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Evaluating mobile prototypes utilization of individual meal recording

Submission date
02/12/2017

Registration date
05/04/2018

Last Edited
18/02/2019

Recruitment status
No longer recruiting

Overall study status
Completed

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

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Public

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Additional identifiers

Protocol serial number

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

Study type(s)

Other

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(s)
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

Key secondary outcome(s))
There are no secondary outcome measures

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

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
18 years

Upper age limit
73 years

Sex
All

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
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Study participating centre
Chang Gung Memorial Hospital, LinKuo, Taiwan

No.5, Fuxing St., Kwei-Shan
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Sponsor information

Organisation

Chang Gung University

Organisation

Chang Gung Memorial Hospital

Organisation

Chang Gung University

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

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
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes