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A deep dive into the OzFITS study: implications for health professionals





Breastmilk is the ideal food for infants

OzFITS TEAM

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- The design of this study, its execution, analyses, interpretation, or decision to submit results was independent of NNI





What are Aussie kids really eating? – first results from the OzFITS study

- why this group has been missed in previous dietary surveys
- methodology of OzFITS 2021
- key findings breastfeeding, timing of solid foods, allergens

A deep dive into the OzFITS study: implications for health professionals

- principles behind determining adequate intakes
- comparison of dietary intakes with recommendations
- areas for future research



RECAP

Aims and Objectives



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Study design & data collection

First Australian dietary survey of children 0-2 years

N=1140

Data Collection

Questionnaire

Family characteristics

Breastfeeding history and use of breastmilk substitutes

Timing of solids including allergens

1-day food record with repeats in 30%



Recruitment







Study Steps



TELEPHONE BASED CHILD FEEDING QUESTIONNAIRE

FOOD DIARY

FOLLOW-UP INTERVIEW



Caregivers age: 34.2 ± 4.5 y

University degree or above: 75%

Household income > \$100K: 61%

Born in Australia: 70%

Married or de facto relationship: 90%

Employed (full or part time): 80%



Demographics

Early Feeding: Summary of Results

- Breastfeeding rates remain high throughout infancy
- Half infants were exclusively breastfed until 3 months
- Few infants were exclusively breastfed to 6 months
- 40% of toddlers continued to receive breastmilk

- Timing of solid foods was consistent with guidelines ~5-6 months
- Common food allergens were introduced before 12 months
- Most toddlers consumed foods from all core food groups



Part 2 – A deeper dive into OzFITS



Comparison of dietary intakes with recommendations



Principles behind determining nutritional adequacy



Areas for future research



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Comparison of food intakes with recommendations

Food Record





Dietary Modeling and the Australian Dietary Guidelines

Australian Government

Department of Health and Ageing

National Health and Medical Research Council

A MODELLING SYSTEM TO INFORM THE REVISION OF THE AUSTRALIAN GUIDE TO HEALTHY EATING



Toddlers 12-24 months



Serves per day AGHE Modeling

Fruit	1/2
Vegetable	2-3
Bread / Cereals	4
Meat / Meat Substitutes	1
Milk / Dairy	1 – 1 ½
Fats / Oils	1
Discretionary Foods	0



Toddlers 12-24 months



Serves per day **AGHE Modeling**

Fruit	1/2
Vegetable	2-3
Bread / Cereals	4
Meat / Meat Substitutes	1
Milk / Dairy	1–1½
Fats / Oils	1
Discretionary	0

Foods



Breastfeeding not included in modeling



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Toddlers 12-24 months





Serves per day Actual Intake **AGHE Modeling** 1.04 (0.51-1.62) $\frac{1}{2}$ Fruit Vegetable 1.24 (0.56-2.31) 2-3 Bread / 2.18 (1.28-3.18) 4 Cereals Meat / Meat 0.55 (0.23-1.10) 1 Substitutes 1.33 (0.64-2.16)* Milk / Dairy $1 - 1\frac{1}{2}$ Fats / Oils 0.21 (0-0.70) 1 Discretionary 1.04 (0.36-2.27) 0 Foods ozf/tS n= 475 | * Including formula

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Comparison of nutrient intakes with recommendations

Estimating Usual Nutrient Intake Distribution



Source: Dietary Assessment Primer, Usual Dietary Intake. National Institutes of Health, National Cancer Institute. (https://dietassessmentprimer.canc er.gov/) [Accessed on: June 27,

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Nutrient Reference Values (NRVs) National Health and Medical Research Council

Nutrient Reference Values for Australia and New Zealand

Including Recommended Dietary Intakes



Nutrient Reference Values

Estimated Average Requirement (EAR)

 Intake to meet the requirement of half the healthy people of an age & gender

Recommended Dietary Intake (RDI)

 Intake to meet the requirement of nearly all (97.5%) healthy people of an age & gender

Adequate Intake (AI)

 Intake of healthy people assumed to be adequate

Tolerable Upper Intake Level (UL)

 Highest daily intake likely to pose no risk of adverse effects to almost all the population



NRVs for Young Children

Age group	Adequate Intake	Estimated Average Requirement	Recommended Dietary Intake
Infants 0-6 m	Based on breastmilk concentrations * 0.78L/day	None	None
Infants 7-12 m	Concentration in breastmilk * 0.6L/day + median intake from complementary foods	Iron, Zinc	Iron, Zinc
Toddlers 1-3 years		Most nutrients	Most nutrients

Nutrient intakes - Infants <6m

57% (164/290) were fully breastfed (breastmilk provides 100% nutrient requirements)

31% (90/290) completed a food record:

- Combination fed or consumed only breastmilk substitutes
- Commenced complementary feeding

