Nutritional Support in Paediatric Patients

Module 10.1

Nutrition in infancy and childhood and prevention of diseases

Prof. Hania SZAJEWSKA, MD
Department of Paediatrics
The Medical University of Warsaw
01-184 Warsaw, Dzialdowska 1, Poland
email: hania@ipgate.pl

Learning objectives:

To discuss current evidence and recommendations on the effects of early nutritional interventions for the prevention of:
- Allergic disease;
- Coeliac disease;
- Type 1 diabetes;
- Obesity.

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Key messages:

Allergy prevention
- Exclusive breastfeeding for at least 4 months and up to 6 months is desirable;
• Infants with a documented hereditary risk of allergy (i.e., an affected parent and/or sibling) who cannot be breastfed exclusively should receive a formula with confirmed reduced allergenicity, i.e., a partially or extensively hydrolysed formula, as a means of preventing allergic reactions, primarily atopic dermatitis;
• Soy protein formulae have no role in the prevention of allergic disease;
• There is no convincing scientific evidence that the avoidance or delayed introduction of potentially allergenic foods (e.g., cow’s milk protein [except for whole cow’s milk], eggs, peanuts, tree nuts, fish and seafood) beyond 4-6 months reduces allergies in infants considered to be at increased risk for the development of allergic diseases or in those not considered to be at increased risk;
• Probiotics do not have an established role in the prevention of allergy;
• For long-chain polyunsaturated fatty acids (LCPUFA), vitamins, and other micronutrients, no specific recommendations exist and further studies are needed.

Coeliac disease and type 1 diabetes
• It is prudent to avoid both early (less than 4 months) and late (7 months or later) gluten introduction and to introduce gluten while the infant is still being breastfed. This might reduce the risk of coeliac disease, type 1 diabetes mellitus, and wheat allergy;

Obesity
• Exclusive breastfeeding for 6 months and continuation of breastfeeding in conjunction with consumption of complementary foods for 1 year or more should be promoted.
1. Introduction

Emerging evidence suggests that nutrition during early life may have consequences extending into adulthood. The pathogenesis of a number of diseases, including so-called non-communicable diseases (NCD) (i.e., non-infectious and non-transmissible diseases) such as cardiovascular diseases, obesity, diabetes mellitus, allergy and other immune diseases, some forms of cancer, mental health problems, osteoporosis, chronic respiratory disease, and musculoskeletal conditions, has been linked, among other factors, to maternal and early infant diet and nutrition.

The objective of this module is to summarise recent evidence on early nutritional interventions that potentially may modify disease risk later in life. The focus is on allergic disease, coeliac disease, type 1 diabetes, and obesity. MEDLINE was searched in February 2013. Preference was given to evidence and recommendations from scientific societies published in the last 5 years (2008-2013).

2. Allergic Disease

2.1. Breastfeeding

Exclusive breastfeeding may help to prevent allergic disease by decreasing exposure to exogenous antigens, protecting against infections, promoting gastrointestinal mucosal maturation and the development of gut microbiota, and conferring immunomodulatory and anti-inflammatory benefits (1).

Meta-analyses of data published before 2007 found probable and possible evidence that exclusive breastfeeding protects against asthma, wheezing, and atopic dermatitis (2,3). However, a recent meta-analysis on the relationship between exclusive breastfeeding and atopic disease does not support these conclusions (4).

Similarly, the results of the International Study of Asthma and Allergies in Childhood (ISAAC) Phase Two, involving more than 51,000 randomly selected children aged 8 to 12 years, documented a lack of a protective effect of prolonged (>4 months) exclusive breastfeeding on the risk of developing childhood eczema (5).

Overall, the evidence is inconsistent, showing a protective effect, no effect, or even a predisposing effect.

The inconsistent results do not mean that breastfeeding does not have a significant effect. Rather, these inconsistencies likely reflect a variety of methodological problems associated with investigating breastfeeding in studies. These problems include an inability to randomise and blind; the retrospective design of many studies and the potential for parental recall bias; imprecise definitions of the intervention with no clear distinction between ‘exclusive breastfeeding’ and ‘any breastfeeding’; the lack of strict diagnostic criteria for allergic diseases, and, finally, reverse causation.

Despite the controversy, everyone agrees that even if breastfeeding does not provide a strong protective effect, it should be promoted for its nutritional, immunological, and psychological benefits.

