



# **Implementation and evaluation of a smartphone dietary assessment application among 15-year-olds in Sweden**

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# Aims

- To evaluate a smartphone applications' ability to assess EI, TEE, nutrient intake and food intake among adolescents
- To investigate individual factors that affect the reporting accuracy of EI among adolescents when using the smartphone application





# Features of the application

- Register as a user
  - Name
  - Telephone number
  - E-mail address
  - Date of birth
  - Gender
  - Height
  - Weight
  - Parents' highest education
  - Born in Sweden
  - Special diet

MatMobilen Beta

Ange användarnamn

Ange lösenord

Logga in

Registrera dig

The image shows a mobile application interface for 'MatMobilen Beta'. It features a blue header with the title 'MatMobilen Beta'. Below the header, there are two input fields: 'Ange användarnamn' (Enter username) and 'Ange lösenord' (Enter password). Below these fields are two buttons: 'Logga in' (Log in) and 'Registrera dig' (Register).



# Features of the application

- Search the National Food Agency's food database to record foods
  - Date and time
  - Type of meal
  - Food
  - Amount

A screenshot of a mobile application interface for recording food intake. The interface is in Swedish and has a dark theme. At the top, there are two tabs: 'Kost' (selected) and 'Levnadsvanor'. Below the tabs is the title 'Registrera kostintag'. The main form area has a blue header for each section. The first section is 'Ange starttid:' (Specify start time), with two input fields containing '2013-02-20' and '12:56'. The second section is 'Välj måltidstyp:' (Select meal type), with a dropdown menu showing 'Mellanmål'. The third section is 'Använd måltidsmall' (Use meal template), with a dropdown menu showing 'Använd ingen mall'. At the bottom, there is a large button labeled 'Starta registrering' (Start recording).





# Features of the application

- Register "questions in the evening"
  - Physical activity during the day (5 levels)
  - How much of the consumed food that was recorded
  - Dietary intake and physical activity compared with the average day
  - Stress
  - Anxious/depressed
  - Nutritional supplements
  - Tried to change weight

A screenshot of a mobile application interface. At the top, there are two tabs: 'Kost' (Cost) and 'Levnadsvanor' (Habits), with 'Levnadsvanor' selected. Below the tabs, the title 'Registrera levnadsvanor' (Record habits) is displayed, followed by the date 'Onsdag 2013-02-20'. The main content area has a blue background and contains the following text: 'Jag har idag uppskattningsvis registrerat 0 % av den mat jag har ätit' (I have today estimatedly registered 0% of the food I have eaten). Below this is a progress bar showing '0 %'. The next line says 'Jag har idag uppskattningsvis ätit' (I have today estimatedly eaten) followed by a dropdown menu with the selected option 'Lika mycket som jag brukar äta' (Same amount as I usually eat). The final line asks 'Har du ätit något kosttillskott idag? (Här kan du välja flera alternativ)' (Have you eaten any supplements today? (Here you can choose several alternatives)). At the bottom, there is a 'Spara' (Save) button.



# Features of the application

- Save meals
- Get reminders to record
- Photograph meals
- Feedback about the dietary intake, per meal, day or several days
  - EI, TEE, macronutrients, fruits and vegetables, dietary fibre, calcium, iron, vitamin C, vitamin D, folic acid, BMIIn relation to NNR





# Recruitment

- Spring and autumn terms 2013
- Adolescents in grade 9 in Gothenburg and neighbouring municipalities
- Adolescents from 12 of 136 contacted schools participated
- A total of 389 adolescents in 28 classrooms received information about the study
- 148 adolescents (38%) were recruited, 85 girls and 63 boys



# Data collection

- Methods:
  - Weight, height, questionnaire
  - 3-day FR with the smartphone application, + questions in the evening
  - SenseWear Armband on the same 3 days
  - During spring term also 3 days web-based FR, and SenseWear Armband
  - Focus group interviews







## Research questions

- How well did the smartphone application capture EI of the adolescents compared with TEE measured by SenseWear Armband? **n=81**
- Which individual factors affected the accuracy of reported EI? **n=81** (n=15 had some imputed data)
- How well did the smartphone application capture TEE of the adolescents compared with TEE measured by SenseWear Armband? **n=69**
- How much of the nutrient intake and food intake did the smartphone application capture compared with the web-based FR? **n=15**



- Results under publication.



## Learnings

- Development in collaboration with the adolescents might have improved study participation and validity of the application
- Use a better reference method such as DLW in a sub-sample
- Develop the application for iPhone