The Effect of Omega-3 Polyunsaturated Fatty Acid Supplementation on Emotional Dysregulation, Oppositional Behaviour and Conduct Problems in ADHD: A Systematic Review and Meta-Analysis

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Background
A number of randomised controlled trials report a beneficial effect of omega-3 polyunsaturated fatty acid (n-3 PUFA) supplementation on emotional lability (EL) and related domains (e.g. oppositional behaviour, conduct problems). Given that n-3 PUFA supplementation shows a significant effect on reducing symptoms of attention-deficit/hyperactivity disorder (ADHD) and that EL and related behaviours commonly co-occurs with ADHD, it is important that there is a more conclusive picture as to the effect of n-3 PUFA on these co-occurring clinical domains.

Methods
Databases (Ovid Medline, Embase, Psychinfo) were searched for trials assessing the effects of n-3 PUFA on EL, oppositional behaviour, aggression and conduct problems. We included trials in children who had ADHD or a related neurodevelopmental disorder.

Results
Of the 1775 identified studies, 10 were included in the meta-analysis. In the primary analyses n-3 PUFA supplementation did not show improvements in measures of EL, oppositional behaviour, conduct problems or aggression. However subgroup analyses of higher quality studies and those meeting strict inclusion criteria found a significant reduction in EL and oppositional behaviour.

Limitations
A number of treatment effects may have failed to reach statistical significance due to small sample sizes and within and between study heterogeneity in terms of design and study participants.

Conclusions
These results exclude the possibility of moderate to large effects. They provide suggestive evidence of small effects of n-3 PUFA on reducing EL and oppositional behaviour in subgroups of children with ADHD.