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<th>Recommendations from scientific societies</th>
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<td>Exclusive breastfeeding for at least 4 months, but preferentially up to 6 months, is recommended (1,6,7,8).</td>
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2.2. Dietary products with reduced allergenicity

2.2.1. Hydrolysed formula

Formulae that contain protein that has been hydrolysed to reduce the potential risk associated with intact cow’s milk protein are widely available. These formulae are differentiated by the protein source (whey and casein) and by the degree of hydrolysis (partially or extensively hydrolysed).
The American Academy of Pediatrics defines partially hydrolysed formulae as those containing reduced oligopeptides that have a molecular weight generally of <5000 Da, and defines extensively hydrolysed formulae as those containing only oligopeptides that have a molecular weight <3000 Da (7).

Not all hydrolysed formulae are equal. Efficacy and safety should be established for each hydrolysed formula, as factors such as the protein source, hydrolysis method, and degree of hydrolysis that often depend on the manufacturer contribute to differences among hydrolysates.

The Cochrane Review (9) (search date: March 2006) found that in high-risk infants who are unable to be completely breastfed, there is limited evidence that prolonged feeding with a hydrolysed formula compared to a cow's milk formula reduces infant and childhood allergy and infant cow's milk allergy.

Two meta-analyses published in 2010 consistently showed that consumption of partially hydrolysed 100% whey formula (pHF) compared to standard infant formula (SF) reduced the risk of all allergic diseases, particularly atopic dermatitis/eczema, at some time points, among children at high risk for allergy (10,11). In all of the studies, a reduced incidence of atopic dermatitis was found regardless of the study design, infant population, follow-up time, or study location (11). The pooled results did not provide evidence of a difference between the pHF and SF groups in the incidence of either wheezing/asthma or rhinitis (10). Moreover, no significant difference was found between the pHF and extensively hydrolysed formulae (10). A lack of methodological rigor in many trials calls for caution in interpretation of the results. However, reassuringly, the strongest evidence comes from the well-designed and conducted, independently funded, randomised controlled trial (RCT) – German Infant Nutrition Intervention (GINI) Study (12).

### Recommendations from scientific societies

Current recommendations agree that infants with a documented hereditary risk of allergy (i.e., an affected parent and/or sibling) who cannot be breastfed exclusively should receive a formula with confirmed reduced allergenicity, i.e., a partially or extensively hydrolysed formula, as a means of preventing allergic reactions, primarily atopic dermatitis (7,8,13,14).

### 2.2.2. Soy protein formula

A meta-analysis of 3 RCTs (search date: March 2006) found that in infants at high risk of allergy who were unable to be completely breastfed, feeding with soy formula compared to cow’s milk formula did not reduce the risk of allergies in later infancy and childhood (15).

### Recommendations from scientific societies

Soy protein formulae have no role in the prevention of allergic diseases (8,16,17).

### 2.2.3. Amino acid-based formula

There are no studies on the consumption of amino acid-based formulae for allergy prevention.

### 2.3. Timing of introduction of complementary food

Earlier guidelines that recommended extended avoidance/delayed introduction of solid foods, specifically of potentially allergenic foods, are being replaced by guidelines recommending early exposure.

No effect of the delayed introduction of solid foods on the prevalence of food allergies has been suggested by the results of a number of prospective birth cohort studies (e.g., GINI Study (18), LISA Study (19), KOALA Study (20)).
The recent large Generation R Study, which was a population-based, prospective, cohort study conducted in Rotterdam that involved almost 7000 children, demonstrated that the timing of the introduction of allergenic foods (i.e., cow’s milk, hen’s eggs, peanuts, tree nuts, soy, and gluten) was not associated with eczema and wheezing in children 4 years or younger (21).

A recent population-based, cross-sectional study, which involved 2589 infants, found that introducing egg into the diet later was associated with a higher risk of egg allergy, irrespective of eczema status. The introduction of cooked eggs (i.e., boiled, scrambled, fried, or poached) compared with baked eggs (egg-containing products such as cakes or biscuits) at 4 to 6 months was the most protective intervention against developing egg allergy at the age of 1 year (22). The latter finding indicates that in addition to timing, the form of food is important.

In summary, recent evidence challenges earlier dogma that elimination or the delayed introduction of specific food allergens reduces the risk of allergic diseases. However, the exact timing of the introduction of complementary foods is still under discussion (23). Worldwide, research projects are also underway to resolve the controversies [e.g., EAT (Enquiring About Tolerance; www.eatstudy.co.uk) study; the LEAP (Learning Early About Peanut Allergy; www.leapstudy.co.uk) study].

