

# Systematic review and meta-analysis of non-pharmacological interventions to treat malnutrition in older people. The SENATOR project (ONTOP series) and MaNuEL Knowledge Hub project<sup>a</sup>.

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## INTRODUCTION

Systematic reviews (SRs) on malnutrition suggest that energy and protein intake can be improved, but results for functional or clinical outcomes have been inconclusive. Following the ONTOP methodology, we aimed to perform a review of SRs of non-pharmacological interventions in older patients with well-defined malnutrition using relevant outcomes agreed by a broad panel of experts<sup>b</sup>.

## METHODS

PubMed, Cochrane, EMBASE, and CINHAL databases were searched for SRs. Primary studies from those SRs, in any setting, were included. Quality assessment was made using Cochrane Collaboration (Risk of Bias) and GRADE criteria.

## RESULTS

Eighteen primary studies from seventeen SRs were included.

Eleven RCTs compared **oral nutritional supplementation (ONS) with usual care**. No beneficial effects of ONS treatment, after performing two meta-analysis in **body weight changes** (six studies) in a community-dwelling setting, mean difference: 0.59 (95%CI -0.08, 1.96) kg, and in **body mass index changes** (two studies), mean difference: 0.31 (95%CI -0.17, 0.79) kg/m<sup>2</sup> were found. Neither in MNA scores, muscle strength, activities of daily living, timed Up&Go, quality of life and mortality. Results of other intervention studies (dietary counselling and ONS, ONS combined with exercise, nutrition delivery systems) were inconsistent.

Fig. 1: Oral nutritional supplementation versus usual care, outcome: changes in body weight (kg)

