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# A blended face-to-face and eHealth lifestyle intervention on physical activity, diet, and health outcomes in Hong Kong community-dwelling older adults

**Submission date**
30/11/2023

**Recruitment status**
No longer recruiting

**Registration date**
01/12/2023

**Overall study status**
Completed

**Last Edited**
11/06/2025

**Condition category**
Other

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

## Plain English summary of protocol

Background and study aims
Aging people are vulnerable to suffering from various noncommunicable diseases (NCDs). Different behaviors are closely related to decreasing the risk of suffering from NCDs: Sufficient physical activity (PA) (e.g., at least 150mins with moderate and vigorous PA, MVPA, per week) and a healthy diet (e.g., at least 5 portions of fruit and vegetable intake, FVI, per day as well as 5-6 taels meat, fish, egg and alternatives, MFEA, consumption per day; 1 tael is approximately equivalent to 40 grams raw meat). Traditional face-to-face lifestyle interventions providing individualized tailored interventions, facilitating interactive communications, and granting opportunities to ask personalized questions are effective in behavior change. However, they are also resource-intensive, and transfer is limited due to poor self-regulation skills outside the face-to-face session. Thus, eHealth could be a potential supplement for traditional face-to-face interventions for older adults in home settings or out of traditional care settings. The blended approach combining the face-to-face and eHealth interventions might optimize the intervention effects on lifestyle behavior initiation and maintenance, but little research can be found on older individuals in Hong Kong. Therefore, this proposed study aims to apply blended intervention to promote PA, diet, and health outcomes among Hong Kong community-dwelling older adults.

Who can participate?
Senior people aged between 65 and 99 years old from two Senior Centers in Hong Kong

What does the study involve?
The e-poster and video will be advertised by the staff in the Senior Centers. There are over 3,000 members in these two centers. Therefore, it is feasible and advantageous to recruit participants by advocating for the Senior Center. Potential study participants will be informed that there will be a health promotion program, in which they can obtain the health-related program and receive $200HKD (about $25USD) supermarket gift cards as an incentive if the participants complete the 10-week health project and finish three times data collections. Once the older adults express their interests, they will be encouraged to register in the program. After finishing all the

registration and eligible screening, they will be provided with the study consent forms. Eligible participants will be allocated with an equal ratio (in a 1:1:1 ratio) to one of three groups. The group allocation will be blinded. For the participants in the blended intervention group, the researchers would provide the individual web-link for participants.

Intervention content
This study will adopt a 10-week three-arm randomized controlled trial, comprising a face-to-face and eHealth blended intervention group, a stand-alone face-to-face intervention group, and a control group. The participants in face-to-face and eHealth blended intervention will receive (1) one 60-minute face-to-face session for PA and one 60-minute face-to-face session for diet per week; (2) a web-based behavior change promotion intervention with one session for PA and one session for diet each week. The participants in the face-to-face intervention group will receive the same intervention content as the face-to-face session in the blended group. A control condition will receive a biweekly telephone interview. The outcome variables will include MVPA (minutes/week), FVI (portion/day), MFEA consumption (taels/day), social-cognitive factors of behavior change (self-efficacy, plan, social support, action control), physical health outcomes (blood pressure, glycosylated hemoglobin, lipid, physical fitness), mental health outcomes (depression, loneliness) and health-related quality of life. Data collection will be implemented at pre-test, post-test after the 10-week intervention, 3-month follow-up test.

What are the possible benefits and risks of participating?
The participants in the intervention groups will promote their lifestyle behaviors after the intervention program. They will be provided with three health reports related to all the physical and mental health outcomes to let them know more about their health. There is a possible risk of injury when participating in the in-person exercise classes.

Where is the study run from?
All the face-to-face intervention sessions will be undertaken at the gym and senior centers (Hong Kong)

When is the study starting and how long is it expected to run for?
May 2021 to May 2024

Who is funding the study?
The Hong Kong Baptist University (Hong Kong)

Who is the main contact?
Miss Min Yang, Ph.D. candidate, Department of Sport, Physical Education and Health, 20482450@life.hkbu.edu.hk (Hong Kong)

# Contact information

### Type(s)
Public, Scientific, Principal investigator

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# Additional identifiers

# Study information

### Scientific Title
A blended face-to-face and eHealth lifestyle intervention on physical activity, diet, and health outcomes in Hong Kong community-dwelling older adults: a randomized controlled trial

### Study objectives
Hypothesis 1: The promotion of physical activity (PA) and diet (fruit and vegetable intake [FVI] and meat, fish, egg & alternatives [MFEA]) behaviors, and higher adherence to both health recommendations of PA and diet (FVI & MFEA) behaviors among participants in different groups would be IG-1 (blended intervention group) > IG-2 (IG-2: face-to-face intervention group) > CG (control group).