Intakes of most nutrients were **above** the adequate intake for these infants



Nutrient intakes - Infants 6-12m

-78% (221/286) breastfed

-34% (98/286) consumed breastmilk substitutes

31% (90/290) completed a food record:

• Most nutrients were above the AI suggesting nutritional adequacy

Zinc and iron were both limiting nutrients



Nutrient intakes - Toddlers 12-24m







Key Finding:

1/3 toddlers consumed >
upper limit (1000mg /day)

The average intake for sodium was 878 ± 12.4mg/day



Context:

May influence preferences for salty foods into adulthood

High sodium intake is a risk factor for cardiovascular disease



Top five sources of sodium – Toddlers 12-24m

Rank	Food item	% daily sodium
1	Regular breads and rolls	10
2	Cheese	9
3	Dairy milk	8
4	Mixed dishes (cereal based)	7
5	Processed meats*	5
*Discretionary food item	1	Oz

Top discretionary sources of sodium-Toddlers 12-24m

Rank	Food item	% daily sodium
1	Processed meats	5
2	Sauces and condiments	3
3	Savoury biscuits	2
4	Yeast extracts (vegemite)	2
5	Cakes, muffins, scones, and cake-type desserts	2





High prevalence of inadequate iron intake



Infants 6-12m



Toddlers 12-24m

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Iron-rich complementary foods - Infants 6-12m

Percentage of infants 6-12m consuming iron-rich foods





Iron-rich complementary foods – Toddlers 12-24m

Percentage of toddlers 12-24 m consuming iron-rich foods





Top five sources of iron - Infants (6-12m)

Rank	Food item	% Daily iron intake
1	Infant formula	38
2	Iron fortified infant cereals	15
3	Breakfast cereals	6
4	Breads	3
5	Meat and meat-based mixed dishes	3



Top Five Sources of Iron - Toddlers (12-24m)

Rank	Food item	% Daily iron intake
1	Breakfast cereals	13
2	Formula/toddler milks	12
3	Breads	9
4	Meat and meat-based mixed dishes	5
5	Egg and egg-based mixed dishes	3



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Practical Implications for health care workers

Exceeding the UL for Sodium (>1000 mg)



84 mg

312 mg

151 mg

123 mg

172 mg

Total: 1000 mg Na



Exceeding the UL for Sodium (>1000 mg)



Meeting the Iron RDI for infants 6-12 mo (11 mg)



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Meeting the Iron RDI for infants 6-12 mo (11 mg)



Toddlers 12 to 24 months



savury snack biscuits 682

Energy, kJ/day		Percentage of total energy intake
Fruits	367 (176-589)	9 (5-13)
Vegetables	173 (36-419)	4 (1-10)
Bread / Cereals	859 (487-1269)	20 (12-30)
Meat / Meat Substitutes	297 (67-720)	9 (3-18)
Milk / Dairy	888 (428-1495)	22 (10-34)*
Fats / Oils	53 (0-179)	1 (0-4)
Discretionary Foods	435 (146-946)	10 (4-23)
n= 475 * Including formula		OZL

Toddlers 12 to 24 months



Energy,	, kJ/day	Percentage of total energy intake	
Fruits	367 (176-589)	9 (5-13)	
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Discretionary Foods	435 (146-946)	10 (4-23)	21
n= 475 * Includir	ng formula	UZL	



Toddlers: Proportions of Energy Intake (%)

12 to <18 months

18 to 24 months











Where to from here?

Study with biomarkers for iron

Re-evaluate NRVs for iron

Revise dietary modelling for toddlers using population intakes

Practical advice around transition from a milk-based diet

Discretionary foods



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The Australian Feeding Infants and Toddlers Study (OzFITS) 2021: Study Design, Methods and Sample Description

by Solution by Sol

The Australian Feeding Infants and Toddler Study (OzFITS 2021): Breastfeeding and Early Feeding Practices

by S Merryn J. Netting, S Najma A. Moumin, S Emma J. Knight, S Rebecca K. Golley, S Maria Makrides and S Tim J. Green

Nutrients 2022, 14(1), 206; https://doi.org/10.3390/nu14010206 - 03 Jan 2022



A deep dive into the OzFITS study: implications for health professionals

principles behind determining adequate intakes
comparison of dietary intakes with recommendations

07

areas for future research

Usual Nutrient Intake Distribution and Prevalence of Inadequacy among Australian Children 0–24 Months: Findings from the Australian Feeding Infants and Toddlers Study (OzFITS) 2021

by 😮 Najma A. Moumin, 😤 Merryn J. Netting, 😩 Rebecca K. Golley, 😵 Chelsea E. Mauch, 😤 Maria Makrides and 😵 Tim J. Green

Nutrients 2022, 14(7), 1381; https://doi.org/10.3390/nu14071381 - 25 Mar 2022

Watch for the new publication on Food Groups – under review

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Questions??