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Multi-component intervention for the reversal of mild cognitive impairment and physical frailty

Submission date
15/07/2020

Recruitment status
No longer recruiting

Registration date
01/06/2021

Overall study status
Completed

Last Edited
11/06/2025

Condition category
Mental and Behavioural Disorders

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

Plain English summary of protocol

Background and study aims
Cognitive frailty (CF) is a newly described predementia syndrome. CF has been used as a general descriptor for cognitive impairment occurring as people reach advanced age. CF can be influenced by a number of risk factors including vascular, lifestyle, poor nutritional status and psychosocial. This AGELESS intervention aims to reverse CF through multi-domain modality intervention with consideration of mitigating adherence towards the intervention.

Who can participate?
Adults between 60 to 80 years old with mild cognitive impairment and physical frailty.

What does the study involve?
During the screening phase and follow-up sessions, participants will be interviewed by the interviewer to obtain information on socio-demographic, health status, cognitive test, dietary intake record and also lifestyle. Anthropometric measurement (weight, height, body composition, waist and hip circumference), blood pressure and fitness test will also be measured and blood will be taken.

Participants that fulfil the criteria will be invited to participate in this study and randomly assigned as intervention and control groups. Subjects in the intervention group will receive 24 months structured multi-domain intervention modality focusing on the management of vascular conditions, lifestyle, physical activity, cognitive stimulation and nutrition, provided through a combination of individualized counseling and group-based activities. Whereas, subjects in the control group will receive routine care and general health consultation. Outcomes will be assessed at baseline, 6, 12, and 24 months. Participants will be required to complete a set of questionnaires, provide anthropometric measurements, engage in older adults' fitness tests as well as provide blood samples during each session. Additional follow-up at 36 months will also be conducted to assess the sustainability of the intervention. Blood samples will be collected at baseline, 12, 24, and 36 months by the biomedical researcher to assess the nutritional and vascular parameters

What are the possible benefits and risks of participating?
Participants will be able to know their general health status through blood analysis, cognitive

status, anthropometry, dietary intake, and physical fitness status. Moreover, this multi-domain modality intervention may have the ability to reverse the CF status if they are committed to this research. No risks known as the procedures involved are part of standard procedures.

Where is the study run from?
The National University of Malaysia

When is the study starting and how long is it expected to run for?
October 2019 until May 2024

Who is funding the study?
Ministry of Education (Malaysia)

Who is the main contact?
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Contact information

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Additional identifiers

Protocol serial number
LRGS/1/2019/UM//1

Study information

Scientific Title
Multi-domain intervention for reversal of cognitive frailty: towards personalized approaches

Acronym
AGELESS

Study objectives
1. Multi-domain modality intervention has the ability to reverse cognitive frailty among older adults
2. Physiological, vascular health and nutritional status would influence responses towards multi-domain modality intervention to reverse cognitive frailty among older adults
3. Environmental and psychosocial factors influence adherence towards multi-domain modality intervention to reverse cognitive frailty among older adults

Ethics approval required
Old ethics approval format

Ethics approval(s)

1. Approved 21/04/2021, Universiti Kebangsaan Malaysia Research Ethics Secretariat (Blok Klinikal, Hospital Canselor Tuanku Muhriz, Kuala Lumpur, 56000, Malaysia; 0391455046; sepkum@ukm.edu.my), ref: UKM PPI/111/8/JEP-2020-347

2.Approved 18/11/2020, Sekretariat Penyelidikan Dan Inovasi [National University of Malaysia Medical Research and Ethics Committee] (Aras 2, Pejabat Dekan, Fakulti Perubatan, Jalan Yaacob Latif, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur Malaysia; +603-9145 9480/9481; sppi@ppukm.ukm.edu.my), ref: JEP-2020-347

Primary study design
Interventional

Study design
Randomized controlled trial

Study type(s)
Other, Treatment

Health condition(s) or problem(s) studied
Cognitive frailty in older adults

Interventions
Current interventions as of 11/06/2025:

The intervention group participated in a structured 24-month program, which began with vascular care, followed by nutritional guidance, psychological support, and finally, exercise and cognitive training components. Vascular care sessions were scheduled every six months, tailored to each participant's blood test outcomes. Nutritional and psychological support were provided through monthly group sessions, typically comprising 8 to 10 individuals. Dietary advice was given by qualified dietitians and nutritionists, focusing on promoting healthy eating habits suitable for older adults. Psychological support included both group-based and individual counseling, addressing topics such as stress management, coping skills, social connections, self-confidence, and symptoms of depression.