This study aims to compare the intervention effects between blended, face-to-face, and control groups in secondary outcomes, including social-cognitive variables of behaviors (i.e., self-efficacy, planning, social support, and action control), physical health outcomes (i.e., BMI and physical fitness test, clinical indicators), mental health outcomes (i.e., depression, loneliness), and health-related quality of life (HRQoL). There are four hypotheses (hypotheses 2-5).

Hypothesis 2: The increase in social-cognitive variables of behaviors (i.e., self-efficacy, planning, action control, and social support) among participants in different groups would be IG-1 > IG-2 > CG.

Hypothesis 3: The improvement in physical health outcomes (i.e., BMI and physical fitness test, clinical indicators) among participants in different groups would be IG-1 > IG-2 > CG.

Hypothesis 4: The improvement in mental health outcomes (i.e., depression, loneliness) among participants in different groups would be IG-1 > IG-2 > CG.

Hypothesis 5: The increase in HRQoL among participants in different groups would be IG-1 > IG-2 > CG.

### Ethics approval required
Ethics approval required

### Ethics approval(s)

Approved 28/02/2023, Hong Kong Baptist University Committee on the Use of Human and Animal Subjects in Teaching and Research (HASC) (224 Waterloo Road, Kowloon Tsai, Hong Kong, None available, Hong Kong; +852 3411-7127; natalietsui@hkbu.edu.hk), ref: SOSC-SPEH-2022-23_112

## Primary study design
Interventional

## Study design
Single-blind randomized controlled trial

## Study type(s)
Other

## Health condition(s) or problem(s) studied
Promote healthy lifestyle behaviors (i.e., physical activity, diet)

## Interventions
The study will be a single-blind randomized controlled trial (RCT) comprising three groups: a blended face-to-face and eHealth intervention group (IG-1), a stand-alone face-to-face intervention group (IG-2), and a control group (CG). Evaluation will be conducted at pre-intervention (T1), post-intervention (T2), and 3 months follow-up after intervention completion (T3). The target population will be Hong Kong community-dwelling older adults. Participants will be recruited and randomly assigned into one of three groups.

Face-to-face intervention group
The participants in the face-to-face intervention group will engage in two 60-minute face-to-face sessions per week, including one session for PA at the gym and one session for diet at the neighborhood elderly center for 10 weeks. Each PA session will consist of two parts, including knowledge education on the topic of PA and health (10 minutes) as well as physical exercise (50 minutes). Each session will include a warm-up exercise (5 minutes), a main exercise (40 minutes), and a cool-down exercise (5 minutes). The main exercise will consist of diverse components such as aerobic training, resistance training, balance training, and mindfulness meditation training. If the participants have any questions, the feedback will be given during physical activity during the course. Each PA session will be delivered by a PA coach with the assistance of two to four research helpers to make sure about safety and feasibility.

Each diet session will consist of two parts, including knowledge education on diet (30 minutes) and nutrition counseling (30 minutes). The education topics were developed based on suggestions from nutritionists, including proteins, fat, hydration, fruits and vegetables, calcium, osteoporosis etc. The nutrition counseling will include 15 minutes of group discussion with 3-4 participants in one group and 15 minutes of dish sharing. Personalized nutritional advice will be offered by the nutritionist accordingly. Each diet session will be delivered by a nutritionist with the assistance of one research helper.

Face-to-face and eHealth blended intervention group
In addition to attending all face-to-face interventions, participants in the blended intervention group will take part in a theory-based and web-based behavioral change promotion eHealth intervention with one program for PA and one program for diet each week. A mobile-based website namely Perfect Diet and Exercise (in Cantonese: “”””) will be established to facilitate

intervention. On the homepage of the website, there will be two modules including the PA module and the diet (FVI and MFEA) module. Participants can access each module to take part in respective online learning activities. Each module will consist of two sections. Section 1 comprises a theory-based 10-week intervention program targeting social-cognitive predictors of PA/diet (FVI and MFEA). Participants will access this section once a week. Section 2 serves as a data repository platform collecting former exercises and incentive activities. Here participants can access their files at any time throughout the 10-week intervention period, including behavior records of PA/diet, action planning of PA/diet, coping planning of PA/diet, and “my diary” about PA/diet behaviors. The weekly eHealth intervention component will be developed based on the Health Action Process Approach (HAPA). In accordance with the HAPA-based social-cognitive variables, the weekly intervention content will be developed accordingly.

In addition, the intervention will apply different behavior change techniques to facilitate behavior. For example, the participants will receive two types of feedback in the weekly web-based health session. This will include individualized feedback on their behavior performance in 1st week, 2nd week, 3rd week, 4th week, and 5th week respectively. Furthermore, the normative feedback on the criterion-based behavior recommendations (e.g., accumulated at least 150 minutes with moderate intensity of PA per week, 5 portions of FVI per day, 5-6 taels of MFEA per day) will be contained.

