



University of Colorado **Anschutz Medical Campus**

Methods to Collect Dietary Intake in Young Children



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General considerations for dietary assessment of young children



- Must use a proxy reporter—sometimes >1+
 - Often eat only one meal consistently with family, especially during week



- Literacy
 - General
 - Food
 - Health
 - Technology



- Accessibility
- Language (particularly clinically)



- Costs

What is the question of interest?



- Is diet the primary aim? What is the investment in diet/nutrition outcomes?
- Total intake (weekend vs. weekday variability)
- Intake in specific settings
 - home, childcare, restaurant, etc.
- Specific nutrients, energy intakes, diet quality
 - Nutrients from foods and/or supplements (food-derived or synthetic)
- Eating behavior
 - neophobia, dietary variety, selective eating
- The environmental and social contexts of eating/feeding
 - Foods eaten away from home vs. foods prepared/eaten at home
 - Family meals



When is good, good enough?

- Dietary patterns
- Groups vs. individuals
- Concordance among individuals
- What level of specificity is needed to answer the question?
 - Child
 - Family/childcare
 - Community
 - Geographic
- What needs to be measured?
 - nutrients, foods, supplements, environment





Instrument Profiles

Introduction

[24-hour Dietary Recall](#)

[Food Record](#)

[Food Frequency Questionnaire](#)

[Screeners](#)

[Comparing Dietary Assessment Instruments](#)

Key Concepts

[Choosing An Approach: Recommendations](#)

[Learn More](#)

[Glossary](#)

[References & Resources](#)

Dietary Assessment Instrument Profiles

Various types of self-report instruments have been developed to assess dietary intake. Each has distinct features as well as strengths and limitations.

This section describes the major types of instruments that rely on individuals reporting their own diets, with information on their salient features; uses and limitations; validation issues; and data capture, processing, and analysis considerations:

- [24-hour Dietary Recall Profile](#)
- [Food Record Profile](#)
- [Food Frequency Questionnaire Profile](#)
- [Screeners Profile](#)

[Diet History](#) and [Observation](#) also are sometimes used to assess dietary intake, but they are not considered in detail in the Primer.

This section also provides an "at-a-glance" table that compares key features of the main self-report dietary assessment instruments:

- [Comparing Dietary Assessment Instruments](#)

The Profiles in this section of the Primer contain numerous links to other sections, including other Profiles, [Key Concepts](#), [Choosing an Approach for Dietary Assessment](#), [Learn More](#), and the [Glossary](#). Links with dashed underlines will show you terms from the Glossary. Links with solid underlines will take you to other sections of the Primer.

Traditional methods of dietary assessment

24-hour recall

Pros	Questions answered	Drawbacks	Considerations
• ASA24 (automated) • Interviewer assisted • Eng/Sp/other • Access is free	• Nutrients • Foods • Dietary patterns • Supplements	• Recall bias • Multiple caregivers • Staffing costs	• Large cohorts • Which meals various caregivers eat w/ child? • Can be combined w/ other methods

**NATIONAL CANCER INSTITUTE**
Automated Self-Administered
24-Hour Dietary Assessment Tool

v2.9.3.0 [Report a Bug](#) | [FAQs](#) | [Contact Us](#)

Sign in

Sign In

New to ASA24?

Register

Announcements:

Welcome to the ASA24 Researcher Web site. This Web site allows researchers, clinicians, and teachers to register a study, set study parameters, manage study logistics, and obtain dietary analyses. To get started, either sign in with your existing username and password or create a researcher account using the button to the left.

General information on ASA24 and its features can be found at <http://epi.grants.cancer.gov/asa24/>

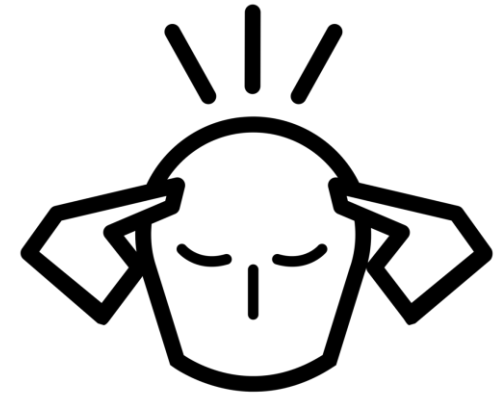
Resources

[Join ASA24 Listserv](#)
[Frequently Asked Questions \(FAQs\)](#)
[Known Issues and Workarounds](#)
[ASA24 Demonstration Site](#)
[Resources Related to the Healthy Eating Index \(HEI\)](#)

[Researcher Instructions – 2020](#)
[Researcher Instructions – 2018](#)
[Researcher Instructions – 2016](#)
[Sample Analysis Files and Data Dictionaries](#)

Parents' ASA24 experiences

- ✓ Time commitment, but only 1x/day
- ✓ Structure and repetition makes it easier
- ✗ You can't recall something that you never knew
- ✗ "Guesstimation" (portions, away from home)
- ✗ Childcare changes to the proposed menu
- ✗ Ethnic foods and restaurant items in database



Bekelman TA, Martin CK, Johnson SL, Glueck DH, Sauder KA, Harrall KK, Steinberg RI, Hsia D, Dabelea D on behalf of program collaborators for ECHO.
Under review: *British Journal of Nutrition*.

Traditional methods of dietary assessment

24-hour recall

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Food diaries

• With or w/out technology • Does not depend on memory	• Same as above • Needs cues for supplements	• Same as above • Can be higher subject burden	• Special populations • EMA • Photo assist?
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The SEED experience— Why we chose food diaries

- Highly motivated group of caretakers with an interest in diet
- QC protocol including some EMA (reminder & follow up calls)
- QC protocol for data entry

- Usable records for n=1120 (70% response rate)
- 9% eliminated for lack of >1 day or plausibility

DiGuseppi et al. (2016). Demographic profile of families and children in the Study to Explore Early Development (SEED): Case-control study of autism spectrum disorder. *Disability & Health J.* 9: 544-551.



