Omega-3 Polyunsaturated Fatty Acids in Youths with Attention Deficit Hyperactivity Disorder (ADHD): A Systematic Review and Meta-Analysis of Clinical Trials and Biological Studies.

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Abstract

The role of omega-3 polyunsaturated fatty acids (omega-3 or n-3 PUFAs) in the pathogenesis and treatment of children and adolescents with attention deficit hyperactivity disorder (ADHD) is unclear. A systematic review followed by meta-analysis was conducted on: (1) randomized controlled trials (RCTs) assessing the effects of n-3 PUFAs on clinical symptoms and cognition in children and adolescent with ADHD; and (2) case-control studies assessing the levels of n-3 PUFAs in blood and buccal tissues of children and adolescents with ADHD. In seven RCTs, totaling n=534 randomized youth with ADHD, n-3 PUFAs supplementation improves ADHD clinical symptom scores (g=0.38, p<0.0001); and in three RCTs, totaling n=214 randomized youth with ADHD, n-3 PUFAs supplementation improves cognitive measures associated with attention (g=1.09, p=0.001). Moreover, children and adolescents with ADHD have lower levels of DHA (seven studies, n=412, g=-0.76, p=0.0002), EPA (seven studies, n=468, g=-0.38, p=0.0008), and total n-3 PUFAs (six studies, n=396, g=-0.58, p=0.0001). In summary, there is evidence that n-3 PUFAs supplementation monotherapy improves clinical symptoms and cognitive performances in children and adolescents with ADHD, and that these youths have a deficiency in n-3 PUFAs levels. Our findings provide further support to the rationale for using n-3 PUFAs as a treatment option for ADHD.