Each weekly web-based section for PA and diet will last for about 15 minutes respectively. In the first week, once the participants complete the face-to-face intervention. The researcher will immediately organize a web-based intervention course for older adults at the gymnasium for PA and at the elderly center for diet respectively. The researcher will first introduce the content of the website and demonstrate the steps related to how to use this web-based program. Then participants will be guided by research helpers to access the website and to finish the online study. In the 2nd week, the web-based intervention course will be continuously offered at the gym and the elderly center to ensure older adults are familiar with the usage of the website. Starting from the 3rd week, participants will be encouraged to finish the online courses at home to support transfer.

Control group
The participants in the control group will receive a biweekly telephone call. Each call will last about 5 minutes. The participants will be asked several health-related questions, such as “Has your physical activity changed in the last two weeks?”, “If change, what are the reasons for the increase or decrease?”, “Have you changed your diet in the last two weeks?”, “What has changed? if change, what are the reasons for the increase or decrease?”

## Intervention Type
Behavioural

## Primary outcome(s)
The following primary outcome measures are assessed at baseline, 10-week post-test, and 3-month follow-up test:
1. Physical activity (PA) measured using a waist-worn accelerometer, wGT3X-BT
2. The Fruit and Vegetable Intake (FVI) measured using a diet record booklet
3. The Meat, Fish, Egg & Alternatives (MFEA) measured by a diet record booklet

## Key secondary outcome(s)
The following secondary outcome measures are assessed at baseline, 10-week post-test, and 3-month follow-up test:

Physical health-related outcomes:
1. The senior physical fitness was measured based on the Senior Fitness Test Manual
2. The blood pressure is measured by an automated portable device (Omron HEM-7121 Standard, Japan)
3. The glycosylated hemoglobin (HbA1c, mmol/mol) is tested by Point of Care (POC) Cobas b 101 system
4. The lipid (triglycerides, TG; high-density lipoprotein, HDL; mg/dL) is tested by Point of Care (POC) Cobas b 101 system

Mental health-related outcomes:
1. Depression is measured by The Geriatric Depression Scale 15-item (GDS-15)
2. Loneliness is measured by The Chinese translation of the 6-item De Jong Gierveld Loneliness Scale
3. Social-cognitive variables were measured by the validated questionnaires
4. Health-related quality of life (HRQoL) is measured by The Hong Kong brief version of the World Health Organization's Quality of Life questionnaire (WHOQOL-BREF HK)

### Completion date
01/05/2024

## Eligibility

### Key inclusion criteria
1. Aged 65 years and above without physical disability
2. Have a smartphone and access to the internet
3. Pass the Physical Activity Readiness Questionnaire (PAR-Q)
4. Have sufficient reading and listening skills in Cantonese
5. At least one health behavior (PA, FVI, MFEA) fails to meet recommended health guidelines

### Participant type(s)
Population

### Healthy volunteers allowed
No

### Age group
Senior

### Lower age limit
65 Years

### Upper age limit
99 Years

### Sex
All

### Total final enrolment
151

### Key exclusion criteria
1. Aged less than 65 years and with physical disability
2. Have no access to the internet
3. Have insufficient reading and listening skills in Cantonese
4. Three health behaviors (PA, FVI, MFEA) meet recommended health guidelines

### Date of first enrolment
01/03/2023

### Date of final enrolment
01/04/2023

## Locations

### Countries of recruitment
Hong Kong

### Study participating centre
**Bliss District Elderly Community Centre**
G/F, Choi Lok House
Choi Fook Estate
Kwun Tong
Kowloon
Hong Kong
Hong Kong
None available

### Study participating centre
**Mei Foo Lai Wan Kai Fong Association**
Lai Wan Rd
Mei Foo Sun Chuen
Hong Kong
Hong Kong
None available

## Sponsor information

### Organisation
Hong Kong Baptist University

### ROR
https://ror.org/0145fw131

# Funder(s)

### Funder type
University/education

### Funder Name
Hong Kong Baptist University

### Alternative Name(s)
, BaptistU, Hong Kong Baptist College, Hong Kong Baptist University, Kowloon, , HKBU

### Funding Body Type
Government organisation

### Funding Body Subtype
Universities (academic only)

### Location
Hong Kong

# Results and Publications

### Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are not expected to be made available due to there only being consent for academic publication and not otherwise.

### IPD sharing plan summary
Not expected to be made available

### Study outputs

| Output type | Details | Date created | Date added | Peer reviewed? | Patient-facing? |
|---|---|---|---|---|---|
| Results article | | 10/06/2025 | 11/06/2025 | Yes | No |
| Protocol article | | 07/05/2024 | 22/05/2024 | Yes | No |