ISRCTN17335889 https://doi.org/10.1186/ISRCTN17335889

The assessment of mobile voice-based apps to measure food consumption reporting for the elderly

Submission date
23/03/2020

Recruitment status
No longer recruiting

Registration date
06/04/2020

Overall study status
Completed

Last Edited
06/01/2021

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
Advances in digital technologies are changing the way elderly care is delivered. Advances in voice technology add a new dimension to health applications. There is a trend for the use of mobile voice-aided applications for daily help in maintaining health. However, the user experience of voice-aided applications by the older population requires further investigation. The researchers have developed two reporting approaches, namely, voice-only reporting (VOR) and voice button reporting (VBR). Each of the two apps features a unique user interaction design. In the VOR, users report the food items by only using voice interaction, while the VBR allows users to report the food items by voice and button interactions.

Who can participate?
Elderly people between 60 and 90 years of age, capable of reading and operating the application on their mobile phone, and without diabetes, high cholesterol, or high blood pressure.

What does the study involve?
Participants will be randomly allocated to use either the VOR or VBR version of the food reporting app. They will be required to use the app to report their intake over a single day.

What are the possible benefits and risks of participating?
By following this study, the participants will gain knowledge in reporting their dietary intake using voice-based apps. Further to the possible risks, this experiment have no risks for the participants.

Where is the study run from?
Chang Gung Health and Culture Village (Taiwan)

When is the study starting and how long is it expected to run for?
November 2019 to January 2020

Who is funding the study?
Ministry of Science and Technology (Taiwan)

Who is the main contact?
Dr Ying-Chieh Liu
ycl30@mail.cgu.edu.tw

Contact information

Type(s)
Public

Contact name
Dr Ying-Chieh Liu

ORCID ID
https://orcid.org/0000-0003-1876-7632

Contact details
Chang Gung University
No.259
Wenhua 1st Rd.
Guishan Dist.
Taoyuan City
Taiwan
33302
+886 (0)955340448
ycl30@mail.cgu.edu.tw

Additional identifiers

Clinical Trials Information System (CTIS)
Nil known

ClinicalTrials.gov (NCT)
Nil known

Protocol serial number
201900324B0

Study information

Scientific Title
The assessment of mobile voice-based interaction on food reporting for the elderly: a randomized controlled trial

Study objectives
This study seeks to develop and assess the relative effectiveness and acceptability of two app prototypes in tests of elderly reporting their food intakes in realistic contexts.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 24/05/2019, Ethics Committee of Chang Gung Memorial Hospital (No. 199, Dunhua North Road, Taipei 105, Taiwan; +886 33196200#3716; yijiun@cgmh.org.tw), ref: 201900324B0

Study design
Interventional randomized parallel trial

Primary study design
Interventional

Study type(s)
Quality of life

Health condition(s) or problem(s) studied
Dietary intake

Interventions
Each participant will complete a questionnaire to collect background and baseline data that allows the assistant researchers to contact them and perform randomization. The baseline data will be randomized to allocate participants either to the voice-only or voice button reporting group. To ensure an even age distribution, two random number lists will be generated by SAS software (SAS Institute Inc, Cary, North Carolina).

Older adults aged 60-90 are recruited and randomized into two experimental groups, i.e., namely voice-only reporting (VOR) and voice button reporting (VBR). Each of the groups utilize a specific app featuring a unique user interaction design. In the VOR, users report the food items by only using voice interaction, while the VBR allows users to report the food items by voice and button interactions. Seventeen food items will be used in the experiment, mimicking three-set meals, breakfast, lunch, and dinner.

All participants use a 7-inch Android tablet for the test, and all participant trials will be conducted on a single day. Each participant is tested one-by-one for about one hour each. Each participant first watches an instructional video explaining the operation of the mobile app and the food reporting method each participant is assigned to use. Following the written and video instructions, the researchers spend several minutes teaching each participant how to navigate to ensure familiarity with the app's operation and features and conduct a 'dry-run' which involves assessing voice reporting of five food items which are presented on a photo-board. Participants will be encouraged to use the system to assess these items until they feel comfortable with the application's operations. For the trial, participants will be informed that their time to completion is also a performance consideration.

Three set meals are arranged under Chang Gung Memorial Hospital's nutritionist supervision based on typical Taiwanese foods. Three set meals represented breakfast, lunch, and dinner. Each set meal contained staple food, a single dish, a dish with two ingredients, a dish with three ingredients, and a beverage. These set meals will be presented in 1:1 colored food-photo-boards (30cm x 42cm). Food name tags (font-size = 72pt) will be placed on the above or below each food picture with the order number from bottom-left to top-right.

Intervention Type
Behavioural

Primary outcome(s)
1. Accuracy of reporting measured using reporting errors made in the app at the time of the intervention
2. Response time recorded and embedded in apps in milliseconds for the time elapsed from a user's voice food reporting to completion

Key secondary outcome(s))
Participants' perceptions of the utility of each app were measured using the System Usability Scale (SUS), with ten items scored using a 5-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree) at the end of the intervention.

Completion date
19/01/2020

Eligibility

Key inclusion criteria
1. 60 - 90 years of age
2. Capable of reading and operating the application on their mobile phone

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Senior

Sex
All

Total final enrolment
57

Key exclusion criteria
1. Under any form of dietary control
2. Engaged in deliberate weight loss
3. On medication
4. Pregnant
5. Diabetes
6. High cholesterol
7. High blood pressure

Date of first enrolment
08/11/2019

Date of final enrolment
15/01/2020

Locations

Countries of recruitment
Taiwan

Study participating centre
Chang Gung Health and Culture Village
No. 2, Changqing Rd.
Guishan Dist.
Taoyuan
Taiwan
333

Sponsor information

Organisation
Ministry of Science and Technology

ROR
https://ror.org/02kv4zf79

Funder(s)

Funder type
Government

Funder Name
Ministry of Science and Technology, Taiwan

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 current data with anonymization can be requested based on ethical committee review and approval. The data sharing plans for the current study are unknown and will be made available at a later date.

IPD sharing plan summary
Data sharing statement to be made available at a later date

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	28/09/2020	06/01/2021	Yes	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes