

Evaluation of an artificial intelligence care call service for older adults in the community

Submission date 08/08/2025	Recruitment status No longer recruiting	<input type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
Registration date 20/08/2025	Overall study status Ongoing	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
Last Edited 19/08/2025	Condition category Other	<input type="checkbox"/> Individual participant data <input checked="" type="checkbox"/> Record updated in last year

Plain English summary of protocol

Background and study aims

South Korea is experiencing one of the fastest rates of population ageing worldwide, leading to increased demand for innovative, scalable solutions to help older adults remain healthy and independent at home. One such approach is the use of artificial intelligence (AI) care call services, which deliver routine well-being checks and emotional support through automated telephone conversations powered by large language models (LLMs). These services aim to reduce loneliness, enhance safety, and supplement existing public community care systems.

Who can participate?

Older adults aged 65 years or older who are currently receiving government-supported Customized Care Services, and who have not used AI-based care services in the past three months.

What does the study involve?

Participants will be randomly assigned to either receive the LLM-based AI care call service in addition to usual care or to continue receiving usual care alone over 12 weeks. The AI care calls will occur twice weekly and will include brief, interactive check-ins on topics such as meals, health, mood, and medication. All participants will complete structured surveys before and after the 12 weeks to evaluate outcomes, including loneliness, well-being, and perceived safety.

What are the possible benefits and risks of participating?

Participants may experience improved emotional well-being, reduced feelings of isolation, and an enhanced sense of safety. Risks are considered minimal. The AI chatbot system is powered by an LLM trained on real conversations between older adults and care providers and has been deployed in previous settings without reported adverse events. Participation is voluntary, and individuals may withdraw from the study at any time without penalty.

Where is the study run from?

Seoul National University (South Korea)

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

December 2024 to March 2026

Who is funding the study?
National Research Foundation of Korea (South Korea)

Who is the main contact?
Prof Hongsoo Kim, hk65@snu.ac.kr

Contact information

Type(s)
Public, Scientific, Principal Investigator

Contact name
Prof Hongsoo Kim

ORCID ID
<https://orcid.org/0000-0002-5539-7653>

Contact details
Seoul National University
221, 1 Gwanak-ro, Gwanak-gu
Seoul
Korea, South
08826
+82 028802723
hk65@snu.ac.kr

Additional identifiers

EudraCT/CTIS number
Nil known

IRAS number

ClinicalTrials.gov number
Nil known

Secondary identifying numbers
RS-2023-00276954

Study information

Scientific Title
Effectiveness of an LLM-based AI care call service in reducing loneliness among community-dwelling, lower-income seniors: a randomized controlled trial

Acronym
AICCS

Study objectives

To evaluate the effectiveness of LLM-based AI care call services for older adults receiving community-based Customized Senior Care Services (a public senior welfare service program provided through community welfare centers) in Korea. The study assesses the impact on loneliness, wellbeing, and functional health (cognitive, physical) through a randomized controlled trial.

Ethics approval required

Ethics approval required

Ethics approval(s)

Approved 08/01/2025, Seoul National University Institutional Review Board (1 Gwanak-ro, Gwanak-gu, Seoul, 08826, Korea, South; +82 02-880-5153; irb@snu.ac.kr), ref: 2501/003-008

Study design

Multicenter interventional double-blind randomized controlled trial

Primary study design

Interventional

Secondary study design

Randomised controlled trial

Study setting(s)

Community

Study type(s)

Prevention, Quality of life

Participant information sheet

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

Health condition(s) or problem(s) studied

Social isolation, loneliness, and unmet care needs in older adults

Interventions

Participants recruited from four community welfare centers will be randomized to receive either the large language model (LLM)-based AI care call service (intervention group) or usual care (control group) for 12 weeks. Once the participant enrollment list at each center is finalized, a member of the research team will perform randomization into the intervention or control group using a computer-generated random number sequence.

