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Evaluating mobile prototypes utilization of individual meal recording

Submission date
02/12/2017

Recruitment status
No longer recruiting

Registration date
05/04/2018

Overall study status
Completed

Last Edited
18/02/2019

Condition category
Nutritional, Metabolic, Endocrine

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
There is a great need for new dietary assessment methods that not only provide valid data, but also suit the lifestyles of different types of users. In mHealth app development, prototypes commonly evolve from concept in more than one design variant. The usability of these design variants are rarely subjected to systematic evaluation, and lack comparative evidence from user interaction. The aim of this study is to evaluate and compare the effectiveness of two app designs.

Who can participate?
University students aged over 18 recruited from Chang Gung University (18-29 years old), and older adults recruited among volunteers from Chang Gung Memorial Hospital (55-73 years old)

What does the study involve?
Participants are randomly allocated to use of one two application prototypes. The first application is called self-chosen tab (SCT), and allows users to choose and click each food ingredient to synthesize a food. The second application is called autonomous exhaustive list (AEL), in which users scroll through and select from a comprehensive list of combined food ingredients. The research assistant demonstrates the use of the application through one meal with four food items to familiarize participants with application operation. After the demonstration, each user is allowed to practice application operation for three minutes to warm up. Each participant is asked to observe two actual meals and to record each item in one prototype. The meals are prepared with real food in appropriate portions, and presented consistently on a plate throughout the experiment. Each participant completes the task within 30 minutes. Application usability is assessed in terms of accuracy and response time in the task of reporting the food items. Participant's time and input of the buttons in each app is automatically recorded by the prototype.

What are the possible benefits and risks of participating?
There are no risks of taking part in the study.

Where is the study run from?
Chang Gung University (Taiwan)

When is the study starting and how long is it expected to run for?
June 2014 to January 2015

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

Who is the main contact?
1. Dr Ying-Chieh Liu
2. Dr Sherry Yueh-Hsia Chiu

Contact information

Type(s)
Public

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Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
103-2745B

Study information

Scientific Title
Evaluating mobile prototypes utilization of individual meal recording using a randomised trial

Study objectives
The aim of this study is to assess the accuracy and efficiency of the two prototypes for dietary recording utilization, including innovative designs of SCT (self-chosen tab) and AEL (autonomous exhaustive list) for individual dietary intakes.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Ethics Committee of Chang Gung Memorial Hospital, 23/06/2014, ref: 103-2745B

Study design
Randomised parallel trial

Primary study design
Interventional

Secondary study design
Randomised parallel trial

Study setting(s)
School

Study type(s)
Other

Participant information sheet
Not available in web format, please use the contact details to request a patient information sheet

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

Interventions

A parallel two-group randomized controlled trial (RCT) was designed to evaluate and compare the effectiveness of two app designs to help users select a wide variety of food alternatives. Two prototypes were implemented in the Android operating system for use in mobile devices. The first application is called self-chosen tab (SCT), and allows users to choose and click each food ingredient to synthesize a food. The second application is called autonomous exhaustive list (AEL), in which users scroll through and select from a comprehensive list of combined food ingredients. Participants were recruited through local hospitals and colleges. Baseline data and informed consent were acquired following online registration. The assessment was performed by a research assistant who began the process by administering a basic background questionnaire. The research assistant then demonstrated the use of both applications through one meal with four food items to familiarize participants with application operation. Participants were given three minutes to complete each task. Having completed the first meal, the participant continued to label the second meal without taking a rest. Recruitment and implementation were performed based on the order of randomization lists with a 1:1 ratio. Individual appointments were then made for evaluation.

Intervention Type
Device

Primary outcome measure
Application usability assessed in terms of accuracy and response time in the task of reporting the food items:
1. Accuracy was defined as the number of correct counts divided by the overall counts. “Correct” was defined as the subject selecting the correct main food ingredient(s) button in the app as well as the correct food attribute(s) button for each of the 12 items, given unlimited switching among food groups and/or subgroups
2. Response time was recorded in milliseconds in terms of the time elapsed from a user’s selection (clicking) at a certain main food ingredient button to complete in food attribute(s) selection

Secondary outcome measures
There are no secondary outcome measures

Overall study start date
20/06/2014

Completion date
31/01/2015

Eligibility

Key inclusion criteria
1. University students aged over 18 recruited from Chang Gung University (18-29 years old)
2. 35 older adults recruited among volunteers from Chang Gung Memorial Hospital (55-73 years old)

Participant type(s)
Healthy volunteer

Age group

Mixed

Lower age limit
18 Years

Upper age limit
73 Years

Sex
Both

Target number of participants
The minimal sample size with 50 subjects was required for each arm

Key exclusion criteria
Those who could not use smartphone or could not communicate with others

Date of first enrolment
30/09/2014

Date of final enrolment
10/01/2015

Locations

Countries of recruitment
Taiwan

Study participating centre
Chang Gung University
No. 259, Wen-Hwa 1st Road, 333 Kwei-Shan
Tao-Yuan
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333

Study participating centre
Chang Gung Memorial Hospital, LinKuo, Taiwan
No.5, Fuxing St., Kwei-Shan
Tao-yuan
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Sponsor information

Organisation
Chang Gung University

Sponsor details
No. 259
Wen-Hwa 1st Road
333 Kwei-Shan
Tao-Yuan
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Sponsor type
University/education

Website
www.cgu.edu.tw

Organisation
Chang Gung Memorial Hospital

Sponsor details
No.5, Fuxing Street
Kwei-Shan
Tao-yuan City 333
Tao-yuan
Taiwan
333
+886 (0)3 3281200
ycl30@mail.cgu.edu.tw

Sponsor type
Hospital/treatment centre

Organisation
Chang Gung University

Sponsor details

Sponsor type
Not defined

Website
http://www.cgu.edu.tw/

ROR
https://ror.org/00d80zx46

Funder(s)

Funder type
University/education

Funder Name
Research Fund of Chang Gung Memorial Hospital and Chang Gung University (BMRPB81; BMRPD67)

Funder Name
Ministry of Science and Technology, Taiwan (NSC-105-2221-E-182-044; NSC-104-2221-E-182-049)

Alternative Name(s)
Ministry of Science and Technology, R.O.C. (Taiwan), Ministry of Science and Technology of Taiwan, MOST

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
Taiwan

Results and Publications

Publication and dissemination plan
The trialists intend to publish this study on 30/05/2018.

Intention to publish date
30/05/2018

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are/will be available upon request from Dr Sherry Yueh-Hsia Chiu. This should follow the mechanism governed by the ethical committee agreement.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?

Results article	results	15/02/2019	Yes	No