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

Submission date
08/08/2025

Recruitment status
No longer recruiting

Registration date
20/08/2025

Overall study status
Completed

Last Edited
14/08/2026

Condition category
Other

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

Type(s)
Public, Scientific, Principal investigator

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Additional identifiers

Protocol serial number
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

Primary study design
Interventional

Study design
Multicenter interventional assessor-blind randomized controlled trial

Study type(s)
Prevention, Quality of life

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

Key secondary outcome(s)
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 Shinners 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

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

Healthy volunteers allowed
No

Age group
Mixed

Sex
All

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
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Sponsor information

Organisation
Seoul National University

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

Individual participant data (IPD) sharing plan

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