

THE EFFECT OF OMEGA-3 FATTY ACIDS SUPPLEMENTATION ON PEDIATRIC PATIENTS WITH NON- ALCOHOLIC FATTY LIVER DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS

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INTRODUCTION

Non-alcoholic fatty liver disease (NAFLD) is the most common chronic liver disease in children and several studies have investigated the potential role of omega-3 fatty acids supplementation as a treatment option.

AIM

The aim of this study was to conduct a systematic review and meta-analysis in order to examine the effect of omega-3 fatty acids on the treatment of pediatric NAFLD.

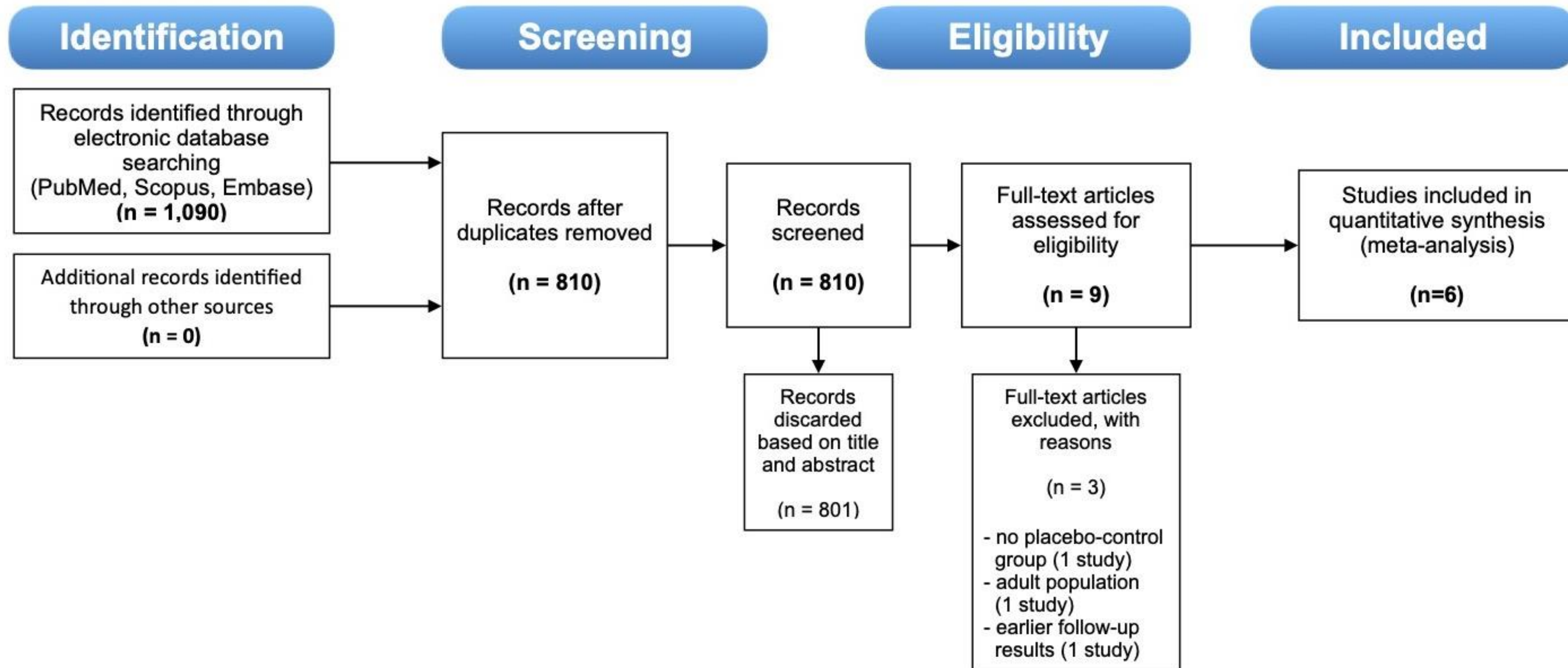
METHOD

- A systematic literature search was performed (PubMed, Scopus and Embase) till February 2021 for randomised controlled trials examining n-3 FA versus placebo in children with NAFLD.
- Change in liver enzymes (ALT, AST) and liver steatosis improvement were considered as **primary outcomes** and change in GGT, lipids, blood glucose, HOMA-IR and Waist Circumference as **secondary outcomes**.
- Risk of bias assessment was conducted with the Cochrane risk-of-bias tool (RoB 2).
- A random-effects model was used to calculate the pooled Mean Difference (MD) for continuous outcomes or the pooled Odds Ratio for dichotomous outcomes with the accompanying 95% CI.

