What does the evidence tell us…..

• Within the development of taste preferences there are:
  ✓ Genetic component
    (Wardle & Cooke 2008)
  ✓ Environmental component
    (Addessi, Galloway, Visalberghi, & Birch, 2005; Breen, Plomin, & Wardle, 2006)
Soapy taste of coriander linked to genetic variants
Dislike of herb traced to genes encoding odour and taste receptors.


Genetic variation and fussiness
Ability to taste PROP (6-<i>n</i>-propylthiouracil) (bitter compound in vegetables like broccoli and Brussels sprouts)
Outline of presentation

- What is fussy or picky eating?
- What’s new
- Concerns from a nutritional perspective
- Research in progress to prevent fussy eating

What is picky eating?

- Picky eating (alternatively known as fussy, faddy, choosy
- or selective eating) is a common behaviour in early childhood.
- It causes a lot of stress on children and families
- It’s a phenomenon of developed countries
- Complex set of interactions between parents/carers and children which is centred around food selection and consumption.
“There is no agreement on a formal definition of picky eating”

Commonly accepted definition

picky/fussy eaters are children ‘who consume an inadequate variety of foods though rejection of a substantial amount of foods that are familiar (as well as unfamiliar) to them’
It does however have common characteristics

- Includes rejection or restriction of familiar and unfamiliar foods

Thus includes an element of Neophobia

**Neophobia**

*Food neophobia* is generally regarded as the reluctance to eat, or the avoidance of, new *foods*. In contrast, 'picky/fussy' eaters are usually defined as children who consume an inadequate variety of *foods* through rejection of a substantial amount of *foods* that are familiar (as well as unfamiliar) to them (Halford et al 2007).
What’s new?

• Research on fussy or picky eating has exploded within the last 2-3 years
  • Only in developed countries

An issue with the evidence

• This is further compounded by a lack of longitudinal observational data, with most studies using only cross-sectional data.
• Addressing these problems would enable evidence-based contributions to inform more consistent advice for parents and carers from healthcare providers.
How common is it?

- Reported to be anywhere between 6 and 50% of children
- Depends on how you define it, how you assess fussy eating, the population group you are looking at and the age of the children.


<table>
<thead>
<tr>
<th>Authors</th>
<th>Country</th>
<th>Age (years)</th>
<th>Prevalence (%)</th>
<th>Assessment method</th>
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<tr>
<td>Xue, Lee et al. (2015)</td>
<td>China</td>
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<td>6</td>
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<td>56</td>
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<td>8.4</td>
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<td>18 (boys)</td>
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<td>Jacob et al. (2003)</td>
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<td>SFQ – 4 items</td>
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<td>Carew et al. (2002)</td>
<td>New Zealand</td>
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<td>V. Li et al. (2001)</td>
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<td>13–27</td>
<td>36</td>
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<td>30</td>
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</table>
Highlighting the issue

• Do you think your child is a picky eater?
  • 25% said always a picky eater
• When provided with a list of typical behaviours
  • Prevalence changed to 49%

Defining problem eating: fussy/picky

😊 Not always hungry at mealtime
😊 Does not seem to enjoy meals
😊 Has strong food preferences
😊 Has strong dislikes
😊 Often refuses to eat
😊 Requests specific foods and then refuses them
😊 Wants food prepared in specific ways
😊 Tries to end a meal after a few bites
😊 Does not accept new foods readily
😊 Eats a limited variety of foods

(Reau et al 1996, Jacobi et al 2003)
Concerns from a nutritional perspective

- Weight (indicator of growth) and body composition
- Nutrient deficiencies (particularly if important foods or food groups are excluded from the diet)
- Child and parent relationships with food and eating
- Does it persist into adulthood?

What is the concern?

Overall, picky eating could be hypothesised to lead to a reduction in food intake with a distortion of nutrient intake through poor dietary variety.
Rationale for why children with fussy eating may be overweight

Energy balance

- Many studies have reported that energy intakes in picky children are not different from those of non-picky children and adequate in comparison with RDI.
- However, others have reported a higher energy intake in picky eaters, perhaps due to a high intake of energy-dense foods such as confectionery and savoury snacks, or intakes lower than non-picky children or substantially below the RDI.
What do we know about diet quality of fussy eaters?