Traditional methods of dietary assessment

FFQ & Screeners

Pros	Questions answered	Drawbacks	Considerations
• With or w/out technology • Less subject burden • Demands re: food & health literacy	• Nutrients • Foods • Dietary patterns	• Recall bias • Cognitive load • Less accuracy for individual intakes	• Large cohorts • Can be combined w/ other methods

Checklists

• Same as above • Tailored to intervention	• Specific nutrients • Specific foods	• Limited info on diet quality	• Same as above
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Other methods



Pros	Questions answered	Drawbacks	Considerations
• Photos rather than estimation of portions • Different subject burden • Food, tech & health literacy • Time eaten	• Nutrients • Foods • Dietary patterns • Amounts offered and eaten • Social context	• Missed eating occasions (snacking) • All or nothing • Internet availability • Expensive • Social desirability	• Sample size • Meals or days • EMA • Can be used in conjunction w/ other methods



Objective: Develop a **technology-based, interactive family intervention** to promote healthy lifestyles (and weight outcomes) for young children in both Head Start and family settings.

Bellows et al. (2018). HEROs: Design of a mixed-methods formative research phase for an ecocultural intervention to promote healthy eating and activity behaviors in rural families with preschoolers. *J Nutr Educ Behav.* 50: 736-745.



- Nutrient intake and dietary quality
- Concordance parent/child meal timing & foods served
- Level of cooking/preparation
- Additional context of family mealtime



What do you see?



Mother

Child

Reality: Portion Sizes



Mother

Child

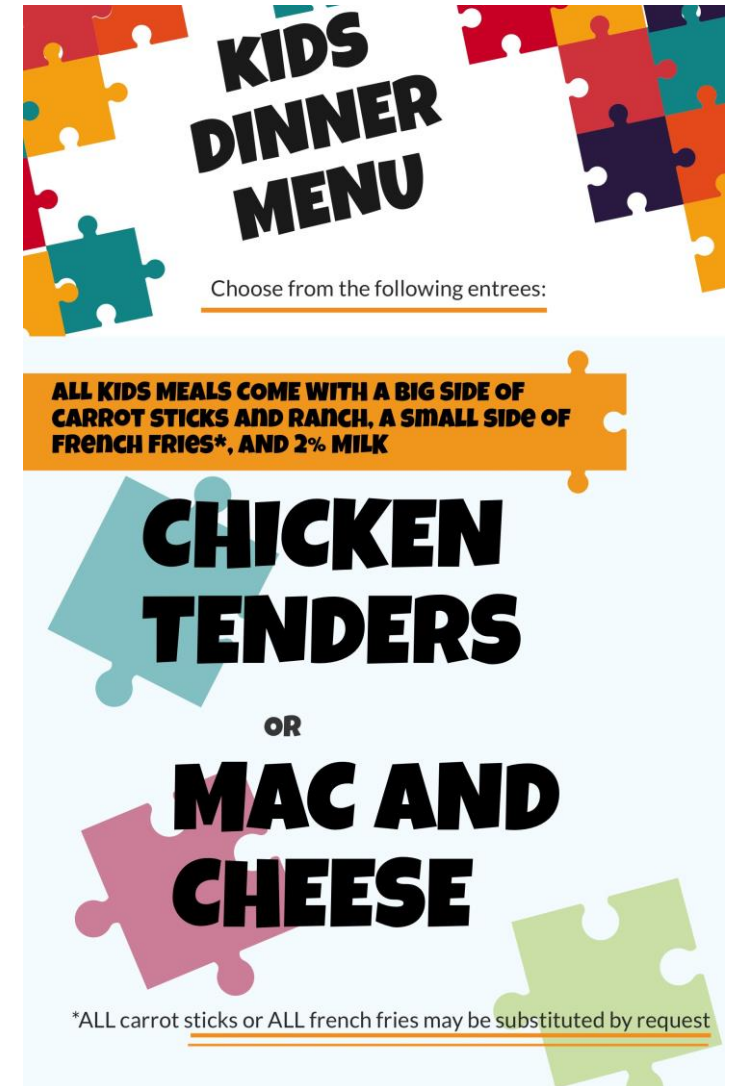
Other methods

	Pros	Questions answered	Drawbacks	Considerations
Food Photography	• Photos rather than estimation of portions • Different subject burden • Food, tech & health literacy • Time eaten	• Nutrients • Foods • Dietary patterns • Amounts offered and eaten • Social context	• Missed eating occasions • Snacking • All or nothing • Internet availability • Expensive • Social desirability	• Sample size • Meals or days • EMA • Can be used in conjunction w/ other methods
Direct Observation	• Same as above • Tailored to intervention • Real time or recorded • Tightly controlled • Less implausibility	• Same as above	• Social desirability • Staff training • Expense	• Same as above • Laboratory or <i>in situ</i>



Direct observation—single meal

- Eating environment—restaurant setting
- Choice architecture—children's menus
- Outcomes
 - Ordering behavior
 - Intake at that meal



Concluding thoughts

- Match assessment to research questions of study population & outcomes
- What is the goal?
 - General adequacy & patterns
 - Specific foods, nutrients, quantities
 - Preparation techniques
- Consider study design, timeframe, & budget
- QC is key
- Is there an opportunity for innovation?

There is no perfect method...what is best for the time & \$?