

Mediterranean diet and risk of childhood overweight/obesity: A systematic review

Athanasia Kyrkili¹, Georgios Saltaouras¹, Vasiliki Bountziouka², Michael Georgoulis¹, Eirini Bathrellou¹, Alexandra Karachaliou¹, Ismini Grapsa¹, Mary Yannakoulia¹ and Meropi D Kontogianni¹

1. Department of nutrition and Dietetics, School of Health Sciences and Education, Harokopio University, Athens, Greece

2. Computer Simulation, Genomics and Data Analysis Laboratory, Department of Food Science and Nutrition, School of the Environment, University of the Aegean, Lemnos, Greece

INTRODUCTION

The Mediterranean diet (MD) has gained recognition for its health benefits among various dietary patterns (DP), but its relationship with overweight/obesity (Ov/Ob) or metabolically unhealthy obesity (MUO) in children and adolescents remains unclear¹.

This study aimed to explore potential association between adherence to the MD and risk of childhood Ov/Ob or MUO.

METHODS

- ✓ The PRISMA methodology² was used.
- ✓ Registration in PROSPERO (CRD42023477613).
- ✓ Studies' quality was evaluated ROBINS-E (Risk Of Bias In Non-randomized Studies)³ & RoB-2 (Revised Cochrane risk of bias tool for randomized trials)⁴ tools.

PICO/PECO

| | |
|--------------------------------------|--|
| Population: | Children and adolescents 2 to 19 y old |
| Exposures/ Interventions: | Adherence to the MD/ Interventions to promote the MD |
| Comparator: | Adherence to a different DP or different levels of adherence to the MD/ No intervention; intervention on a different DP; standard care |
| Outcomes: | Ov/Ob or MUO |

Study design: Longitudinal prospective studies & RCTs with ≥12-months follow up (FU)
Timeframe: 01/01/2013 – 30/07/2024
Databases: Medline & Scopus
Study area: Europe, USA, Canada, Oceania
Language: English

