ISRCTN14153741 https://doi.org/10.1186/ISRCTN14153741

Randomized controlled trial for dietary food measurement on mobile devices

Submission date
05/03/2015

Recruitment status
No longer recruiting

Registration date
08/04/2015

Overall study status
Completed

Last Edited
07/04/2015

Condition category
Nutritional, Metabolic, Endocrine

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
Mobile phone applications (apps) are considered to have great potential in helping to tackle the global health challenge of obesity. Promoting a healthy diet to the general population is getting attention. Many such mobile phone apps include the participant being able to report on what they have eaten (or not eaten) in a dietary log or planner. However, they usually only ask for the type of food and the quantity that is eaten. To make such a mobile phone app more useful, a user-friendly and effective way of measuring the amount of food eaten wherever the participant happens to be is needed. In this study, we developed a promising dietary food measurement on mobile devices and two visual-based interactive app alternatives were designed to appeal to young adults. This study compares these two apps in terms of how easy they are to use.

Who can participate?
Collegiate students aged at least 18 and attending Chang Gung University (Taiwan)

What does the study involve?
The visual-based interactive apps being tested are the IPI (interactive photo interface) and SBI (sketching-based interface). IPI uses pre-determined images of a specific food which the users can flick though and select the one most representative of the amount eaten. SBI compares the amount of food to a readily available comparator (e.g., a credit card) and the users can scribble to shade in the appropriate area. We then look at how well the apps perform in terms of accuracy rate, response time, and subjective assessment. Participants taking part in the study are randomly assigned to one of three groups. Those in group 1 use the IPI app. Those in group 2 use the SBI app. Those participants in group 3 are in the control group and are given traditional life-sized photos (TLP) of food portions. 18 food items in which the portion of each food are used and the portion of each of these foods is also randomly selected.

What are the possible benefits and risks of participating?
Not provided at time of registration.

Where is the study run from?
Food Interaction Design Lab, Department of Industrial Design, College of Management, Chang Gung University (Taiwan)

When is study starting and how long is it expected to run for?
November 2012 to February 2014

Who is funding the study?
1. Chang Gung Memorial Hospital, Taoyuan (Taiwan)
2. Research Fund of Chang Gung University (Taiwan)
3. Ministry of Science and Technology (Taiwan)

Who is the main contact?
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Contact information

Type(s)
Scientific

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Additional identifiers

Protocol serial number
101-3876B

Study information

Scientific Title
Design and usability evaluation of user-centered and visual-based aids for dietary food measurement on mobile devices in a randomized controlled trial

Study objectives
To design a promising dietary food measurement on mobile devices, and two interactive aids for apps were designed. A randomized controlled trial was conducted to evaluate user usability.

Ethics approval required

Old ethics approval format

Ethics approval(s)
Ethics Committee of Chang Gung Memorial Hospital, 14/01/2013, ref: 101-3876B.

Study design
Randomized controlled trial

Primary study design
Interventional

Study type(s)
Other

Health condition(s) or problem(s) studied
Diet

Interventions
Overall, 36, 38, and 34 subjects were randomly assigned to the interactive photo interface (IPI), sketching-based interface (SBI), and traditional life-size photo (TLP) groups, respectively.

Intervention Type
Behavioural

Primary outcome(s)
Two types of outcomes were conducted to evaluate the usability of mobile devices for dietary measurement, and these outcomes included the correct proportion of dietary food measurement.
1. Accuracy was one type of outcome and was defined as the number of correct counts divided by overall counts
2. Absolute weight difference in grams compared with the standard.

Key secondary outcome(s))
1. The duration of the response time consumed in seconds for each item was automatically recorded by the apps.
2. Subjective evaluation for preference was determined by conducting food portion measurements and operating the interface.

Completion date
07/02/2014

Eligibility

Key inclusion criteria
Collegiate students aged 18 or over of Chang Gung University.

Participant type(s)
Healthy volunteer

Healthy volunteers allowed

No

Age group
Adult

Lower age limit
18 years

Sex
All

Key exclusion criteria
N/A

Date of first enrolment
14/01/2013

Date of final enrolment
31/08/2013

Locations

Countries of recruitment
Taiwan

Study participating centre
College of Management
Chang Gung University
No. 259
Wen-Hwa 1st Road
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333

Sponsor information

Organisation
Ministry of Science and Technology, Taiwan and Chang Gung University

ROR
https://ror.org/009knm296

Funder(s)

Funder type
University/education

Funder Name
Chang Gung University

Alternative Name(s)
, CGU

Funding Body Type
Private sector organisation

Funding Body Subtype
Universities (academic only)

Location
Taiwan

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Available on request