Supplementary material

**Preschool nutrition-related behaviours at home and early education services: Findings from the Growing Up in New Zealand longitudinal study**

**Table S1: Average number of recommended nutrition-related behaviours1 adhered to at home for 45-month-old New Zealand children**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Child characteristics** | | **n** | **Mean (median)** | **Standard deviation** | **Range** |
| Gender\* | Male | 3215 | 5.3 (5) | +/-1.6 | 0-8 |
| Female | 2990 | 5.4 (6) | +/-1.6 | 0-8 |
| Socio-economic status (NZDep 2013) | Low deprivation (decile 1-3) | 1762 | 5.3 (6) | +/-1.7 | 0-8 |
| Medium deprivation (decile 4-7) | 2064 | 5.3 (5) | +/-1.6 | 0-8 |
| High deprivation (decile 8-10) | 1840 | 5.3 (5) | +/-1.6 | 0-8 |
| Main ethnic group child identifies with\* | NZ European | 3522 | 5.4 (6) | +/-1.6 | 0-8 |
| Māori | 795 | 5.2 (5) | +/-1.6 | 0-8 |
| Pacific (e.g. Samoan, Tongan, Cook Island Māori) | 788 | 5.3 (5) | +/-1.6 | 1-8 |
| Asian (e.g. Chinese, Indian, Fijian Indian) | 868 | 5.1 (5) | +/-1.6 | 0-8 |
| Other (e.g. ‘New Zealander’, MELAA, British, Australian) | 214 | 5.5 (6) | +/-1.6 | 1-8 |
| Total | | 6205 | 5.3 (5) | +/-1.6 | 0-8 |

\* =statistically significant difference between groups (chi square test) at *p* <0.05. NZDep2013 = New Zealand Index of Neighbourhood Deprivation, MELAA = Middle Eastern, Latin American and African.

Notes: 1. Data from Growing Up in New Zealand 45-month data collection wave (DCW4). Information was missing for 18 children for ethnic group and for 543 children for SES. Recommended home nutrition-related behaviours were defined as: Family usually sit together for main meal everyday; Child always or mostly eats same food as parents; Mealtimes are mostly seen as time to talk to each other; Mealtimes are never rushed; Child eats a variety of food: everything or most things; Family mealtimes are mostly enjoyable; Child eats breakfast every day; TV is never or almost never on when child is eating.

**Table S2: Average number of recommended nutrition-related behaviours1 adhered to at early education service for 45-month-old New Zealand children**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Early education service characteristics** | | **n** | **Mean (median)** | **Standard deviation** | **Range** |
| Type of early childhood service\* | Privately-run centre | 91 | 4.8 (5) | +/-1.6 | 1-8 |
| Community-based centre | 81 | 4.7 (5) | +/-1.6 | 0-8 |
| Kindergarten | 49 | 5.5 (6) | +/-1.3 | 3-7 |
| Playcentre | 31 | 4.3 (4) | +/-1.4 | 2-8 |
| No. of students enrolled | 0-29 | 38 | 4.6 (5) | +/-1.3 | 2-7 |
| 30-49 | 93 | 5.1 (5) | +/-1.5 | 1-8 |
| 50-69 | 71 | 4.7 (5) | +/-1.6 | 0-8 |
| 70+ | 41 | 4.7 (5) | +/-1.6 | 1-8 |
| District Health Board | Auckland | 99 | 4.8 (5) | +/-1.6 | 1-8 |
| Counties Manukau | 106 | 4.9 (5) | +/-1.4 | 1-8 |
| Waikato | 52 | 4.8 (5) | +/-1.6 | 0-8 |
| Teacher to child ratio | Low (1:1 to 1:5) | 56 | 4.5 (5) | +/-1.5 | 1-8 |
| Med (1:6 to 1:8) | 113 | 4.7 (5) | +/-1.7 | 0-8 |
| High (1:9 or more) | 88 | 5.3 (6) | +/-1.3 | 3-7 |
| Proportion of teachers fully qualified | Low (60% or less) | 44 | 4.3 (4) | +/-1.4 | 1-8 |
| Med (61%-90%) | 90 | 4.8 (5) | +/-1.7 | 1-8 |
| High (91% or more) | 123 | 5.0 (5) | +/-1.5 | 0-8 |
| Proportion of Māori and Pacific students enrolled | < 10% of roll | 63 | 4.9 (5) | +/-1.6 | 1-8 |
| 10 < 30% of roll | 83 | 4.8 (5) | +/-1.5 | 0-8 |
| 30 < 70% of roll | 48 | 4.9 (5) | +/-1.5 | 2-8 |
| 70% or more of roll | 46 | 5.0 (5) | +/-1.6 | 1-8 |
| Participating in Healthy Heart Award \* | No | 188 | 4.7 (5) | +/-1.6 | 0-8 |
| Yes | 51 | 5.3 (5) | +/-1.5 | 1-8 |
| Total |  | 257 | 4.8 (5) | +/-1.5 | 0-8 |

\* =statistically significant difference between groups (chi square test) at *p* <0.05

Notes:

1. Data from Kai Time in ECE online survey, manager-reported about behaviours relevant to 3 and 4 year olds. Imputation was conducted for *n*=15 services with missing nutrition behaviour variables, based on proportionate responses by type of service. Observations with missing data for demographics were excluded from analyses (less than *n*=18 for each variable). Recommended early education nutrition-related behaviours were defined as: Staff always sit with children while they eat; Staff always or mostly eat same things as children; Staff always talk to children about food at mealtimes; Staff never hurry children to finish eating; Staff always encourage or promote water consumption; Staff never use food as a reward or deny food as a punishment; Children make, bake or cook food at least weekly; Children garden at least weekly.