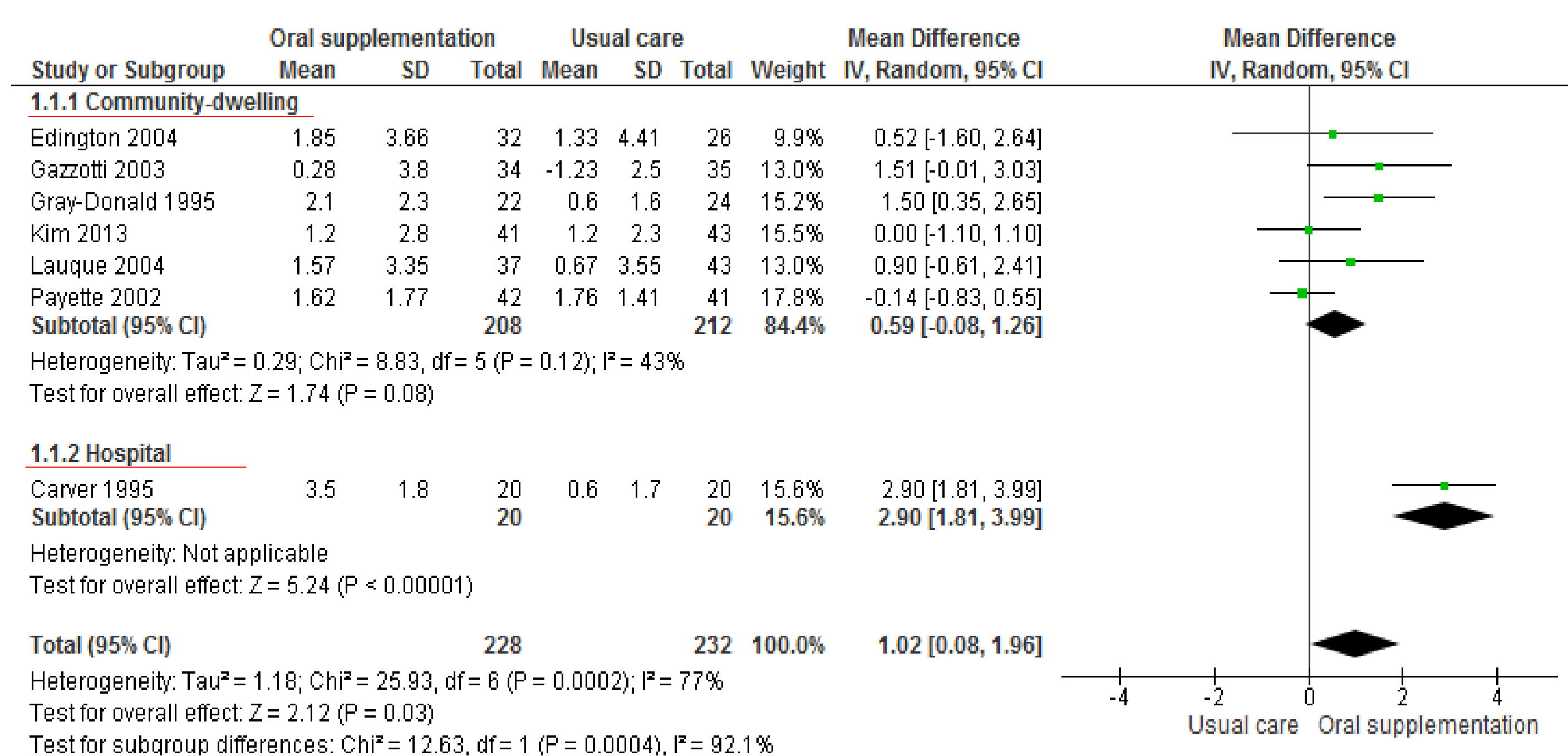


Fig. 2: Oral nutritional supplementation versus usual care, outcome: percentage of changes in body weight (%)

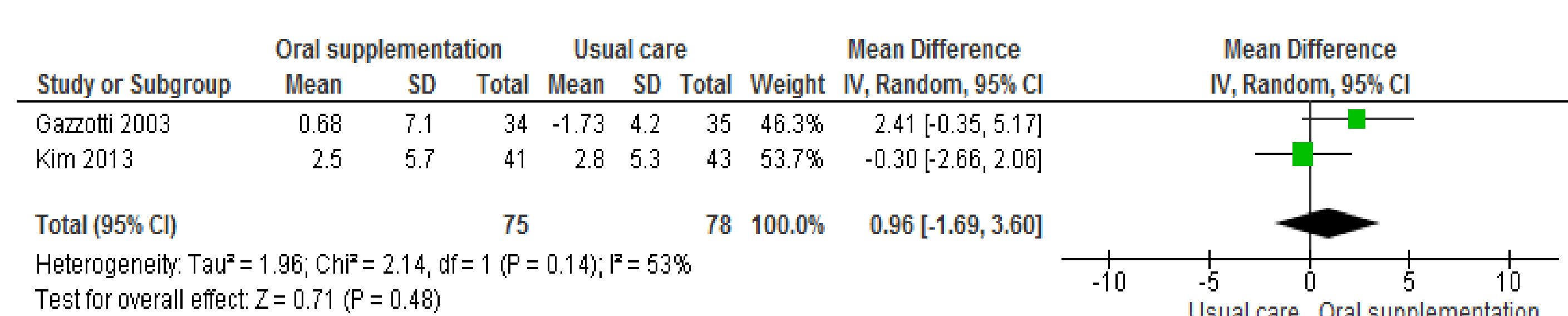
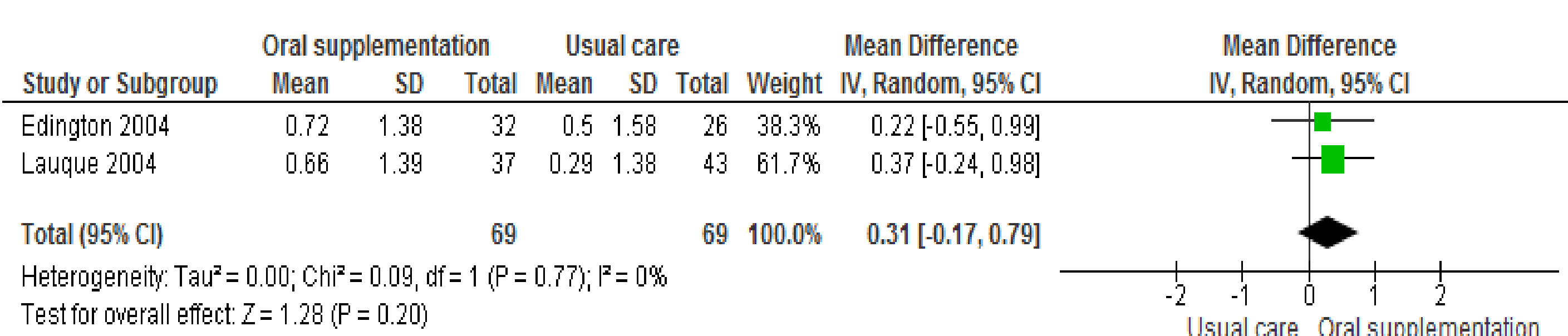


