

Food Frequency Questionnaires

A Food Frequency Questionnaire (FFQ) is a limited checklist of foods and beverages with a frequency response section for subjects to report how often each item was consumed over a specified period of time. Semi-quantitative FFQs collect portion size information as standardized portions or as a choice of portion sizes. Portion size information is not collected in non-quantitative FFQs. Calculations for nutrient intake can be estimated via computerized software programs that multiply the reported frequency of each food by the amount of nutrient in a serving of that food. Reference databases commonly used in FFQs include USDA food and nutrient database and University of Minnesota's NCC-Nutrient database. Some utilize NHANES data to provide nationwide comparisons.

Pros (Strengths) - Representative of "habitual" intake; preferable method of measuring intake for nutrients with very high day-to-day variability; questionnaire processing is significantly less expensive than food records or diet recalls; can be easy for literate subjects to complete as a self-administered form; suitable for very large studies; designed to rank individuals according to intake

Cons (Weaknesses) - Retrospective method that relies upon the respondent's memory; cost may increase dramatically for questionnaires that must be interviewer-administered, e.g., low literacy populations; less sensitive to measures of absolute intake for specific nutrients; arbitrary groupings of foods may not correspond to the perception of the respondent; exclusion of foods popular to ethnic minority groups that are significant contributors of nutrients will skew the data

Common Food Frequency Questionnaires for Adults:

- **Harvard FFQ:** developed by Walter Willett, M.D., and his colleagues at Harvard University; pen and paper version only; 2007 booklet plus analysis cost roughly \$ 15.00-20.00 per questionnaire; portion size information is included as a part of the food item description rather than a separate listing; several validation studies conducted against standard methods like diet records and recalls
<https://regepi.bwh.harvard.edu/health/nutrition.html>
- **Diet History Questionnaire (DHQ):** a semi-quantitative FFQ which uses an embedded question approach directed by Fran Thompson and Amy Subar at the National Cancer Institute; pen and paper version available for purchase; web-based version available free of cost; validation studies conducted against standard methods like recalls etc. Spanish version available in pen and paper format but does not include any ethnic food based questions.
<http://riskfactor.cancer.gov/DHQ/webquest/index.html>
- **Block FFQ:** a semi-quantitative FFQ originally developed at the National Cancer Institute under the direction of Gladys Block, PhD; pen and paper and web based version available for purchase; validation studies conducted against standard methods like recalls and records. Spanish version available in pen and paper format and includes questions on ethnic foods.
<http://www.nutritionquest.com>

Recommendations:

Extensive literature review indicates that all three FFQs perform fairly well in estimating habitual macronutrient intakes in adult populations when compared to standard methods of diet records or recalls. However, DHQ offers a web-based version free of cost which makes its use much easier and economical in a research setting. A web-based Block questionnaire is available at a much higher cost. The Harvard FFQ can be preferred in situations where intake of simple sugars, sweet foods and fructose is of prime concern. Overall, the web-based DHQ is our tool of choice for assessing habitual macronutrient intakes in adults due to its convenience for the subject and low cost.

References:

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8. Feskanich. Et.al. Reproducibility and validity of food intake measurement from a semiquantitative food frequency questionnaire. *J Am Diet Assoc.* 1993Jul;93(7):790-6
9. Salivini et.al. Food-Based Validation of a Dietary Questionnaire: The Effects of Week to-Week Variation in Food Consumption *International Journal of Epidemiology* 1989; 18: 858-867

Compilation of FFQ validations studies- Harvard FFQ vs. DHQ vs. Block FFQ

Author, year	FFQs	Correlation Coefficients for Validity for several nutrients / foods											Details on comparison methods	
		Energy	Pro	Fat	Carbs	Fiber	Sugar	Fruc.	Mg	OJ	Sodas	Raisins		Apples
1.Boucher et.al, 2005	Block	0.44	0.41	0.41	0.51	0.62			0.63					2 -24 hr recalls
2.Subar et.al, 2001	Block	0.45	0.53	0.67	0.66	0.8			0.81					Four 24 hr recalls
	HFFQ	0.18	0.54	0.63	0.65	0.68			0.83					
	DHQ	0.48	0.60	0.66	0.69	0.77			0.78					
3.Block et al , 2006	Block	0.69	0.61	0.78	0.61	0.68								Three 24 hour recalls
4.4. Hendricks et.al, 2005	Block	0.44	0.42	0.52	0.28	0.67								3- day DRs
5.Longnecker etal, 1993	HFFQ	0.51	0.33	0.45	0.44	0.44			0.57					Multiple DRs
6.Hernandez –Aliva et al, 1998	HFFQ	0.51	0.29	0.52	0.52	0.51			0.56					Sixteen 24 hour recalls
7.Barclay et al, 2007	HFFQ				0.62	0.79	0.44							Three 4-DRs
8.Fekanich et. al, 1993	HFFQ								0.78	0.84	0.59	0.70		DRs
9.Salvini et.al, 1989	Block								0.62	0.84		0.74		DRs

