

# Evaluation of the Eetscore, a screener to assess diet quality

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## Background

Assessing overall diet quality is a method to evaluate adherence to dietary guidelines. One methodological approach for measuring overall diet quality is using an index. The advantage of an index is that it can be used as a simple and quick assessment of diet quality to assess adherence to dietary guidelines and monitor dietary changes. The Dutch Healthy Diet 2015-index (DHD15) assesses adherence to the Dutch food-based dietary guidelines of 2015.

## Development Eetscore FFQ

The Eetscore FFQ was specifically developed to score the fifteen components of the DHD15-index. In addition, the Eetscore FFQ scores one additional component on unhealthy choices aiming to get insight in dietary intake beyond the Dutch dietary guidelines (Table 1).

**Table 1.** Cut-off values for calculation of the DHD15-index components of the Eetscore FFQ and the additional component unhealthy choices.

Component	Guideline	Min. score (=0)	Max. score (=10)
1. Vegetables	Eat at least 200 g/d	0 g/d	≥ 200 g/d
2. Fruit	Eat at least 200 g/d	0 g/d	≥ 200 g/d
3. Wholegrain	Eat at least 90 g/d Replace refined by wholegrain	0 g/d No wholegrain or ratio ≤ 0.7	≥ 90 g/d No refined or ratio ≥ 11
4. Legumes	Eat daily	0 g/d	≥ 10 g/d
5. Nuts	Eat at least 15 g/d	0 g/d	≥ 15 g/d
6. Dairy	Eat a few portions	0 or ≥750 g/d	300-450 g/d
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16. Unhealthy choices	Limit consumption	> 7 choices/wk	≤ 3 choices/wk

## Objectives

- To investigate associations with participants' characteristics
- To evaluate reproducibility of the Eetscore FFQ
- To evaluate relative validity: Eetscore FFQ vs. full-length FFQ

## Methods

Dietary intake data were randomly collected from the Eetscore FFQ twice and a 183-item full-length FFQ once with at least one month in between. Participants with data of at least one Eetscore FFQ (*n* 751) were included. Two subsamples were used to for analysis of the reproducibility (*n* 343) and the relative validity (*n* 565) of the Eetscore FFQ.

## Results

The mean DHD15-index score based on the Eetscore FFQ was 111 (SD 17.5) out of a possible maximum score of 160 points and was significantly higher in women than in men, positively associated with age and educational level, and inversely associated with BMI.

**Table 2.** Participant characteristics across sex-specific quartiles of the DHD15-index based on the Eetscore FFQ (*n* 751).

	Quartiles DHD15-index Eetscore FFQ				P for trend
	Q1 ( <i>n</i> 190)	Q2 ( <i>n</i> 197)	Q3 ( <i>n</i> 182)	Q4 ( <i>n</i> 182)	
DHD15-index (mean ± SD)*	89 ± 11.1	107 ± 6.9	117 ± 6	131 ± 7	
Age, y (mean ± SD)	53.7 ± 16.2	56.2 ± 15.5	57.6 ± 16.4	60.4 ± 14.2	<0.001
BMI, kg/m <sup>2</sup> (mean ± SD)	25.1 ± 4.2	24.4 ± 3.8	24.1 ± 3.9	23.3 ± 3.2	<0.001

\* The total score ranges between 0 and 160 points.

## Results

Reproducibility of the Eetscore FFQ was 0.91 (95% CI: 0.89, 0.93) as assessed by intraclass correlation coefficient (ICC) (Table 3). Kendall's tau-b correlation coefficient of the DHD15-index between the Eetscore FFQ and the full-length FFQ was 0.51 (95% CI: 0.47, 0.55).

**Table 3.** Reproducibility of the Eetscore FFQ (*n* 343).

	Eetscore FFQ-1		Eetscore FFQ-2	
	Mean ± SD	Mean ± SD	ICC	95% CI
1. Vegetables	6.9 ± 3.0	6.7 ± 2.9	0.82	0.77, 0.85
2. Fruit	7.8 ± 3.0	7.7 ± 3.0	0.91	0.89, 0.93
3. Wholegrain	7.7 ± 2.4	7.4 ± 2.6	0.84	0.80, 0.87
4. Legumes	8.1 ± 3.4	7.9 ± 3.5	0.72	0.65, 0.77
5. Nuts	5.6 ± 3.7	5.5 ± 3.8	0.82	0.78, 0.85
6. Dairy	6.3 ± 3.3	6.4 ± 3.2	0.84	0.80, 0.87
7. Fish	6.8 ± 3.4	6.7 ± 3.4	0.88	0.85, 0.90
8. Tea	6.2 ± 4.1	5.9 ± 4.1	0.90	0.88, 0.92
9. Fat and oils	6.1 ± 4.6	6.1 ± 4.6	0.80	0.75, 0.84
10. Coffee	8.3 ± 2.4	8.3 ± 2.5	0.87	0.84, 0.90
11. Red meat	9.5 ± 1.7	9.6 ± 1.4	0.71	0.64, 0.77
12. Processed meat	5.8 ± 3.5	5.7 ± 3.6	0.87	0.84, 0.89
13. Sugar-containing beverages	7.8 ± 3.0	7.9 ± 2.8	0.87	0.84, 0.90
14. Alcohol	8.0 ± 3.2	7.9 ± 3.3	0.93	0.91, 0.94
15. Sodium	8.1 ± 2.1	8.4 ± 2.0	0.80	0.76, 0.84
16. Unhealthy choices	3.6 ± 4.0	3.8 ± 4.0	0.86	0.83, 0.89
DHD15 index †	113 ± 17	112 ± 17	0.91	0.89, 0.93

## Conclusions and perspectives

The Eetscore FFQ showed good to excellent reproducibility and is therefore able to monitor diet quality of individuals. Moreover, the Eetscore FFQ was considered an acceptable screener to rank participants according to their diet quality. The Eetscore FFQ could be used for research purposes but also for use in clinical settings.