### Recommendations from scientific societies

| Current recommendations from the scientific societies agree that there is no convincing scientific evidence that the avoidance or delayed introduction of potentially allergenic foods (e.g., cow’s milk protein [except for whole cow’s milk], eggs, peanuts, tree nuts, fish and seafood) beyond 4-6 months reduces allergies in infants considered to be at increased risk for the development of allergic diseases or in those not considered to be at increased risk (7,8,24). Highly allergic foods are best first introduced at home, rather than at a day-care centre or at a restaurant (8). |

#### 2.4. Probiotics and/or prebiotics

It has been suggested that improved hygiene and the reduced exposure of the immune system to microbial stimuli early in childhood contribute to the rising number of allergic disorders worldwide (25).

There are differences in the neonatal gut microbiota that may precede or coincide with the early development of atopy. Atopic subjects have more clostridia and tend to have fewer bifidobacteria than non-atopic subjects.26 There is evidence suggesting a crucial role for a balanced commensal gut microbiota in the maturation of the early immune system.

A number of recent meta-analyses have suggested that probiotics are effective in preventing eczema, particularly if the probiotics are administered both pre- and postnatally (27, 28, 29). It is well accepted that all probiotics are not created equal. One major limitation of all of these meta-analyses is that all of them pooled data obtained from different probiotic strains, with no analyses based on individual probiotic strain(s). There is a need to determine which probiotic microorganisms are suitable for use and in which type of population.

Like probiotics, prebiotics and synbiotics may potentially affect the development and severity of allergic disease (30,31,32). However, evidence regarding these products is even more limited.

### Recommendations from scientific societies

Based on a qualitative and narrative review, the World Allergy Organization (WAO) recently (2012) concluded that probiotics do not have an established role in the prevention of allergy. The WAO also noted that no single probiotic supplement or class of supplements has been demonstrated to influence the course of any allergic manifestation or long-term disease efficiently, or to be sufficient to do so (33).
2.5. Long-chain polyunsaturated fatty acids (LCPUFA)

It has been hypothesised that low consumption of n-3 LCPUFA (e.g., oily fish), typical of the diet in many Westernised countries, results in reduced maternal consumption of n-3 LCPUFA, favours more proinflammatory n-6 LCPUFA, and contributes to the development of allergy and asthma (34).

Epidemiological studies do suggest an association between the intake of fish oil and a reduced risk of allergy (35).

In contrast to the epidemiological data, a meta-analysis (search date: 2008) of 10 publications (representing 6 RCTs) found no clear evidence of a benefit in regard to reducing the risk of allergic sensitisation or developing a favourable immunological profile with use of n-3 or n-6 LCPUFA (36).

More recent evidence suggests that the timing of the intervention may play an important role. The Docosahexaenoic Acid to Optimise Mother Infant Outcome (DOMInO) randomised controlled trial found that while maternal n-3 LCPUFA supplementation (900 mg/day) during pregnancy did not reduce the overall incidence of IgE-associated allergies in the offspring’s first year of life, it reduced the risk of atopic eczema and egg sensitisation (37).

In contrast, n-3 LCPUFA supplementation carried out exclusively during the postnatal period demonstrated mixed results, with one trial showing no effect (38) and another suggesting only a transient effect on symptoms of respiratory disease (39). Further research is needed to establish the optimal timing of n-3 LCPUFA supplementation and its long-term effects.

2.6. Other nutritional interventions

A recent systematic review and meta-analysis of observational trials (no RCTs were identified) concluded that although the evidence is weak, it is nevertheless supportive with respect to the consumption of vitamins A, D, and E; zinc; fruit and vegetables; and a Mediterranean diet for the prevention of atopic disease, namely asthma (40).

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<th>Recommendations from scientific societies</th>
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<tr>
<td>For LCPUFA, vitamins, and other micronutrients used for allergy prevention, no specific recommendations exist and further studies are needed.</td>
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3. Coeliac Disease

3.1. Breastfeeding

The exact mechanisms that underlie the relationship between breastfeeding and possible protection against coeliac disease (CD) remain uncertain. Likely explanations have been extensively discussed in earlier studies and reviews (41,42).

