

Dietary patterns and risk of childhood overweight/obesity or metabolically unhealthy childhood obesity: A systematic review and meta-analysis

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INTRODUCTION

Diet is one of the most important modifiable determinants of weight status and health, but the relationship between dietary patterns and overweight/obesity (Ov/Ob) or metabolically unhealthy obesity (obesity accompanied with comorbidities such as hypertension, insulin resistance etc.; MUO) in children and adolescents remains poorly studied¹.

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

METHODS

- ✓ The PRISMA methodology² was used.
- ✓ The research questions were formulated according to the PICO/PECO framework.
- ✓ Registration in PROSPERO (CRD42023477613).
- ✓ Studies' quality was evaluated ROBINS-E (Risk Of Bias In Non-randomized Studies) & RoB-2 (Revised Cochrane risk of bias tool for randomized trials) tools.

Databases	Medline & Scopus
Study design	✓ Longitudinal prospective studies ✓ RCTs with ≥12-months follow up (FU)
Age	2 to 19 y old
Study area	Europe, USA, Canada, Oceania
Timeframe	01/01/2013 – 30/06/2023
Language	English

RESULTS

All included studies (29 longitudinal; sample size 202-18,350; age: 2-15 y; FU: 2-12 y) reported on Ov/Ob risk (figure 1).

Risk of bias

- high/very high: 9 studies
- raised some concerns: 16 studies

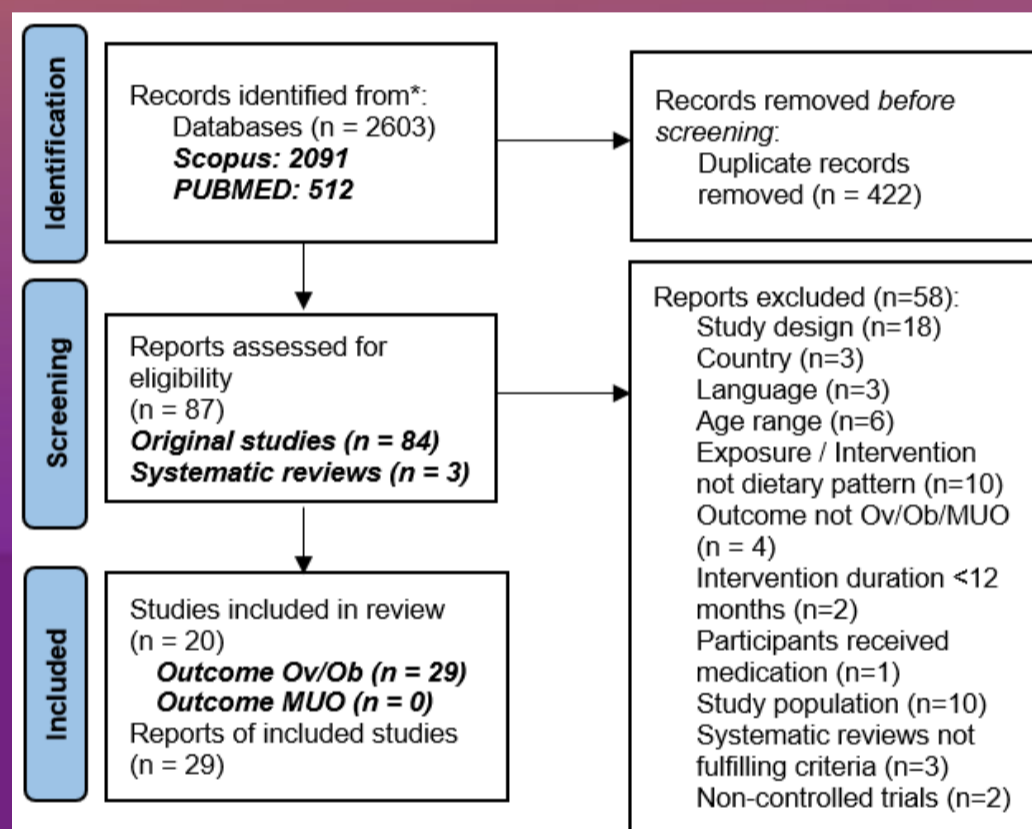


Figure 1. PRISMA flowchart.

Dietary patterns definitions

- a-priori method: 15 studies, a-posteriori method: 14 studies
- Characterized as “healthy” (HDP) or “unhealthy” (UDP)
- However there were inherent differences in the way dietary patterns were defined/ extracted, the items loading high in each extracted pattern, and the scoring system applied for the degree of adherence to each pattern.

18 studies were included in meta-analysis.

- Adherence to a HDP (i.e., Mediterranean diet, DASH, varied Norwegian) was associated with lower odds of Ov/Ob compared to non-adherence (Figure 2), while adherence to an UDP (i.e., snacking, processed, ultra-processed foods) was associated with higher odds of Ov/Ob compared to non-adherence (Figure 3).
- A marginally significant association was revealed between adherence to UDP and z-BMI [beta: 0.04 (95%CI: -0.00; 0.08) kg/m² for the adjusted model].
- The adjusted models were not all adjusted for the same covariates, so there may be residual confounding.

