

Iris Rijnaarts^{1,2,3}, Nicole de Roos¹, Erwin Zoetendal², Nicole de Wit³, Ben Witteman^{1,4}

1) Division of Human Nutrition & Health, Wageningen University & Research, Wageningen, the Netherlands. 2) Laboratory of Microbiology, Wageningen University & Research, Wageningen, the Netherlands. 3) Wageningen Food and Biobased Research, Wageningen University & Research, Wageningen, the Netherlands. 4) Department of Gastroenterology and Hepatology, Hospital Gelderse Vallei, Ede, the Netherlands

Background

Eligibility criteria for dietary fiber interventions often include a low fiber intake, which requires dietary screening during recruitment. However, current methods are unnecessary extensive and burdensome for both researcher and participant.

Therefore, we aimed to develop and validate a fiber screening questionnaire (FiberScreen) with a short completion time.

Methods

This was part of a high-fiber intervention study. The FFQ and FiberScreen were performed twice, during screening (n=131) and at 3-month follow-up (n=87). The FiberScreen was optimized in between two measurements (Figure 1).

Results

- **T1:** 5-item FiberScreen score = 8.5 ± 3.1 points vs FFQ = 22.6 ± 8.0 g of fiber, which correlated moderately, $r=.356$, $p<.000$. Correlations between food categories ranged between $r=.126$ and $r=.374$
- **T2:** 18-item FiberScreen = 24.5 ± 6.0 g, FFQ = 23.7 ± 6.6 g of fiber, $p=.138$, with a strong correlation $r=.705$, $p<.001$, see Table 1

Table 1 Comparison between the FFQ and the 18-item FiberScreen in n=87 healthy adults, T2

	Pearsons r	Δ
Total dietary fiber	.705*	-0.77 \pm 4.8
Fruit	.707*	0.60 \pm 1.7*
Vegetables	.457*	0.14 \pm 1.5
Whole grain	.603*	0.59 \pm 2.9
Pasta/rice/potatoes	.505*	-1.60 \pm 1.2*
Legumes	.731*	0.27 \pm 1.4
Nuts and seeds	.469*	-5.24 \pm 2.1*

* Indicates significance, $p < .05$

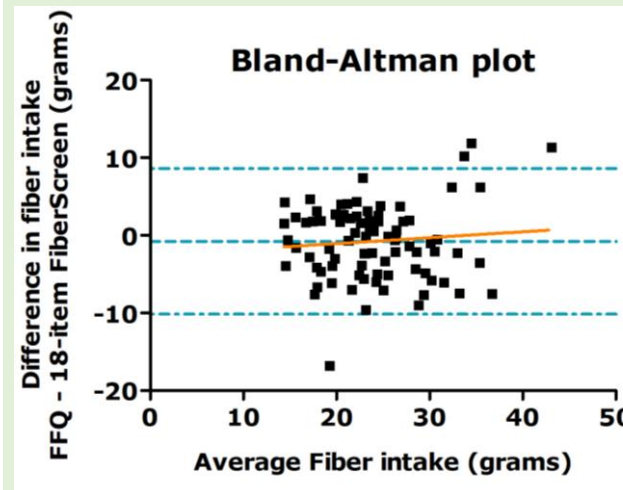


Figure 2 Bland-Altman plot between the 18-item FiberScreen and the FFQ, n=87

Bland-Altman plot (Figure 2) showed good agreement between the two questionnaires, although the 95% limit of agreement was quite wide (-10.2 – 8.62 g of fiber). The difference between the questionnaires was not different for a different average intake ($\beta=0.08 \pm 0.09$, $p=.401$)

Completion time: 18-item FiberScreen = 4.19 \pm 2.03 min, FFQ = estimated 45-60 min.

Conclusion

The 18-item FiberScreen is a valid short method to screen and rank participants' fiber intake.

Figure 1 Overview of the FiberScreen

