

An mHealth-based lifestyle intervention for metabolic syndrome management: evaluation of the Seoul Metabolic Challenge app

Submission date 01/06/2026	Recruitment status Not yet recruiting	<input checked="" type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
Registration date 02/06/2026	Overall study status Ongoing	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
Last Edited 02/06/2026	Condition category Nutritional, Metabolic, Endocrine	<input type="checkbox"/> Individual participant data <input checked="" type="checkbox"/> Record updated in last year

Plain English summary of protocol

Background and study aims

Metabolic syndrome is a group of health risk factors, including abdominal obesity, high blood pressure, high blood sugar, high triglycerides, and low high-density lipoprotein cholesterol. People with metabolic syndrome have a higher risk of cardiovascular disease and diabetes. Improving daily health behaviors, such as physical activity, healthy eating, weight control, and self-management, can help reduce these risks.

The Seoul Metabolic Challenge App is a mobile health lifestyle program developed to support the prevention and management of metabolic syndrome. It is provided through the Seoul “Wrist Doctor 9988” application. This study aims to find out whether using the Seoul Metabolic Challenge App in addition to standard public health center metabolic syndrome management is more effective than standard management alone in improving metabolic syndrome and heart-healthy lifestyle behaviors.

Who can participate?

Adults aged 50 to 64 years who are participating in a metabolic syndrome management program at a public health center in Seoul and who have three or more metabolic syndrome risk factors

What does the study involve?

Participants will be randomly allocated to one of two groups.

Participants in the control group will receive the standard metabolic syndrome management program provided by the public health center for 12 weeks. This includes health counselling, explanation of health examination results, lifestyle education, and general health management information.

Participants in the intervention group will receive the same standard metabolic syndrome management program and will also use the Seoul Metabolic Challenge App for 12 weeks. The app provides personalized health missions, health information, self-monitoring, and support for improving physical activity, dietary habits, and other lifestyle behaviors.

All participants will complete surveys and health examinations before the program starts and after 12 weeks. The health examination includes measurements of height, weight, waist circumference, blood pressure, fasting blood sugar, triglycerides, and high-density lipoprotein

cholesterol. Participants in the intervention group will also complete an app user evaluation after the program.

What are the possible benefits and risks of participating?

Participants may benefit from learning more about their health status and metabolic syndrome risk factors. Both groups will receive standard metabolic syndrome management from the public health center. Participants in the intervention group may additionally benefit from using the mobile app to support daily lifestyle management.

There are no expected serious risks from taking part in this study. Some participants may feel inconvenience from the time required to complete surveys and health examinations. The pre-test and post-test are expected to take about 30 minutes each. Fingerprick blood testing may cause mild and temporary discomfort, but the test will be performed using standard procedures.

Where is the study run from?

The study is run from Korea University College of Nursing, in collaboration with a public health center metabolic syndrome management center in Seoul (South Korea)

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

July 2026 to May 2027

Who is funding the study?

Seoul Metropolitan Government (South Korea)

Who is the main contact?

Prof. Jina Choo, jinachoo@korea.ac.kr

Contact information

Type(s)

Public, Scientific, Principal investigator

Contact name

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Additional identifiers

Study information

Scientific Title

Effects of the Seoul Metabolic Challenge app among middle-aged adults with metabolic syndrome: a randomized controlled trial

Study objectives

The objective of this study is to evaluate whether the Seoul Metabolic Challenge mobile health application, when added to standard public health center metabolic syndrome management, is more effective than standard public health center metabolic syndrome management alone in reducing metabolic syndrome prevalence and improving heart-healthy lifestyle indicators among community-dwelling adults aged 50 to 64 years with metabolic syndrome.

Ethics approval required

Ethics approval required

Ethics approval(s)

approved 29/05/2026, Korea University Institutional Review Board (Korea University Research Center, Anam-dong, Seongbuk-gu, Seoul, 02841, Korea, South; +82 (0)2 3290 1137; kuirb@korea.ac.kr), ref: KUIRB-2026-0292-01

Primary study design

Interventional

Allocation

Randomized controlled trial

Masking

Blinded (masking used)

Control

Active

Assignment

Parallel

Purpose

Health services research, Prevention

Study type(s)**Health condition(s) or problem(s) studied**

Metabolic syndrome and cardiovascular disease risk factors

Interventions

Participants will be randomly allocated in a 1:1 ratio to either the control group or the intervention group. Randomization will be performed using a computer-generated block randomization schedule stratified by sex and medication use, with allocation sequences generated in advance using R (version 4.5.3; R Foundation for Statistical Computing, Vienna, Austria).

The control group will receive standard public health center metabolic syndrome management for 12 weeks, including counselling on metabolic syndrome risk factors, explanation of health examination results, lifestyle education, and general health management information.

The intervention group will receive the same standard public health center metabolic syndrome management plus the Seoul Metabolic Challenge mobile health application for 12 weeks. The application is provided through the Seoul "Wrist Doctor 9988" platform and includes personalized health missions, health information, self-monitoring, prompts for health behavior practice, and support for improving physical activity and dietary habits. Outcomes will be measured at baseline and after the 12-week intervention.

Intervention Type

Behavioural

Primary outcome(s)

1. Metabolic syndrome prevalence measured using the proportion of participants meeting three or more of the five metabolic syndrome risk-factor criteria: waist circumference, blood pressure, fasting blood sugar, triglycerides, and high-density lipoprotein cholesterol at baseline and after 12 weeks

Key secondary outcome(s)

Completion date

28/05/2027

Eligibility

Key inclusion criteria

1. Adults aged 50 to 64 years
2. Participants in a metabolic syndrome management program at a public health center in S district, Seoul
3. Participants with three or more of the five metabolic syndrome risk factors: waist circumference, blood pressure, fasting blood sugar, triglycerides, and high-density lipoprotein cholesterol

Healthy volunteers allowed

Yes

Age group

Adult

Lower age limit

50 years

Upper age limit

64 years

Sex

All

Total final enrolment

0

Key exclusion criteria

1. Having physical limitations that make participation in physical activity difficult
2. Having cognitive impairment or other difficulties that make study participation or survey completion difficult
3. Unable to complete online or offline surveys
4. Unable to use a mobile application

Date of first enrolment

01/07/2026

Date of final enrolment

31/10/2026

Locations

Countries of recruitment

Korea, South

Sponsor information

Organisation

Seoul Metropolitan Government

ROR

<https://ror.org/002wfgr58>

Funder(s)

Funder type

Funder Name

Seoul Metropolitan Government

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Not expected to be made available