RESULTS

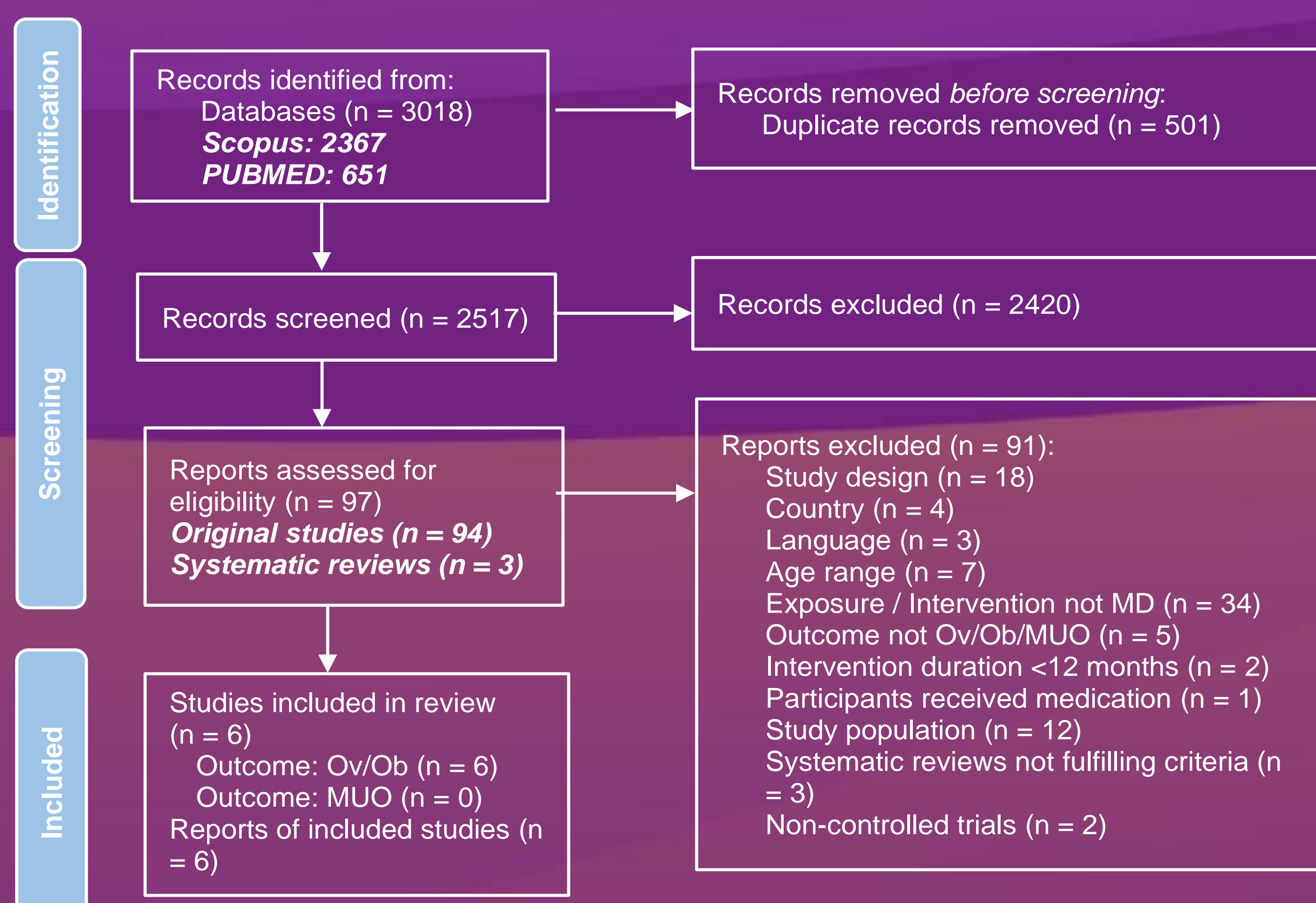


Figure 1. PRISMA flowchart.

All included studies (**6 longitudinal**; sample size 298-18,350; age: 2-15 y; FU: 2-7 y) reported on Ov/Ob risk (figure 1).

Risk of bias

- high/very high: 2 studies
- raised some concerns: 3 studies

MD assessment

- a-priori method: 5 studies using various indexes/scores (food frequency-based MD Score, modified KidMed index, relative MED score and alternate MED)
- a-posteriori method: 1 study (by principal component analysis and characterized by frequent consumption of plain unsweetened yogurt or kefir, dishes of milled cereals, nuts, & pizza).

- ✓ A high adherence to the MD was associated with lower incidence of Ov/Ob, and abdominal Ob, smaller increases in body mass index (BMI), lower BMI z-score, waist circumference, and waist-to-height ratio, as indicated in 3 studies. Moreover, a change towards a more Mediterranean food choice was associated with lower odds for excess gain in fat mass index, waist-to-height ratio, and BMI in one study.

- ✓ In contrast, in another study no association was found between BMI and adherence to the MD among girls and boys. Moreover, another study did not find an association between adherence to the MD and the risk of Ov/Ob

CONCLUSION

Higher adherence to MD exhibits preventive effect against Ov/Ob in children and adolescents. No studies were identified in relation to MUO, highlighting a significant research gap. Results should be confirmed through future research due to the small number of studies and the heterogeneity in their methodology.

REFERENCES

1. Lassale, C. et al. (2022) *Obes. Rev.* 23, 1–17.
2. Page, M. J. et al. (2021) *BMJ* 372.
3. Higgins, J. P. T. et al. (2024) *Environ. Int.* 186, 108602.
4. Sterne, J. A. C. et al. (2019) *BMJ* l4898.



Funded by
the European Union



BIO-STREAMS

www.bio-streams.eu

A Multi-Pillar Framework to address childhood obesity by building on an EU biobank, micro-moments and mobile recommendation systems

Project funded by



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,
Education and Research EAER
State Secretariat for Education,
Research and Innovation SERI

Corresponding author:

Meropi Kontogianni

mkont@hua.gr