

Complementary and Allergenic Food Introduction in Infants

An Umbrella Review

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Introduction

Infant and child **nutrition is key for healthy** cognitive and physical **development**. Poor quality diets are a **risk factor for non-communicable diseases**.^{1,2} These diseases include obesity, cardiovascular disease, autoimmune disorders, and allergic disease.

Food introduction **guidelines** commonly separate their advice by general complementary food and potentially allergenic foods and is **often inconsistent**.³ Complementary food is defined as all solid and liquid foods other than breast milk or infant formula.

Multiple systematic reviews examine the introduction of foods in relation to abstract individual health outcomes, but the **balance of harms and benefits** has not been overviewed systematically.

OBJECTIVE

To perform an **overview of systematic reviews on age of introduction** of complementary and allergenic **foods** to the infant diet and long and short-term health outcomes.

Methods

Search Strategy & Selection

- 4 **databases**: MEDLINE, EMBASE, Cochrane PubMed (Inception to July 25, 2022)
- Screening, full text review, extraction, and quality assessment performed in **duplicate** using Covidence. We piloted the selection process with 50 titles and abstracts, 10 full texts, and 2 extractions and quality assessments.
- Quality assessment: AMSTAR 2 tool⁴ & GRADE

Eligibility

- Systematic reviews and meta-analyses** examining the age of introduction of complementary or allergenic foods before age 1.
 - Outcomes in childhood from age 1**, including allergic disease, autoimmune diseases, inflammatory diseases, neurodevelopment, nutrition, and weight.



Conclusion

Current evidence supports introducing complementary foods **around 6 months** and allergenic foods **before 11 months**. Low certainty of evidence for many outcomes.

Results

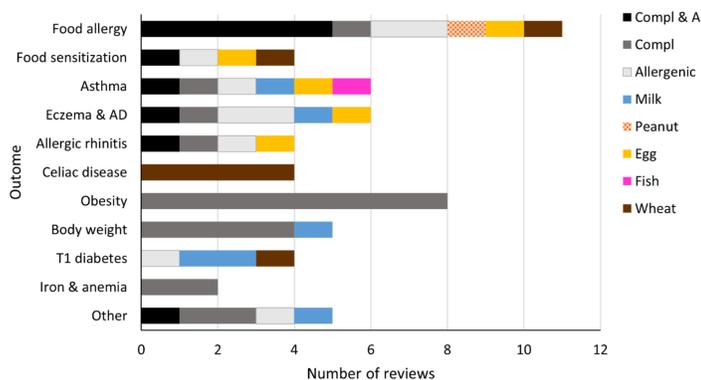
- 4015 records screened
- 156 full-texts reviewed
- 32 systematic reviews **included**
- 410 original articles
- Evidence found for 10 outcomes

TABLE 1
Summary of Characteristics of the Included Reviews

Characteristics	Category	N	%
Study design	Both RCT and observational	22	73.3
	RCTs only	3	10.0
	Observational only	7	23.3
Intervention or exposure	Complementary and allergenic solids ^a	5	16.7
	Complementary foods	14	46.7
	Allergenic solids ^a	3	10.0
	Peanut only	1	3.3
	Egg only	1	3.3
	Fish only	1	3.3
Language	English only	17	56.7
	English and others	3	10.0
	No restriction	9	30.0
	Not specified	3	10.0
Overall confidence (AMSTAR 2)	High	7	23.3
	Moderate	5	16.7
	Low	8	26.7
	Very low	12	40.0

RCT, randomized controlled trial. (a) Reviewed the literature on allergenic solids, both individual foods and/or as a group.

FIGURE 1
Systematic reviews (n=32) by type of complementary food within each outcome category.

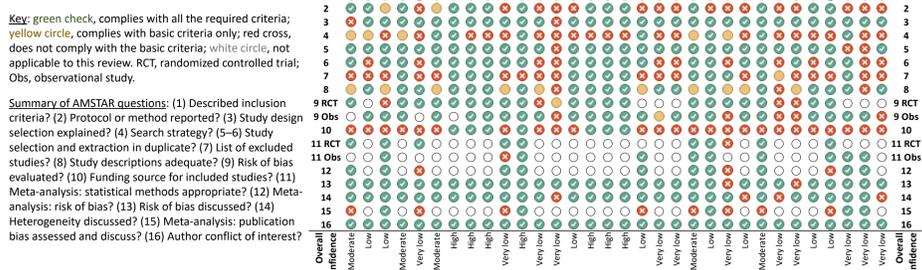


Results

TABLE 2 Associations found between age of introduction of each exposure and outcomes in childhood

DECREASED RISK OF OUTCOME	CERTAINTY OF EVIDENCE (GRADE)
◆ Peanut <11m & PEANUT ALLERGY	MODERATE/HIGH
◆ Egg <6m & EGG ALLERGY	MODERATE
◆ Fish <4m or <9m & FISH ALLERGY	VERY LOW
◆ Fish <8m or <9m & ASTHMA	VERY LOW/LOW
◆ Milk <4m or Fish <11m & ECZEMA	VERY LOW
◆ Fish ≤12m & ALLERGIC RHINITIS	LOW
◆ Solids <4m & IRON DEFICIENCY (DEVELOPING COUNTRIES)	LOW
INCREASED RISK OF OUTCOME	CERTAINTY OF EVIDENCE (GRADE)
◆ Solids <4m & OBESITY	LOW
◆ Solids <4m & ECZEMA	VERY LOW
◆ Gluten and milk <4m & T1 DIABETES	VERY LOW
NO ASSOCIATION	GAPS FOUND
◆ Solids, milk, or wheat & FOOD ALLERGY	◆ Allergenic foods & OVERWEIGHT OR OBESITY
◆ Solids, milk, peanut, tree nuts, sesame, or egg & ASTHMA	◆ Any food & DEHYDRATION OR GASTROINTESTINAL DISEASES
◆ Solids, milk, peanut, tree nuts, seeds, or egg & ECZEMA	◆ Solids &
◆ Fruits, vegetables, meat & ALLERGIC RHINITIS	BONE HEALTH/ OSTEOPOROSIS,
◆ Solids <6m or <12m & OBESITY	EOSINOPHILIC ESOPHAGITIS,
◆ Solids <6m or milk & BODY WEIGHT	PERNICIOUS ANEMIA,
◆ Gluten or milk & T1 DIABETES	DIABETES TYPE 2,
◆ Solids <4m & IRON STATUS	DENTAL CARIES,
◆ Gluten & COELIAC DISEASE/AUTOIMMUNITY	NEURODEVELOPMENT,
◆ Allergenic foods & AUTOIMMUNE DISORDERS	CARDIOVASCULAR DISEASE,
◆ Milk & GASTROINTESTINAL BLOOD LOSS	RESPIRATORY TRACT INFECTION, OR
	DIARRHEA

FIGURE 2 Full AMSTAR 2 ratings of included systematic reviews.



Solids = complementary solid, semi-solid, or liquid food that is not infant formula, breastmilk, supplements, vitamins, or water. Milk, cow's milk. M, months. Certainty of evidence as assessed by GRADE.

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