

## Poster

# Visual Food Diary for Social Support, Dietary Changes and Weight Loss

Heli Salmenius-Suominen<sup>1\*</sup>, BAppSc; Mikko Lehtovirta<sup>2\*</sup>, MD; Henna Vepsäläinen<sup>1</sup>, MSc; Hanna Konttinen<sup>3\*</sup>, PhD; Maijaliisa Erkkola<sup>1\*</sup>, PhD

<sup>1</sup>Department of Food and Environmental Sciences, Division of Nutrition, University of Helsinki, Helsinki, Finland

<sup>2</sup>FiMM, Institute for Molecular Medicine Finland, University of Helsinki, Helsinki, Finland

<sup>3</sup>Department of Social Research, University of Helsinki, Helsinki, Finland

\*these authors contributed equally

**Corresponding Author:**

Heli Salmenius-Suominen, BAppSc  
Department of Food and Environmental Sciences, Division of Nutrition  
University of Helsinki  
PL 66  
Helsinki, 00014  
Finland  
Phone: 358 405036811  
Fax: 358 405036811  
Email: [heli.salmenius-suominen@helsinki.fi](mailto:heli.salmenius-suominen@helsinki.fi)

## Abstract

**Background:** To find out to what degree health-improving dietary behavior (eg, increasing consumption of vegetables and fruits) can be furthered in virtual peer support groups moderated by a nutrition professional using a mobile app.

**Objective:** To find out, to what degree health improving dietary behaviour, for example increasing the use of vegetables and fruits can be furthered in virtual peer support groups moderated by a nutrition professional using a mobile application.

**Methods:** In this feasibility study, volunteering adult men and women (body mass index [BMI]>25 kg/m<sup>2</sup>) were recruited both from a diabetes outpatient clinic and from an occupational health care unit. Participants were divided into 3 groups. All participants used a smartphone app that allowed them to keep a visual food journal, share their meals and activity with group members, and receive virtual coaching from a nutrition professional. Outcomes were assessed via surveys at baseline, after the intervention, and 4 weeks later using a food frequency questionnaire (FFQ). Frequency of app use, weight, and waist circumference were estimated at baseline and after the intervention.

**Results:** Mean weight loss (n=25) after intervention was 1.5 kg (95% CI 0.79 to 2.29), or 1.7% (95% CI 0.89 to 2.5) in all subjects together, and 1.5% in group 1 (95% CI -0.02 to 2.9), 1.9% in group 2 (95% CI 0.56 to 3.25), and 1.7% in group 3 (95% CI -0.20 to 3.61), respectively. Mean waist circumference (n=22) reduced 2.4% (95% CI 1.3 to 3.4). At the end of the 4-week intervention, the consumption of vegetables and fruits (n=26) had increased by 55%, while the consumption of sweets and chocolate had decreased by 39% as compared to baseline. Almost all participants (84%) strongly agreed (40%) or agreed (44%) that they got support and encouragement from other group members. Similarly, altogether 92% of participants strongly agreed (67%) or agreed (25%) that they felt like they belonged to the group. The engagement level was high, with the average user uploading 5.2 meals a day and recording a total of 9.3 sessions a day. There was some variation between the 3 groups. On average, users in groups 1, 2, and 3 uploaded 3.8 (n=8, 862 meals), 5.8 (n=8, 1315 meals) and 5.7 (n=11, 1774 meals) meals a day, respectively, within the 4 week period. In total, the participants uploaded 3951 meals and recorded 7066 sessions.

**Conclusions:** Smartphone-based virtual peer support can be used as a tool to promote healthy eating both in outpatient clinic and occupational health settings.


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**KEYWORDS**

mHealth; nutrition; food journal; peer support; obesity

This poster was presented at the Connected Health Symposium 2016, October 20-21, Boston, MA, United States. The poster is displayed as an image in [Figure 1](#) and as a PDF in [Multimedia Appendix 1](#).

**Figure 1.** Poster.



## VISUAL FOOD DIARY

### FOR SOCIAL SUPPORT, DIETARY CHANGES AND WEIGHT LOSS

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AGRIKULTUR-FORSTVETENSKAPLIGA FAKULTETEN  
FACULTY OF AGRICULTURE AND FORESTRY

Heli Salmenius-Suominen, Department of Food and Environmental Sciences, Division of Nutrition | Mikko Lehtovirta, FIMM, Institute for Molecular Medicine Finland | Henna Vepsäläinen, Department of Food and Environmental Sciences, Division of Nutrition | Hanna Konttinen, Department of Social Research | Maijaliisa Erkkola, Department of Food and Environmental Sciences, Division of Nutrition

#### BACKGROUND

Behaviour changes in diet may prevent or delay onset of chronic diseases such as type 2 diabetes. Social support is a known predictor of successful behaviour change. However, it is not known whether also virtual peer support could be used to improve dietary behaviour.

#### OBJECTIVE

To find out whether virtual peer support groups moderated by a nutrition professional using a mobile application can be used to promote healthy eating.

#### METHODS

In this 4-week feasibility study, volunteering adult (n=26) overweight (BMI > 25 kg/m<sup>2</sup>) men and women were recruited from a diabetes outpatient clinic and from an occupational health care unit.

Participants used a smartphone application to keep a visual food journal, share their meals and activity with peer group members and receive virtual coaching.

Several physical measurements and questionnaires were completed both before and after the intervention:

- food frequency questionnaire (FFQ) including eight food groups in 48 rows
- self-efficacy, group environment and social support scales
- height, weight and waist circumference

Also frequency of the application use was analysed.

#### RESULTS

After the intervention the daily use of vegetables and fruits were 6.04 (SD 2.31) portions. The daily use had increased by 2.15 (SD 2.64) portions (p<0.001) compared to baseline.

Food	Change in consumption (average, SD)	Significance
Vegetables and fruits, per day	2.15 (2.64)	p < 0.001
Wholegrain products, per day	0.30 (1.33)	p = 0.274
Low-fiber grain products, per week	-0.70 (3.17)	p = 0.276
Sweets and chocolate, per week	-0.97 (4.14)	p = 0.248
Sugared soft drinks and juices, per week	-0.39 (2.38)	p = 0.419
Sugar-free soft drinks and juices, per week	-0.85 (3.09)	p = 0.175

\*Paired samples t-test was used for vegetables, fruits and wholegrain products. For the other variables Wilcoxon Signed Rank test was used.

Mean weight loss after the intervention was 1.5 kg (SD 1.82, p=0.001) in all subjects together. Mean reduction in waist circumference was 2.4 cm (SD 2.418, p=0.001).


Variable	Change after intervention (average, SD)	Significance
Weight (kg)	-1.54 (1.82)	p = 0.001
BMI (kg/m <sup>2</sup> )	-0.54 (0.63)	p = 0.001
Waist circumference (cm)	-2.40 (2.42)	p = 0.001

Wilcoxon Signed Rank Test was used.


84% of participants agreed that they got support from other group members. The use of application was high: average user uploaded 5.2 meals per day and used the application total of 9.3 times per day.

#### CONCLUSIONS


Smartphone based virtual coaching and peer support can be used as a tool to promote healthy eating and weight loss.




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## Multimedia Appendix 1

Poster.

[\[PDF File \(Adobe PDF File\), 1MB-Multimedia Appendix 1\]](#)

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