ACKNOWLEDGEMENTS

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RESULTS



A flow diagram of the studies included in the Systematic Review and the main reasons for rejection during study selection

Study ID	D1	D2	D3	D4	D5	Overall	
Nobili et al., 2013	+	+	+	+	+	+	D1 Randomisation process
Boyraz et al., 2015	+	+	+	+	+	+	D2 Deviations from the intended interventions
Janczyk et al., 2015	+	!	+	+	+	!	D3 Missing outcome data
Pacifico et al., 2015	+	!	+	+	+	!	D4 Measurement of the outcome
Corte et al., 2016	+	+	+	+	+	+	D5 Selection of the reported result
Zöhrer et al., 2017	+	!	+	+	!	!	

+

Low risk

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Some concerns

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High risk

Quality Assessment of the included studies using Version 2 of the Cochrane risk-of-bias tool for randomized trials (RoB 2)

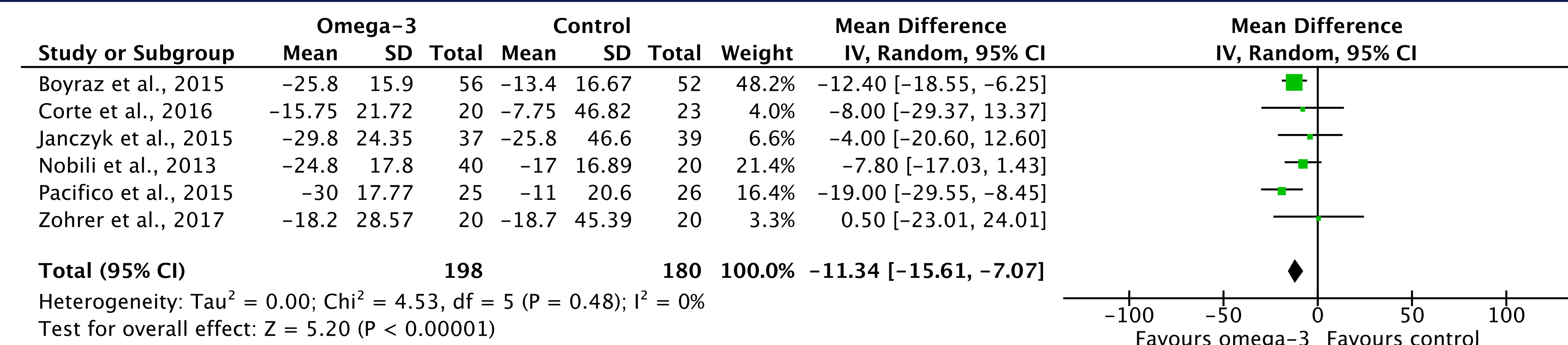
A total of 6 RCTs with 378 patients were finally included in the study. Treatment with omega-3 resulted in a statistically significant reduction in ALT (ALT IU/L: MD = -11.34, 95% CI: -15.61 to -7.07, $p < 0.01$; AST IU/L: MD = -4.72, 95% CI: -8.09 to -1.36, $p = 0.006$), as well as, a significant improvement in liver steatosis assessed by ultrasonography (OR: 0.31, 95% CI: 0.16 to 0.62, $p = 0.001$), when compared to placebo, in parallel with a significant decrease in weight (BMI kg/m²: MD = -1.15, 95% CI: -2.22 to -0.09, $p = 0.03$).

CONCLUSIONS

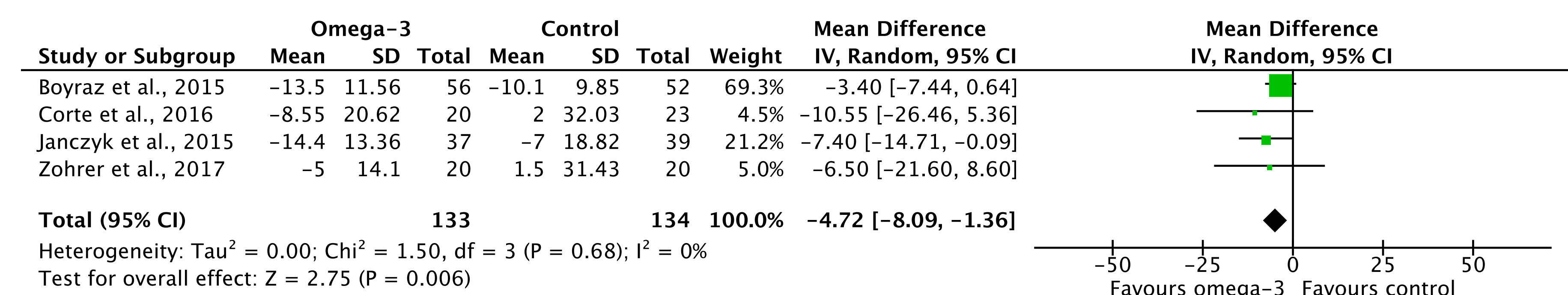
n-3 FA supplementation can improve liver function and liver steatosis in children with NAFLD. Further research is essential to determine their potential role in the treatment of pediatric NAFLD and their effect on liver histology.