The physical activity component consisted of group-based, multicomponent exercises that targeted strength, endurance, flexibility, coordination, and balance. Cognitive training, on the other hand, was delivered through structured paper-and-pencil tasks aimed at strengthening various cognitive abilities, including memory, executive functioning, processing speed, language skills, visuospatial reasoning, and attention span. Both the physical and cognitive training sessions were held two to three times per week throughout the entire 24-month period.

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Previous interventions:

This is a randomised clinical trial of which approximately 1,000 individuals aged 60 years and above will be screened for cognitive frailty at selected Older Adults Centres (PAWE). They will be divided into intervention and control groups through simple random sampling via Statistical Package for Social Sciences (SPSS) randomization feature.
The intervention group (n=150) will receive a 24 months structured multi-domain intervention modality (Nutrition, exercise, cognitive stimulation).

Control group (n=150) will continue their routine care and general health consultation at the hospitals or health clinics they usually visit to.

This is a multicentre-trial of which three centres (1 urban, 1 semi-urban and 1 rural) will be selected to conduct activities for intervention and control groups. Outcomes will be assessed at baseline, 6, 12 and 24 months. Additional follow up at 36 months will also be conducted to assess the sustainability of the intervention.

This is a multi-domain intervention study which includes the following interventions:
1. Physical Exercise
2. Cognitive Stimulation
3. Psychosocial interventions

These interventions will be implemented for a period of 24 months in which physical and cognitive interventions will be carried out on weekly basis, whereas psychosocial interventions will be carried out on month basis.

After 24 months of intervention, participants will no longer have a face-to-face session with the researchers for; physical, cognitive and nutritional interventions. They will be provided with materials and will be guided to continue the interventions taught as a home-based program for 1 year.

Intervention Type
Mixed

Primary outcome(s)
Current primary outcome measure as of 11/06/2025:

The primary outcomes assessed in this study encompassed both cognitive and physical functions. Cognitive performance was evaluated using several measures, including digit span forward, digit span backward, total digit span, verbal paired associates (for both immediate and delayed recall), visual paired associates (immediate and delayed recall), the Rey Auditory Verbal Learning Test (RAVLT), and the Categorical Fluency Test. Physical function, meanwhile, was measured using a range of tests: the chair sit and reach test, back scratch test, timed up and go (TUG) test, 30-second sit-to-stand test, 6-minute walk test, and the 2-minute step test.

Previous primary outcome measure as of 02/06/2023:

At baseline, 6, 12, 24 and 36 months:
1. Physical Function (Physical performance test, frailty indicators, cardiorespiratory fitness (VO2max), 2-min Step Test, Grip Strength Test, Chair Stand Test, Chair Sit-and-Reach Test, Timed Up-and-Go Test, Back Scratch Test, Gait speed, Exercise Self-Efficacy Scale (ESES))
2. Cognitive Function (Mini Mental State Examination, modified Neuropsychological Test Battery)

Previous primary outcome measure:

At baseline, 6, 12, 24 and 36 months:
1. Physical Function (Physical performance test, frailty indicators, cardiorespiratory fitness

(VO2max), 2-min Step Test, Grip Strength Test, Chair Stand Test, Chair Sit-and-Reach Test, Timed Up-and-Go Test, Back Scratch Test, Gait speed, Exercise Self-Efficacy Scale (ESES))
2. Cognitive Function (Mini Mental State Examination, Sleep pattern and insomnia, Medical Outcome Social Support (MOSS), BRIEF-Cope, Geriatric Depression Scale (GDS), UCLA loneliness scale, Resilience scale, General Self-Efficacy Scale (GSES) and University of Rhode Island Change Assessment (URICA) Psychotherapy version)

Key secondary outcome(s)
Current secondary outcome measures as of 11/06/2025:

1.15ml blood will be drawn to examine the vascular health that includes biochemical analysis (Fasting Blood Sugar, Fasting Serum Lipid, HBA1C], Troponin, Nitric oxide) as well as the nutriomes (level of albumin, Amino acid and fatty acids profile, vitamin D status and receptor, B12, Folic Acid, Vitamin E)
2. Psychosocial factors: Sleep pattern and insomnia, Medical Outcome Social Support (MOSS), BRIEF-Cope, Geriatric Depression Scale (GDS), UCLA loneliness scale, Resilience scale, General Self-Efficacy Scale (GSES) and University of Rhode Island Change Assessment (URICA) Psychotherapy version

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Previous secondary outcome measures:

At baseline, 6, 12 and 24 months:
1.15ml blood will be drawn to examine the vascular health that includes biochemical analysis (Fasting Blood Sugar, Fasting Serum Lipid, HBA1C], Troponin, Nitric oxide) as well as the nutriomes (level of albumin, Amino acid and fatty acids profile, vitamin D status and receptor, B12, Folic Acid, Vitamin E)
2. Environment and psychosocial factors: Sleep pattern and insomnia, Medical Outcome Social Support (MOSS), BRIEF-Cope, Geriatric Depression Scale (GDS), UCLA loneliness scale, Resilience scale, General Self-Efficacy Scale (GSES) and University of Rhode Island Change Assessment (URICA) Psychotherapy version

Completion date
12/05/2024

Eligibility

Key inclusion criteria
Current inclusion criteria as of 11/06/2025:

1. 60 - 80 y old
2. Clinical Dementia Rating = 0.5
3. Mini-Mental State Examination Score (> 19)
4. Frailty (Fried criteria) > 3

Previous inclusion criteria:

1. 60 - 80 y old
2. Clinical Dementia Rating = 0.5
3. Mini-Mental State Examination Score (> 19)
4. Frailty (Fried criteria) > 3
5. Cognitive screening will be conducted with the Consortium to Establish a Registry for Alzheimer's Disease (CERAD) neuropsychological battery and participants have to meet at least one of the following criteria: word list memory task (ten words three times) results of 19 words or fewer; word list recall of 75% or less; or mini mental state examination of 26 points or less out of 30 points

Participant type(s)
Healthy volunteer, Health professional, Carer, Resident, Population

Healthy volunteers allowed
No

Age group
Senior

Lower age limit
60 Years

Upper age limit
80 Years

Sex
All

Total final enrolment
106

Key exclusion criteria
1. Suspected dementia after clinical assessment by study physician at screening visit (individuals recommended for further investigations)
2. Disorders affecting safe engagement in the intervention (eg, malignant disease, major depression, symptomatic cardiovascular disease, revascularisation within 1 y previously)
3. Severe loss of vision, hearing, or communicative ability
4. Coincident participation in another intervention trial

Date of first enrolment
23/11/2020

Date of final enrolment
30/03/2024

Locations

Countries of recruitment
Malaysia

Study participating centre
Healthy Ageing and Wellness Centre (H-Care)
Fakulti Sains Kesihatan
Universiti Kebangsaan Malaysia
Jalan Raja Muda Abdul Aziz
Kuala Lumpur
Malaysia
50300

Study participating centre
Older Adults Activity Centre (PAWE)
Aras 5, Kolej Keris Mas
Universiti Kebangsaan Malaysia (UKM)
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Malaysia
43600

Study participating centre
Older Adults Activity Centre (PAWE)
No. 16, Jalan Batu Hampar
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Sponsor information

Organisation
National University of Malaysia

ROR
https://ror.org/00bw8d226

Funder(s)

Funder type
Government

Funder Name
Ministry of Higher Education and Long Term Research Grant Scheme (LRGS)

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		13/05/2025	11/06/2025	Yes	No
Protocol article		21/07/2021	02/06/2023	Yes	No
Other publications	A qualitative study on the impact and participation in the AGELESS multidomain intervention: Insights from older adults with cognitive frailty and their caregivers	03/01/2025	11/06/2025	Yes	No
Other publications	Development and Evaluation of Content Validity and Acceptance of a Multidomain Intervention Module for Reversal of Cognitive Frailty Among Older Adults	01/07/2024	11/06/2025	Yes	No
Other publications	Recruitment and Baseline Characteristics of Participants	01/01/2024	11/06/2025	Yes	No
Study website	Study website	11/11/2025	11/11/2025	No	Yes