Participants in the intervention group will receive an LLM-based AI care call service developed using the LLM conversational chatbot platform SKT NUGU. The service aims to check on older adults' safety and well-being via automated telephone conversations based on preset LLM prompts. Each call consists of one to three randomly selected questions from a pool of eight topics: meals, sleep, health, exercise, medication adherence, social interaction, activities of daily living, and mood. As an LLM-based system, participants may also converse on other topics of interest during the call, but the AI is prompted to steer the conversation toward well-being and health.

The AI care calls will be delivered twice per week. If the participant does not answer, the call will be reattempted up to three times. During the 12-week intervention, participants will continue to receive their standard Customized Senior Care Services in addition to the AI calls. Participants will complete surveys before (T0) and after the intervention period (T1).

The control group will receive usual care from the Customized Senior Care Service, which includes home visits from designated care staff, telephone-based check-ups, and health education.

Intervention Type

Behavioural

Primary outcome measure

Loneliness score measured using the UCLA Loneliness Scale (short form) at baseline and after 12 weeks

Secondary outcome measures

Older adults:

1. Well-being score measured using the WHO-5 Well-Being Index at baseline and 12 weeks
2. Depression assessed using the PHQ-9 at baseline and 12 weeks
3. Self-rated health using a one-item question from the WHO World Health Survey and the Korean Community Health Survey (KCHS) at baseline and 12 weeks
4. Cognitive function measured by the Korean Dementia Screening Questionnaire (KDSQ-P) at baseline and 12 weeks
5. Frailty measured by K-FRAIL at baseline and 12 weeks
6. Technology acceptance measured using the Senior Technology Acceptance Model (STAM) scale at baseline and 12 weeks
7. Perceived safety measured using a 5-point Likert scale at baseline and 12 weeks
8. Perceived usefulness of AI service using a 4-point Likert scale at baseline and 12 weeks
9. Satisfaction with AI service (intervention group only) measured using a structured questionnaire at 12 weeks

Other measures:

1. Perceived workload and occupational stress measured using items from Daejeon Public Agency for Social Services (5-point Likert Scale) at baseline and 12 weeks
2. Job satisfaction and emotional burnout measured using the Maslach Burnout Inventory at baseline and 12 weeks
3. Care workers' perception of AI technology measured using Shinnars Artificial Intelligence Perception tool at baseline and 12 weeks
4. Qualitative outcome variables on service experience measured using data collected from focus groups and in-depth interviews at the end of the intervention period

Overall study start date

01/12/2024

Completion date

31/03/2026

Eligibility

Key inclusion criteria

1. Adults aged 65 years or older who are currently receiving the government-supported Customized Senior Care Services, and have not received an AI-based care call service in the past 3 months
2. Care support workers (part-time caregivers) under the Customized Senior Care Services, whose assigned older adults are participating in the study.

Participant type(s)

Carer, Service user

Age group

Mixed

Sex

Both

Target number of participants

294

Total final enrolment

400

Key exclusion criteria

1. Older adults: Participants with communication difficulties due to cognitive impairment, psychiatric conditions, or language barriers (e.g., non-Korean speakers); prior participation in the AI care call within past 3 months
2. Care support workers: None

Date of first enrolment

18/04/2025

Date of final enrolment

08/08/2025

Locations**Countries of recruitment**

Korea, South

Study participating centre

AI in Health and Care Center, AI Institute, Seoul National University

942, 1 Gwanak-ro, Gwanak-gu

Seoul

Korea, South

08826

Sponsor information

Organisation

Seoul National University

Sponsor details

1 Gwanak-ro, Gwanak-gu

Seoul

Korea, South

08826

+82 02-880-4257

meag15@snu.ac.kr

Sponsor type

University/education

Website

<https://www.snu.ac.kr/>

ROR

<https://ror.org/04h9pn542>

Funder(s)**Funder type**

Research organisation

Funder Name

National Research Foundation of Korea

Alternative Name(s)

, National Research Foundation (South Korea), NRF

Funding Body Type

Private sector organisation

Funding Body Subtype

Trusts, charities, foundations (both public and private)

Location

Korea, South

Results and Publications**Publication and dissemination plan**

Planned publication in a peer-reviewed journal

Intention to publish date

31/03/2027

Individual participant data (IPD) sharing plan

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