In brief, it has been postulated that breast milk contains factors such as secretory IgA antibodies, lactoferrin, lysozyme, and others that contribute to passive immunity. These factors may contribute to the reduced number of gastrointestinal infections potentially contributing to the pathogenesis of coeliac disease by increasing gut permeability or alterations to the immune system (43). Moreover, human milk contains cytokines such as down-regulatory transforming growth factor β that may influence immune development and the type of immune response. In addition, human milk contains gluten in small quantities (44,45) this can, perhaps, induce tolerance to gluten as has been suggested for other antigens (46).

Whether or not breastfeeding protects or delays the clinical presentation of coeliac disease remains controversial. There are studies that show a protective effect of breastfeeding as well as studies that show no effect. No studies have shown a long-term preventative effect of breastfeeding (42,47).
3.2. Breastfeeding at the time of gluten introduction

Results from a meta-analysis of 5 observational, case-control studies suggest that breastfeeding at the time of gluten introduction is associated with a lower risk of coeliac disease compared with that associated with formula feeding. However, the majority of these studies were based on retrospectively collected feeding data. It is unclear whether breastfeeding provides a permanent protection or only delays the onset of coeliac disease. Available data are insufficient to prove causality. Moreover, one more recent, prospective study found no effect of breastfeeding at the time of gluten introduction on coeliac disease autoimmunity, but the effect on biopsy-proven coeliac disease is unknown (48).

3.3. Timing of gluten introduction

The role of age at gluten introduction with respect to the risk of coeliac disease is unclear. The data from observational studies suggest that early (≤3 months after birth), and possibly late (≥7 months after birth), introduction of gluten may be associated with an increased risk of coeliac disease and probably should be avoided. The only interventional study suggested that delayed introduction of gluten (12 months of age) may be beneficial. However, the results of this RCT should be viewed with caution given the small sample size and unclear risk of bias (42).

3.4. Amount of gluten at weaning (and later)

The results of one incident, case-referent study documented that the introduction of gluten in large amounts compared with small or medium amounts increased the risk of coeliac disease (49). These data support previous findings, also from Sweden (50). In the mid 1980s, this country experienced an epidemic of coeliac disease in children younger than 2 years of age. A twofold increase in the average daily consumption of gluten was followed by a fourfold rise in the incidence of coeliac disease. When gluten consumption decreased 10 years later, an abrupt fall in the incidence of coeliac disease was observed. However, the recommended age for gluten introduction was also changed preceding both the start of the epidemic (from 4 to 6 months) and the end (back to 4 months), which changed the proportion of infants introduced to gluten while being breastfed. Still, the amount of gluten is likely to be a contributing risk factor for coeliac disease. Whether this is a dose–response or a threshold effect remains unknown.

Most recently, data on the total prevalence of coeliac disease in 2 birth cohorts of 12-year-olds from the epidemic and post-epidemic periods were published. Compared with children born during the epidemic, children born after the epidemic had a significantly lower risk of having coeliac disease at 12 years of age (prevalence ratio 0.75, 95% CI 0.6 to 0.93) (51).

Recommendations from scientific societies

| The European Society of Paediatric Gastroenterology, Hepatology and Nutrition recommends avoiding the introduction of gluten both early (less than 4 months) and late (7 months or later) and to introduce gluten while the infant is still being breastfed. This might reduce not only the risk of CD, but also the risks of type 1 diabetes mellitus and wheat allergy (13). |
| The American Academy of Pediatrics recommends the introduction of complementary foods, including gluten, between 4 and 6 months of age. Gluten-containing foods should be introduced when the infant receives only breast milk and not milk formula or other milk products (52). |

4. Type 1 Diabetes
Type 1 diabetes is an immunologically mediated disease characterised by the destruction of insulin-producing β-cells of the pancreatic islets in genetically susceptible persons. The disease is characterised by the presence of disease-related autoantibodies. These are islet-cell antibodies; insulin autoantibodies; and autoantibodies to glutamic acid decarboxylase (GAD), the tyrosine phosphatase-related insulinoma-associated 2 molecule (IA-2), and zinc transporter 8 (ZnT8). Positivity for two or more antibodies signals a risk of 50% to 100% for the development of type 1 diabetes over the course of 5 to 10 years (53).