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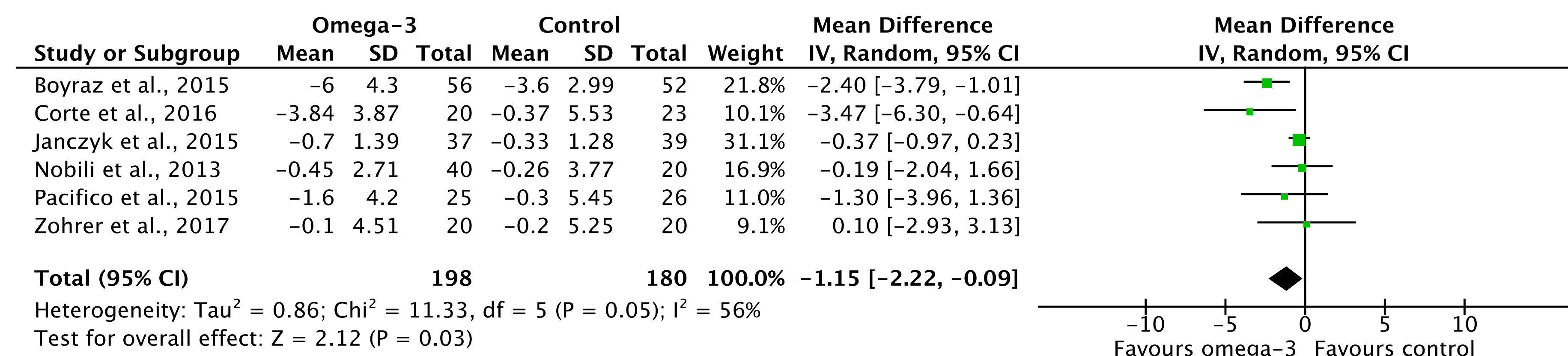
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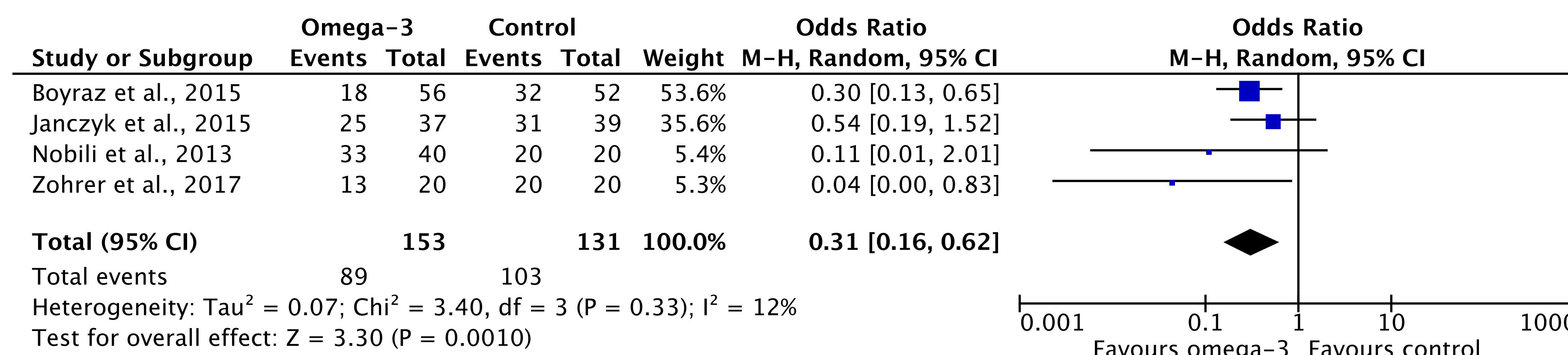
Estimated pooled Mean Difference (MD) in ALT (ALT IU/L: MD = -11.34, 95% CI: -15.61 to -7.07, $p < 0.01$, I² = 0%)



Estimated pooled Mean Difference (MD) in AST (AST IU/L: MD = -4.72 IU/L, 95% CI: -8.09 to -1.36, $p = 0.006$, I² = 0%)



Estimated pooled Mean Difference (MD) in BMI (BMI kg/m²: MD = -1.15, 95% CI: -2.22 to -0.09, $p = 0.03$, I² = 56%)



Estimated pooled Odds Ratio (MD) in the Grade of Liver Steatosis (OR: 0.31, 95% CI: 0.16 to 0.62; $p = 0.001$, I² = 12%).

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