4–6 months (EBF4–6).¹ Similarly, before 2001, the World Health Organization (WHO) recommended EBF4–6 globally. Exclusive breastfeeding is defined by the NHMRC as 'an infant receives only breast milk from his or her mother or a wet nurse, or in the form of expressed breast milk, and no other liquids or solids apart from drops or syrups containing vitamins, mineral supplements or medicines'.²

In 2001, based largely on a systematic review by Kramer and Kakuma,^{3,4} the WHO recommendation for EBF4–6 was extended to EBF6.⁵ This recommendation was reaffirmed in 2005,⁶ citing the original version of the

Cochrane review by Kramer and Kakuma.⁷

Based on Kramer's review, the Global Strategy on Infant and Young Child Nutrition from WHO recommends 'as a global public health recommendation, infants should be exclusively breastfed for the first 6 months of life to achieve optimal growth, development and health'.⁸

International response to the WHO recommendation has varied, with only some nations adopting it. In the European Union, eight of 22 member states agree with the WHO recommendation without qualification.⁹ In the United States of America (and Canada) there is strong support for breastfeeding and mixed support for making this exclusive.^{10,11}

In 2003, the NHMRC adopted the WHO recommendations, 'In Australia, it is recommended that as many infants as possible be exclusively breastfed until 6 months of age. It is further recommended that mothers then continue breastfeeding until 12 months of age, and beyond if both mother and infant wish'.² In October 2011, the NHMRC published new draft guidelines for public consultation. Although the recommendation has softened slightly, it still advocates that 'as many infants as possible be exclusively breastfed until around 6 months of age (22–26 weeks)'.¹²

Benefits of any breastfeeding

The literature is replete with evidence for the benefits of breastfeeding for both mother and child. Advantages for the child include increased resistance to diseases, lower rates of gastroenteritis, recurrent otitis media, pneumonia and lower respiratory tract infections (LRTIs). Additionally, there are lower rates of sudden infant death syndrome (SIDS), colitis, hypertension, obesity, hyperlipidaemia, atopic disease and diabetes, and a higher IQ.^{13,14}

For the mother, there is a delay in ovulation, decreased risks of breast and ovarian cancer and the bonding effects of breastfeeding. These benefits are well supported and apply almost universally to any breastfeeding for any length of time.

Benefits of breastfeeding exclusively

The major evidence based advantages for the child of exclusive breastfeeding are decreased rates of gastroenteritis, otitis media and LRTIs. This protection appears to relate to both duration and exclusivity of breastfeeding.^{7,15} The United Kingdom Millennium Study demonstrates that the risks of hospital admission with a diagnosis of gastroenteritis decreases from 1.1% to 0.5%.¹⁶ The risk of infection however, appears to relate more significantly to the age of introducing infant formula rather than complementary solids.¹⁷

Risks of exclusivity, increasing food allergies and evolving guidelines

There is an emerging body of evidence that EBF4–6 and introducing complementary solids from around 4 months of age has potential benefits. This can be achieved while maintaining breastfeeding.

Allergy, particularly food allergy, has increased in English speaking nations over the past 2 decades and has become a public health priority.^{18–25} For certain food groups, allergies may be 2–12 times more prevalent than 20 years ago.^{18,22,25} About 90% of infant allergies relate to peanut and egg. Recent Melbourne (Victoria) research confirmed high levels of IgE mediated allergy in infants aged 12 months. The prevalence of challenge-proven peanut allergy was 3.0%; raw egg allergy 8.9% and sesame allergy 0.8%.²³ Once established, peanut allergy may be lifelong, while egg allergy often subsides with time.

Recent research suggests decreased rates of peanut and egg allergy as a consequence of introducing these allergens in a critical early window likely to be the first 4–6 months of life.^{18,19,21}

The immune system of the human gut has a complex task of discrimination. It must

accurately differentiate between foreign proteins that are dangerous, ie. viral and bacterial particles, and foreign proteins that are food, ie. peanut, fish or egg proteins. It is likely that the gut is the organ most efficient at developing immunological tolerance.²⁵ It is also likely that there is a window of opportunity where the process of accurate discrimination is performed best. If delayed, it appears the task of learning discrimination and developing oral tolerance is less efficient and inappropriate allergic responses may emerge. The optimal window for the child to develop accurate immunological discrimination in the gut is likely to commence from at least 4 months of age.^{19,20,25} In a similar manner, coeliac disease may increase in frequency when gluten is withheld to 6 months and decrease when gluten is introduced between 4–6 months.^{26,27} Once established, coeliac disease is likely to be lifelong.