4.1. Breastfeeding

Two meta-analyses suggested that breastfeeding for at least 3 months reduced the risk of childhood type 1 diabetes compared with breastfeeding for less than 3 months, with a 19% (95% CI 11%–26%) reduction and a 27% (95% CI 18%–35%) reduction, respectively (54,55). The authors of both meta-analyses called for caution when interpreting the results because of the possibility of recall biases and suboptimal adjustments for potential confounders in the studies. Several studies published since these meta-analyses have reported similar results (55).

4.2. Cow’s milk

It has been suggested that a possible mechanism in the development of type 1 diabetes is the exposure to complex dietary proteins, particularly cow’s milk β-lactoglobulin, which stimulates an immune-mediated process cross-reacting with pancreatic β cells. Thus, early introduction of cow’s milk protein into the infant diet may be triggering type 1 diabetes. The effect of consumption of an extensively hydrolysed, casein-based formula or a standard cow’s-milk–based formula (whenever breast milk was not available) during the first 6 to 8 months of life on beta-cell autoimmunity was evaluated in the Finnish TRIGR (Trial to Reduce IDDM in the Genetically At-Risk) Study conducted in Finland. This was a double-blind RCT that involved 208 full-term infants at risk for type 1 diabetes (defined as HLA risk genotype and a first-degree relative with type 1 diabetes) (56). During a 10-year follow-up, the unadjusted hazard ratio for positivity for one or more autoantibodies in the casein hydrolysate formula group, as compared with the control group, was 0.54 (95% CI 0.29 to 0.95), and the hazard ratio adjusted for an observed difference in the duration of exposure to the study formula was 0.51 (95% CI, 0.28 to 0.91). The unadjusted hazard ratio for positivity for two or more autoantibodies was 0.52 (95% CI, 0.21 to 1.17), and the adjusted hazard ratio was 0.47 (95% CI, 0.19 to 1.07). The rate of type 1 diabetes by age 10 was similar in both groups (6% in the experimental group compared with 8% in the control group). However, the study was underpowered for this outcome (56). More information will come from a larger TRIGR study now ongoing in 15 countries. The enrolment of a total of 2160 infants was completed in 2006. The results, including the effect on type 1 diabetes, are expected only after 2017 when all infants recruited into the study will have reached 10 years of age (http://trigr.epi.usf.edu).

4.3. Gluten

Two observational studies were conducted in children at risk for the development of CD or type 1 diabetes mellitus; they showed that the early introduction of gluten (<3 months) seems to be linked to an increased risk for the development of islet cell autoantibodies in infants at risk for type 1 diabetes mellitus (based on HLA typing, or having a first-degree relative with type 1 diabetes mellitus) (57,58). One of these studies also found an increased risk in infants first exposed to gluten at 7 months or later (58). Data from observational studies have suggested that the introduction of food antigens
(including gluten) while infants are still being breastfed, even if the infant is younger than 6 months, may protect against the development of type 1 diabetes mellitus. The introduction of gluten-containing foods while the infant is receiving only breast milk may be more important than the absolute time of exposure. The results of a pilot, randomised, intervention study (BABYDIET) contradict the findings from the observational trials. This study aimed to determine the effect of delayed exposure to gluten (at 12 months of age) compared with the exposure at 6 months of age on the risk of type 1 diabetes autoimmunity in children at risk of type 1 diabetes (59). Only 70% of families adhered to the dietary protocol. Delayed gluten exposure until the age of 12 months did not reduce the 3-year risk of islet autoimmunity (12% vs. 13%; P=0.6). Similar numbers of children developed type 1 diabetes. The limitations of the study (i.e., the study was underpowered to detect type 1 diabetes; high drop-out rate) call for caution in interpreting this evidence. They also preclude modification of the current paediatric guidelines with respect to the introduction of gluten into the diet of children at risk for type 1 diabetes.

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<tr>
<td>The European Society for Paediatric Gastroenterology, Hepatology and Nutrition recommended that it is prudent to avoid both early (&lt;4 months) and late (≥7 months) introduction of gluten, and to introduce gluten gradually while the infant is still being breastfed because this may reduce the risk of coeliac disease, type 1 diabetes mellitus, and wheat allergy (13).</td>
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### 4.4. Vitamin D

One meta-analysis (search date: June 2007) of data from case-control studies showed a significantly reduced risk (29% reduction) of type 1 diabetes in children who were supplemented with vitamin D compared to those who were not supplemented (OR 0.71, 95% CI 0.60 to 0.84). The result of a cohort study was in agreement with that of the meta-analysis (60). Although these results are encouraging, the authors highlighted the limitations of the included trials. Evidence from adequately powered, randomised controlled trials with long periods of follow-up is needed to confirm whether vitamin D supplementation will actually lower the risk of type 1 diabetes.