Fig. 3: Oral nutritional supplementation versus usual care, outcome: changes in BMI (kg/m<sup>2</sup>)



OUTCOMES <sup>b</sup>	NON-PHARMACOLOGICAL INTERVENTIONS
Nutritional status (body weight change, BMI, muscle mass...)	Oral nutritional supplementation (ONS)
Morbidity (hospital complications, infections, pressure sores...)	Dietary counselling and ONS
Functional status (mobility, ADL, physical performance...)	ONS combined with exercise
Mortality	ONS delivery systems
Quality of Life	

The overall quality of the evidence was **very low** due to risk of bias and small sample size:

Author year	Type of study	Sequence of generation (Selection bias)	Allocation concealment (Selection bias)	Blinding of participants and personnel (Performance bias)	Blinding of outcome assessor (Detection bias)	Incomplete outcome data (Attrition bias)	Selective outcome reporting (Reporting bias)	ITT analysis	Similar baseline characteristics
Campbell 2013	CCT	X	X	X	X	X	✓	NO	NO
Carver 1995	RCT	?	?	?	?	✓	✓	NO	YES
De Luis 2008	RCT	?	?	X	X	X	✓	?	YES
Edington J 2004	RCT	?	?	X	?	X	✓	YES	YES
Feldblum 2011	RCT	?	?	?	✓	X	✓	NO	YES
Gazzotti 2003	RCT	?	?	X	X	✓	✓	YES	YES
Gray-Donald 1995	RCT	X	X	X	X	✓	✓	YES	YES
Ha 2010	RCT	✓	✓	X	?	X	✓	NO	YES
Hickson 2004	RCT	✓	✓	?	?	X	✓	NO	YES
Kim 2013	RCT	✓	✓	X	✓	✓	✓	YES	YES
Lammes 2012, Rydwick 2008	RCT	X	X	X	X	X	X	NO	YES
Lauque 2000	RCT	X	X	X	X	X	✓	NO	NO
Lauque 2004	RCT	?	✓	X	?	X	✓	YES	YES
Payette 2002	RCT	?	?	X	✓	✓	✓	YES	YES
Price R 2005	RCT	✓	✓	X	X	X	✓	YES	YES
Smoliner 2008	RCT	X	X	X	?	?	✓	NO	YES
Sugawara 2010	RCT	?	?	X	?	✓	✓	YES	YES
Volkert 1996	RCT	?	?	X	X	X	✓	NO	YES

## CONCLUSIONS

This review has highlighted the **lack of high-quality evidence** to indicate which interventions are effective in treating malnutrition in older people. The results indicate **no beneficial effect of ONS or other non-pharmacological interventions**, but the studies were of poor quality with a high risk of bias. High-quality research studies are urgently needed in this area.

<sup>a</sup>Correa-Pérez, A.; Abraha, I.; Cherubini, A.; Collinson, A.; Dardevet, D.; de Groot, Lisette CPGM, et al. (2018). Efficacy of non-pharmacological interventions to treat malnutrition in older persons: A systematic review and meta-analysis. The SENATOR project ONTOP series and MaNuEL Knowledge Hub project. Submitted to Ageing Res Rev (pending to response).

<sup>b</sup>Correa-Pérez, A., Lozano-Montoya, I., Volkert, D., Visser, M., Cruz-Jentoft, A.J., (2018). Relevant outcomes for nutrition interventions to treat and prevent malnutrition in older people: a collaborative SENATOR-ONTOP and MANUEL Delphi study. Eur. Geriatr. Med. 9, 243–248. <https://doi.org/10.1007/s41999-018-0024-8>