

Genetic differences and weight loss on a low-carbohydrate reduced caloric diet in Palestinian adults with overweight or obesity

Submission date 06/09/2026	Recruitment status Not yet recruiting	☒ Prospectively registered ☐ Protocol
Registration date 21/09/2026	Overall study status Ongoing	☐ Statistical analysis plan ☐ Results
Last Edited 21/09/2026	Condition category Nutritional, Metabolic, Endocrine	☐ Individual participant data ☒ Record updated in last year

Plain English summary of protocol

Background and study aims

Obesity affects a large proportion of Palestinian adults. People who follow the same weight-loss diet often lose weight at very different speeds, and part of this difference may be genetic. This study looks at a small genetic variation called PLIN1 rs894160, found in a gene that helps control how the body releases fat from storage. We want to find out whether people with different versions of this gene lose weight at different rates, or with different success, when they follow the same low-carbohydrate, reduced-calorie diet.

Who can participate?

Palestinian adults aged 18–65 years who are overweight or obese (body mass index 27 kg/m² or above), who have already had PLIN1 rs894160 genetic testing done at Gene Medical Lab, and who are willing to follow a 12-week diet plan.

What does the study involve?

Participants will follow a personalised low-carbohydrate, reduced-calorie diet for 12 weeks. Everyone follows the same type of diet; there is no comparison group receiving a different diet or a placebo. Body weight is measured at the start, at week 6, and at week 12. Every 2 weeks, participants meet the researcher to check their weight, answer questions about what they have eaten in the last 24 hours, and have a simple urine test. Existing genetic results and, where available, blood test results (glucose, cholesterol) already on file are used; no new blood or genetic samples are taken for this study.

What are the possible benefits and risks of participating?

Participants may benefit from structured dietary guidance and monitoring aimed at healthy weight loss. Risks are those normally associated with a supervised calorie-restricted diet, such as tiredness or hunger, and are minimised through regular monitoring by the researcher and a supervising physician.

Where is the study run from?

Gene Medical Lab, a private clinical genetics laboratory in Palestine, together with Al-Azhar University – Gaza (Faculty of Applied Medical Sciences, Master Program of Clinical Nutrition).

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

October 2026 to January 2027

Who is funding the study?

Al-Azhar University – Gaza (Palestine)

Who is the main contact?

Omar Ayesh, omarsuhailayesh@gmail.com

Contact information

Type(s)

Principal investigator, Public

Contact name

Mr Omar Ayesh

Contact details

Gaza Strip
Al Nasser Street
Gaza
Palestine, State of
P850
+972 (0)592189971
omarsuhailayesh@gmail.com

Type(s)

Scientific

Contact name

Dr Reema Tayyem

Contact details

Building I06, Room SA2.29, University Street, Al Tarfa
Doha
Qatar
12572
+974 (0)4403 7505
reema.tayyem@qu.edu.qa

Additional identifiers

Study information

Scientific Title

Association of PLIN1 rs894160 polymorphism with weight-loss among Palestinian adults with overweight and obesity undergoing a low-carbohydrate, reduced-calorie dietary intervention

Acronym

PLIN1-LCRCD

Study objectives

1. To assess the association between PLIN1 rs894160 genotype and weight loss velocity (kg /week) during the LC-RCD dietary intervention, and to compare the rate of weight reduction across the three genotype groups (GG, GA, AA).
2. To evaluate the association between PLIN1 rs894160 genotype and the overall success of weight reduction at the end of the dietary intervention period, and to compare success rates across genotype groups.
3. To examine the effect of age, sex, baseline BMI, and biochemical data on the association between PLIN1 rs894160 genotype and both weight loss velocity and overall weight reduction success.
4. To determine the genotype and allele frequency distribution of the PLIN1 rs894160 polymorphism (GG, GA, AA genotypes) in the Palestinian adult population.
5. To estimate the magnitude of genotype-associated differences in weight-loss outcomes, as a preliminary step toward future validation of PLIN1 rs894160 as a candidate marker for personalized nutrition.

Ethics approval required

Ethics approval required

Ethics approval(s)

Approved 03/08/2026, Palestinian Health Research Council (Department of Clinical and Therapeutic Nutrition Al-Azhar University – Gaza, Gaza, P850, Palestine, State of; +972 (0)599 784 862; mohammed.lulu@alazhar.edu.ps), ref: PHRC\HC\1452\26

Primary study design

Interventional

Allocation

N/A: single arm study

Masking

Open (masking not used)

Control

Uncontrolled

Assignment

Single

Purpose

Treatment

Study type(s)

Health condition(s) or problem(s) studied

Overweight and obesity

Interventions

All eligible participants receive the same standardised 12-week Low-Carbohydrate, Reduced-Calorie Diet (LC-RCD): an individually calculated carbohydrate target (60–130 g/day, ± 10 –15 g tolerance) combined with a personalised caloric deficit of 500–750 kcal/day below estimated total daily energy expenditure (Mifflin-St Jeor equation). Participants are stratified by pre-existing PLIN1 rs894160 genotype (GG, GA, AA) obtained from prior clinical testing at Gene Medical Lab; no randomisation is performed, as genotype occurs naturally. Body weight and BMI are measured at baseline (week 0), midpoint (week 6) and end of intervention (week 12). Biweekly follow-up visits (weeks 2, 4, 6, 8, 10) include weight measurement, urinary ketone testing, and a structured 24-hour dietary recall interview conducted by the principal researcher in collaboration with a supervising physician. Total duration of intervention and follow-up is 12 weeks per participant.

Intervention Type

Behavioural

Primary outcome(s)

1. Weight loss velocity: total weight lost (kg) from baseline to week 12, divided by 12 weeks, measured using calibrated digital scales at baseline (week 0) and week 12
2. Weight loss success: the proportion of participants achieving $\geq 10\%$ total body weight reduction from baseline to week 12, measured using calibrated digital scales at baseline and week 12

Key secondary outcome(s)

Completion date

31/01/2027

Eligibility

Key inclusion criteria

1. Palestinian adults aged 18–65 years
2. Overweight or obese individuals with body mass index (BMI) ≥ 27 kg/m²
3. Available PLIN1 rs894160 genotype result from Gene Medical Lab
4. Willingness to adhere to the 12-week LC-RCD dietary protocol
5. Provision of informed consent

Healthy volunteers allowed

No

Age group

Mixed

Lower age limit

18 Years

Upper age limit

65 Years

Sex

All

Total final enrolment

0

Key exclusion criteria

1. Presence of severe chronic illness that may independently affect metabolism or weight, including active malignancy, chronic kidney disease, or hepatic disease
2. Current use of medications known to affect body weight or lipid metabolism, including corticosteroids, antipsychotics, or weight-loss medications
3. Pregnancy or lactation
4. Prior bariatric surgery
5. Multiple prior dietary attempts (history of repeated dieting before the study)
6. Incomplete baseline anthropometric data

Date of first enrolment

01/10/2026

Date of final enrolment

30/10/2026

Locations**Countries of recruitment**

Palestine, State of

Sponsor information**Organisation**

Al-Azhar University – Gaza

ROR

<https://ror.org/047k2at48>

Funder(s)**Funder type****Funder Name**

Al-Azhar University

Alternative Name(s)

, Al-Azhar Al Sharif, Université Al Azhar

Funding Body Type

Private sector organisation

Funding Body Subtype

Universities (academic only)

Location

Egypt

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary

Not expected to be made available