Recent review papers focusing on questions of food allergy, present a consensus that there is no need to delay the introduction of hyperallergenic foods and that there may be benefits to introducing appropriate complementary foods earlier than 6 months.^{19,20,25,28} The Australian Society of Clinical Immunology and Allergy recently advised relaxing recommendations to avoid certain food groups and to introduce solids from 4 months.²⁹

The new draft NHMRC guidelines, unlike the previous guidelines² no longer recommend avoiding hyperallergenic foods for atopic families.¹² The new guidelines state ‘introducing a variety of solid foods around the age of 6 months is consistent with reducing the risk of developing allergic syndromes’.¹² A systematic review of relevant studies provided to the European Commission by the European Food Safety Authority reported no evidence of benefit in withholding complementary foods beyond 4 months.⁹ The extensive literature review conducted by the NHMRC only briefly addresses the issue of the early introduction of solids.³⁰

Community and clinical experience

Extensive international studies demonstrate low levels of EBF6. In the UK, 1.2% of mothers are providing only breast milk to their child at 6 months.¹⁶ Different surveys within the past

5 years in Australia indicate low rates of EBF6 with estimates of 15.3% in Victoria,³¹ 12.6% in Perth,³² 16.7% in New South Wales³³ and 12.9% in Queensland.³⁴

Advice to EBF6 commonly contains the statement that the supply of breast milk will respond to the demand and that ‘virtually all mothers’ are able to exclusively breastfeed successfully given appropriate support.⁸ Caring for women with newborn babies on a daily basis, it is clear to me that, for many women, their milk supply on some days may not meet the total nutritional needs of their child. Many women genuinely try to breastfeed exclusively without success and often feel disappointed and distressed at their ‘failure’.

In primary care, the lead author finds that the large majority of women seen for antenatal or postnatal care are aware of the recommendation to EBF6. The promotion of EBF6 as a policy may risk the useful partial breastfeeding of those women who for biological or psychosocial reasons are unable to provide a larger volume of milk. The benefits of breastfeeding can often be maintained by the addition of complementary feeding that provides the necessary calorie intake for the child.

Discussion

The benefits of breastfeeding for infants and mothers are well proven. Recommendations to breastfeed exclusively for 6 months have been widely adopted by relevant organisations in Australia. These include the NHMRC,² The Royal Australian College of General Practitioners,³⁵ the Royal Australian College of Physicians³⁶ and the Australian Breastfeeding Association.³⁷

The most robust evidence in favour of EBF6 that the authors have been able to identify is lower risks of hospital admissions for gastroenteritis and LRTIs. While in the developing world gastroenteritis is dangerous and often fatal, this is not the case in Australia, where effective and affordable medical advice is generally available. In addition, the risk for gastroenteritis has been linked to the introduction of formula milk rather than solids.¹⁷

The authors support and applaud the benefits of breastfeeding, but little robust evidence exists in the scientific literature to show that the benefits of breastfeeding are lost or

diminished by adding complementary solids from 4 months. Similarly, with the exception of certain infections, there is little robust evidence that the benefits are amplified by making breastfeeding exclusive.

Kramer's original research and the current Cochrane review compare risks and benefits of breastfeeding and in particular exclusive breastfeeding. The Cochrane review concludes: 'thus, with the caveat that individual infants must still be managed individually, so that insufficient growth or other adverse outcomes are not ignored and appropriate interventions are provided, the available evidence demonstrates no apparent risks in recommending, as a general policy, exclusive breastfeeding for the first 6 months of life in both developing and developed country settings'.⁷

Exclusive breastfeeding for 6 months has become part of the health culture in developed nations. Compared to the 2003 guidelines, the new draft NHMRC guidelines provide greater flexibility in regards to the introduction of solids. However, the guidelines could have gone further and recommended exclusive breastfeeding for 4–6 months combined with the early introduction of solids.

Health professionals caring for children, thousands of families and many schools are now responding to, coping with, and funding the consequences of food allergies that have high social impact and are often lifelong.^{22,23,25,28} The emerging evidence that introducing complementary foods by around 4 months may decrease the risks of these health problems is therefore particularly pertinent.

It would now appear that the body of evidence for returning infant feeding recommendations to EBF4–6 is greater than it was when EBF4–6 was altered to EBF6.

Key points

- Breastfeeding offers many health benefits to both mother and child. The benefits are likely to be amplified by prolonging breastfeeding.
- Current literature does not provide a convincing argument on why exclusive breastfeeding is necessary to facilitate the many benefits of any breastfeeding in developed nations.
- There has been little public health promotion

of the concept that all breastfeeding is desirable and beneficial to mother and child.

- Delayed exposure of the child to complementary solids may be a factor in the recent increase in food allergies in developed nations.
- There is an emerging body of evidence to suggest that there are benefits to introducing complementary foods from around 4 months and the authors recommend a return to a public health policy of exclusive breastfeeding for 4–6 months.

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Conflict of interest: none declared.

Acknowledgement

The authors wish to thank Dr Harriet Hiscock for commenting on manuscript drafts. Dr Hiscock is a paediatrician and postdoctoral research fellow at the Royal Children's Hospital and Murdoch Childrens Research Institute.

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