- Fussy eaters consume less vegetables (and sometimes fruit)
- This is often replaced by increased consumption of unhealthy foods with high sugar, salt, and/or fat content.
- Fussy eaters have a history of lower vegetable and whole grain intake but a higher intake of ready-to-eat-meals and snacks.
- This poor eating pattern contributes to the paradoxical situation in which an increasing rate of childhood overweight in Western countries is accompanied by essential nutrient deficiencies.
- A recent study found that picky eaters ate a lower total number of foods.
Micronutrients

Food group of most concern

Lower intake of vegetables in picky eaters, which is a frequent finding.
Health issues for fussy eaters

Constipation

- Constipation is a common condition in children, affecting up to 30% of school-age children in the UK and accounting for about 3% of paediatric consultations, and seems to affect children who are picky eaters disproportionately.

Fibre rich foods

![Fibre rich foods image](image-url)
Foods to address

• Vegetables particularly fibre rich
• Meat particularly non-processed meats
• Any food group which is avoided
• Promotion of nutrient dense foods

Referral

• Referral to a paediatric dietitian/psychologist/speech and language therapist is recommended for children who fulfil the diagnostic criteria for Avoidant/Restrictive Food Intake Disorder
• or who have special dietary requirements for a chronic disease such as type 1 diabetes, a metabolic disorder or cystic fibrosis, or who have learning difficulties or autistic spectrum disorders.
• However, there is also a need to identify persistent picky eaters, who may need surveillance of growth and development and detailed advice on management.
Key strategies

1) having realistic expectations of children's portion sizes;
2) graded and repeated exposure to unfamiliar foods (10–15 positive experiences may be needed);
3) using non-food rewards to provide motivation
4) having a positive approach, avoiding negativity and pressure to eat;
5) parental modelling of eating fruit and vegetables and trying unfamiliar foods;
6) promoting appetite by limiting snacks and energy-providing drinks such as milk, juice and soft drinks in between meals;
7) having social food experiences such as family meals with all members eating the same food
8) focusing on long-term goals and being consistent.
Repeated exposure but how often…

Number of exposures required for acceptance of a novel flavour or food

- very few in infants
  (Maier, et al 2007; Sullivan & Birch, 1994)
- 5-10 in toddlers,
  (Birch & Marlin, 1982; Birch, McPhee et al 1987)
- and up to 15 in 3–4-year-olds
  (Sullivan & Birch, 1990).

However initial rejection commonly interpreted as genuine dislike for the foods being offered
(Cooke, 2007; Cooke et al., 2004; Skinner et al, 2002).

Who’s in the driving seat?

- Parent decide what and where a child eats
- Child decides on how much they will eat
- Rationale
  - Child is depend on the parent for the food
  - Child responds to their satiety
  - Balance of responsibilities allows families to enjoy meals
Preventing fussy eating

- Encourage a variety of food during pregnancy and lactation
- A window of opportunity for getting babies to accept load of different flavours (for bitter tastes the time this may between 4-7 months)
- Avoid negative experiences
  - Scraping food from around the babies mouth
  - Overloading spoons
  - Using wet cold clothes
  - Parents over riding satiety cues

Overall

- The identification of picky eating in children is hampered by the lack of a universally accepted definition and assessment tool.
- Children’s picky eating can cause stress to parents/caregivers and may have a negative impact on family relationships, and so it is important that health providers are able to identify picky eating confidently and provide caregivers with appropriate advice.
- For most children, the behaviour seems to resolve spontaneously, perhaps because the child is exposed to a wider range of foods through gradually being more socially active at preschool, toddler group, school and getting to know a wider range of peers with growing independence and autonomy.
Overall

• The evidence for an impact of being a picky eater on health and development is mostly limited to studies on growth, but these are generally reassuring.
• However, there may be a subsample of picky eaters in whom the behaviour does become embedded, and they may be at risk of later issues.
• Identification, support and parental advice at an early age in this small group of children is very important to be able to avert these more serious outcomes.

Current research

Jeanette Rapson, PhD Candidate
Supervisors: Cath Conlon and Pamela von Hurst

VEGETABLES AS FIRST FOODS FOR BABIES
Background

- Early exposure to vegetables may improve liking for vegetables\(^1\).
- Many complementary foods provide a ‘sweet’ taste.
- Few studies available.


Is there any evidence that early acceptance of vegetables persists into childhood?

- Breast feeding promotes vegetable acceptance
- Offering babies a high variety of vegetables during complementary feeding increases acceptance of new ones
- Repeated exposure to a disliked vegetable increases acceptance
- BUT do these findings persist into childhood?
Aim
To compare the impact of two different complementary feeding regimes on infant taste preferences.

Randomised controlled trial (RCT)
- 120 mother-infant pairs
- 2 x groups
  - Feeding regime 1
  - Feeding regime 2
- 4-week trial
- Follow-up 9 & 12 months of age
Measuring taste preferences

Thank you

www.vegesfirststudy.co.nz