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Determining the Validity and Reproducibility of a Feeding Assessment Tool to Assess Complementary Food Group Intake in New Zealand infants aged 9-12 months

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Abstract

Background: Collection of information that reflects the dietary intake of infants is challenging. Food frequency questionnaires are commonly used to assess habitual dietary intake, as they are quick and easy to administer. Food frequency questionnaires are used within many studies to assess this aspect of an infant's diet, yet very few have been validated.

Objectives: This study aimed to investigate the relative validity and reproducibility of a complementary food questionnaire designed to assess food group intake in infants aged 9-12 months.

Methods: Participants were a convenience sample of caregivers of infants aged 9-12 months who completed the complementary food questionnaire (CFQ) at baseline (CFQ-1) and four weeks later (CFQ-2) to assess reproducibility. A 4-day weighed food record (4DWFR) was completed between these assessments to determine the validity of CFQ-1. Foods appearing in the 4DWFR were classified into the same 49 food items as the CFQ. Foods from both the 4DWFR and the CFQ were further classified into main food groups (breads and cereals; fruits; vegetables; dairy products; meat and protein; and occasional foods). Agreement between the two methods for intake of main food groups (frequency and grams eaten) was assessed using paired t-tests, correlation coefficients, cross-classification, the weighted κ statistic and Bland and Altman analysis.

Results: For grams of food groups consumed, validity correlations ranged from 0.15 (fruit) to 0.65 (vegetables), with an average correlation of 0.36. Correlations were significant for all food groups with the exception of fruit. Correct classification into the same tertile from the CFQ-1 and 4DWFR ranged from 38.7% (vegetables) to 65.2% (breads and cereals). Misclassification into opposite tertiles ranged from 2.0% (occasional foods) to 16.3% (vegetables). Reproducibility correlations were significant for all six food groups and ranged from 0.37 (fruit) to 0.84 (occasional foods), with an average correlation of 0.58. When comparing CFQ-1 and CFQ-2, participants correctly classified into the same tertile ranged from 48.9% (meat and protein) to 72.6% (breads and cereals). Misclassification ranged from 3.9% (breads and cereals) to 11.8% (meat and protein).

Conclusion: The feeding assessment tool appears to have reasonable validity and good reproducibility for assessing complementary food group intake in infants aged 9-12 months. The CFQ could be used in future research as a simple way to assess complementary food group intake, where it is not feasible or appropriate to employ weighed food records.

Keywords: assessment; diet; infant; nutrition; questionnaire; valid

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Abbreviations list

24HR	Twenty-four hour recall
3DEFR	Three day estimated food record
4DWFR	Four day weighed food record
CI	Confidence Intervals
CFQ	Complementary Food Questionnaire
cm	Centimetre
DLW	Doubly labelled water
e.g.	example
EFR	Estimated food record
FFQ	Food Frequency Questionnaire
g	Gram
GUINZ	Growing up in New Zealand
ID	Identification
k	Weighted Kappa statistic
Kg	Kilogram
LOA	Limits of Agreement
MoH	Ministry of Health
n	number
NDNS	National diet and nutrition survey
NZ	New Zealand
NZEO	New Zealand European and Others
r	Pearson's correlation coefficient
SD	Standard deviation
SFFQ	Semi-quantitative food frequency questionnaire
SPSS	Statistical Package for the Social Sciences
TBSP	Tablespoon
tsp	teaspoon
WFR	Weighed food record
WHO	World Health Organisation
>	Greater than
<	Less than