**Table S3: Characteristics of the study subsample compared with full Growing Up in New Zealand cohort at 45 months of age**

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| --- | --- | --- | --- |
|  |  | **Growing Up in New Zealand cohort** | **ECE linked subsample** |
| **Variable1** | **Category** | **n (%)** | **n (%)** |
| Gender | Male | 3216 (51.8) | 594 (50.3) |
| Female | 2995 (48.2) | 587 (49.7) |
| Country of residence | New Zealand\* | 5913 (95.2) | 1181 (100.0) |
| Outside NZ | 298 (4.8) | 0 (0.0) |
| Socio-economic status (NZDep 2013)2 | Low deprivation (deciles 1-3)\* | 1762 (31.1) | 404 (35.3) |
| Medium deprivation (deciles 4-7) | 2064 (36.4) | 390 (34.1) |
| High deprivation (deciles 8-10) | 1842 (32.5) | 350 (30.6) |
| Main ethnic group child identifies with3 | NZ European | 3522 (56.9) | 654 (57.9) |
| Māori\* | 797 (12.9) | 108 (9.6) |
| Pacific (including Samoan, Tongan, Cook Island Māori) | 791 (12.8) | 135 (12.0) |
| Asian (including Chinese, Indian, Fijian Indian) | 869 (14.0) | 140 (12.4) |
| Other (including ‘New Zealander’, MELAA, British, Australian)\* | 214 (3.5) | 92 (8.2) |
| Mother’s highest education4 | No secondary school | 382 (6.2) | 55 (4.8) |
| Secondary schooling (NCEA 1-4) | 1400 (22.6) | 239 (20.9) |
| Diploma, trade certificate (NCEA 5-6) | 1893 (30.6) | 357 (31.2) |
| Bachelor’s degree | 1483 (23.9) | 286 (25.0) |
| Higher degree | 1037 (16.7) | 208 (18.2) |
| Mother’s employment status5 | In paid work | 3963 (66.3) | 765 (66.7) |
| Not in paid work and not seeking or unavailable to work | 1595 (26.7) | 308 (26.9) |
| Unemployed and looking for work | 407 (6.8) | 72 (6.3) |
| Main type of childcare at 45 months6 | Privately-run childcare centre\* | 2387 (38.4) | 401 (34.0) |
| Community childcare centre\* | 1191 (19.2) | 418 (35.4) |
| Kindergarten\* | 1007 (16.2) | 317 (26.8) |
| Playcentre (parent-run cooperative)\* | 115 (1.9) | 40 (3.4) |
| Kōhanga Reo (Māori cultural immersion centre)\* | 133 (2.1) | 5 (0.4) |
| Home-based (in carers home) | 189 (3.0) | 0 |
| Grandparent | 83 (1.3) | 0 |
| Nanny or au-pair | 63 (1.0) | 0 |
| Other relative or other person (including friend or neighbour) | 22 (0.4) | 0 |
| Other: casual education and care, unlicensed crèche or other specified | 383 (6.2) | 0 |
| No regular childcare at 45m | 290 (4.7) | 0 |
| Mean (SD, min-max) hours per week at licensed childcare service6\* | | 21.2 (+/-11.7, 1-56) | 19.8 (+/-11.1, 1-52) |
| **Total** | | **6211 (100)** | **1181 (100)** |

\* =statistically significant difference between proportions (chi square test) or means (t-test) in full cohort and subsample at *p* <0.05.

Notes:

1. Childcare and country of residence is from the 45-month data collection wave (DCW4). Gender, ethnic group, mother’s employment and NZDep2013 based on the home address are from the 54 month interview (DCW5);

2. *n=*37 children were missing address information to calculate NZDep2013.

3. Self-reported by mother and prioritized according to Statistics New Zealand protocols. *n=* 52 mother’s refused or didn’t know main ethnic group(s) child identified with.

4. *n*=16 missing maternal education

5. *n*=246 missing mother occupation

6. Based on mother reported main childcare service at 45 months of age. Licensed service type was confirmed or adjusted using ‘Institution Type’ in Ministry of Education’s ECE Directory; *n*=345 mothers refused to give name/location of main childcare service or not enough information provided on the name/location (i.e. Don't know/Refused) and *n*=3 mothers did not answer the preceding question asking if their child was attending regular childcare.

7. Licensed childcare service = service instution type of private or community education and care centre, kindergarten, playcentre or kōhanga reo as listed on the Ministry of Education ECE Directory.