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<td>For vitamin D for prevention of type 1 diabetes, no specific recommendations exist and further studies are needed.</td>
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### 5. Obesity

#### 5.1. Breastfeeding

Exclusive breastfeeding may help to prevent obesity through conferring hormones such as leptin, adiponectin and ghrelin, which might have an effect on long-term appetite signalling (61). The evidence is conflicting as to whether prolonged and exclusive breastfeeding decreases or has no effect on the risk of obesity. Almost all of the available evidence is based on observational studies. While some studies demonstrated a reduced risk, other studies did not find an effect of breastfeeding on obesity (62). A 6.5-year, follow-up, PROBIT study that investigated cluster-randomised breastfeeding promotion found no difference in the body mass index after between 3 and 6 months of exclusive breastfeeding (63).

Gillman critically evaluated evidence for and against the hypothesis that breastfeeding reduces the risk of obesity. Although overall evidence suggests that breastfeeding (i.e., initiation, longer duration, or exclusivity) may have a protective effect, it ‘no longer appears to be a major determinant’. A number of methodological problems associated...
with investigating breastfeeding have been addressed, including confounding, reverse causality, generalisability, and misclassification (64).
Recently, the protective effect of breastfeeding against obesity was considered as one of several myths about obesity (65).

**Recommendations from scientific societies**

Despite the controversy, even if breastfeeding does not provide a strong protective effect against obesity, there is a consensus that exclusive breastfeeding for 6 months (or for at least 4 months) and continuation of breastfeeding in conjunction with consumption of complementary foods for 1 year or more should be promoted (1,6).

5.2. Complementary feeding

A recent systematic review (search date: May 2011) found 4 studies that investigated the relationship between the earlier introduction of solid food and the risk of later overweight/obesity. There was some evidence associating early introduction of solid food with childhood overweight (62).

A narrative review by Przyrembel suggested that early introduction (<12-17 weeks of age) compared to late introduction of complementary foods is linked to an increased risk of overweight/obesity or body fat later in life. The risk might be smaller in breastfed infants compared with non-breastfed infants. There is only limited evidence on the effect of composition or constituents of complementary food on the risk of adiposity (66).

The European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) recommended that complementary feeding (defined as all solid foods and liquids other than breast milk or infant formula and follow-on formula) should not be introduced in any infant before 17 weeks, and all infants should start complementary feeding by 26 weeks (13).

The American Academy of Pediatrics (AAP) recommends that complementary foods may be introduced between the ages of 4 and 6 months. There is a difference of opinion among experts – the AAP Section on Breastfeeding recommends exclusive breastfeeding for at least 6 months (67).

5.3. Protein content in infant formula

While significant changes have occurred in the composition of infant formulae over the years, the protein content is still higher than that in breast milk.

Data from observational trials suggested that protein intake during infancy was associated with rapid early weight gain and later obesity (68).

In one recent, multicentre RCT, 1138 formula-fed infants were randomised to receive cow milk-based infant and follow-on formulae with lower (1.77 and 2.2 g protein/100 kcal, respectively) or higher (2.9 and 4.4 g protein/100 kcal, respectively) protein contents for the first year. Both protein contents were within the recommended range.69
At 2 years, data from 934 (82%) of 1138 randomised infants were available. The data showed that the weight-for-length Z score of infants in the lower protein formula group was lower than that of the higher protein group, and it was similar to that of the breastfed reference group (n=619) and to the international growth standards of the World Health Organization (69).

The findings indicate that early limitation of protein intake prevents excessive weight gain. However, further trials by an independent research team are needed to confirm these positive results. If the results are confirmed, questions such as which dietary factors (e.g., total protein intake? specific milk protein/amino acid(s)?) are crucial for the effect. Furthermore, it needs to be established whether the modulation of weight gain persists over a longer period of time.
Recommendations from scientific societies
There are no specific recommendations from the scientific societies on protein content in infant formulae.

6. Summary

This module reviews current evidence on early nutritional interventions used to reduce the risk of allergic disease, coeliac disease, type 1 diabetes, and obesity. Practical evidence-based recommendations from scientific societies are provided.

7. References