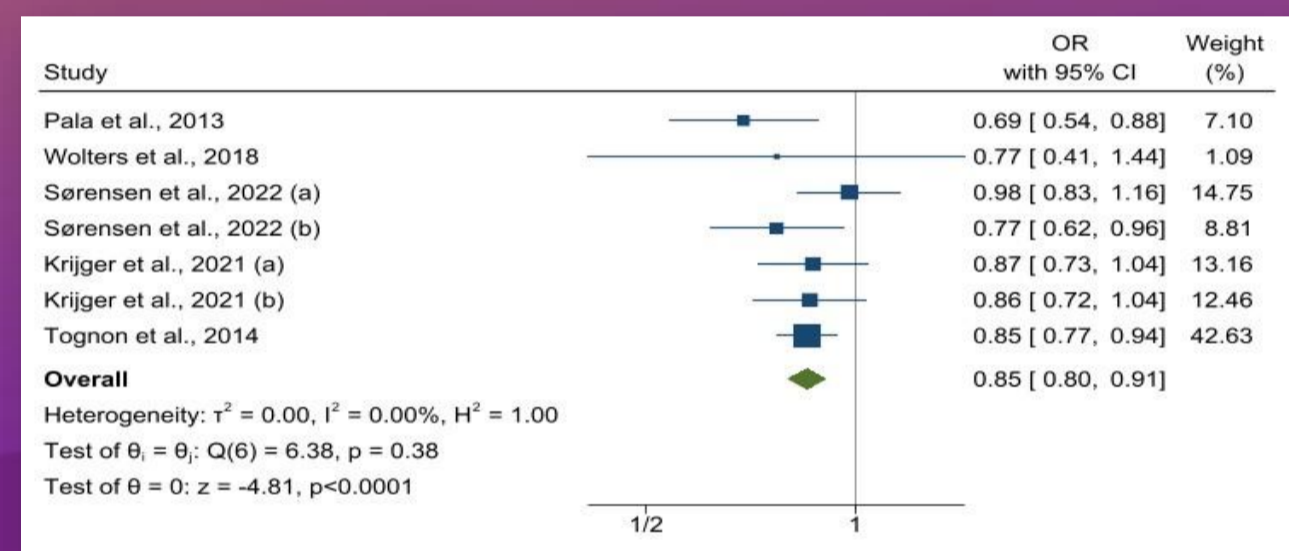


Figure 2. Forest plot for OR (95% CI) of being Ov/Ob for adherents to a HDP vs non-adherents for the adjusted model

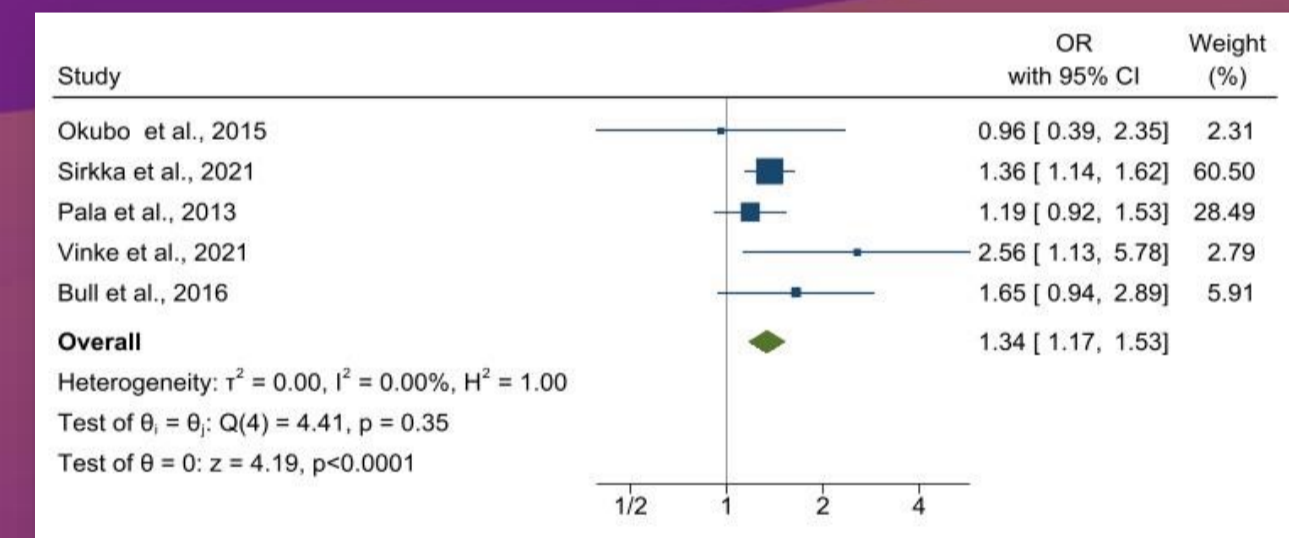


Figure 3. Forest plot for OR (95% CI) of being Ov/Ob for adherents to an UDP vs non-adherents for the adjusted model.

CONCLUSION

Higher adherence to HDP exhibits preventive effects against Ov/Ob in children and adolescents, while higher adherence to UDP has a detrimental impact on Ov/Ob in children and adolescents.

REFERENCES

1. Hoelscher, D. M. et al (2022) J. Acad. Nutr. Diet. 122, 410-423.e6.
2. Page, M. J. et al. (2021) BMJ 372.

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BIO-STREAMS

A Multi-Pillar Framework to address childhood obesity by building on an EU biobank, micro-

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