

Omega-3 fatty acid supplementation in autism spectrum disorder is there a benefit: An unanswered question? we can answer together

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ABSTRACT

Autism spectrum disorder (ASD) is a well-known neurodevelopmental illness with significant medical variance. There is controversy surrounding the effectiveness of omega-3 supplementation as an evidence-based treatment of symptoms of ASD. The link between autism and nutrition also opens up the possibility of early dietary intervention that could protect against the development of autism or prevent autism symptoms. This idea opens up exciting new avenues for research into dietary supplement therapy, which may improve the quality of life for people with autism and their families. Epidemiological studies show an increasing trend in the annual prevalence of ASD with a prevalence of four to five times more in boys than girls. The average prevalence of ASD in Asia, Europe and North America is estimated at 1%, with a prevalence of 0.14 to 2.9% in the Arab countries around Arabian gulf. 1 in 36 eight years old were identified in ASD in 2020. In animals and human studies show the antioxidant effect of ω 3-PUFAs. There are conflicts of the effect of omega 3 in autistic children. A systematic review by Qawasmi et al., 2011 identified that omega-3 supplementation improved attention deficiency and hyperactivity in children with autism. In the line Omega-3 treatment decreased hyperactivity and stereotyped behavior, according to Amminger et al. investigation on omega-3 fatty acid supplementation in autistic children. Another study found that giving children with ASD an omega-3 supplement for 12 weeks reduced their hyperactivity. The relationship between maternal dietary fat intake before or during pregnancy and ASD in children was studied by Lyall et al. found that maternal linoleic acid consumption was strongly linked to an increased incidence of ASD. Finding of ElAnsary et al., indicated that autistic children plasma fatty acid concentrations had altered, with an increase in saturated fatty acids other than propionic acid and a decrease in PUFA. Children at risk for ASD had better language development after receiving omega-3 and omega-6 supplements for three months. Systematic review showed that omega-3 supplementation decreased hyperactivity and inattentiveness in autistic children. According

to a different study, giving children who had the lowest starting reading levels an omega-3 supplement enhanced their reading abilities. The use of omega-3 supplements may also have some positive effects on schizophrenia and depression. Another study done by Richardson et al., found EPA (3 g) or fish oil (10 g/d) reduced symptoms of depression, attention deficit hyperactivity disorder (ADHD), dyslexia, and dyspraxia disorder in autistic children. Particularly in the central nervous system, DHA and EPA play important roles in the synthesis of membrane phospholipids. Macronutrients, such as omega-3 fatty acids, are thought to play a neuroprotective role in the production of synaptic maintenance, modulation of brain cell signaling, regulation of monoamines production, and receptor signal transduction pathway, which may help to explain the role of omega-3 in psychiatric diseases like autism. Because they influence ASD through their effects on brain structure and function, neurotransmission, cell membrane structure, and microbial domain organization, omega-3 PUFAs and their metabolic products provide as a strong basis. DHA is significantly more abundant in neural and synaptic membranes, which suggests that it plays a significant role in neuronal cell signaling. The inner layer of synaptic membranes, where it is preferentially absorbed into phosphatidylethanolamine and phosphatidylserine, results in either DHA- or cholesterol-rich lipid rafts due to its sterile incompatibility with cholesterol. Additionally, DHA has an impact on protein function, phase behavior, fusion, ion permeability, fluidity of membrane fatty acid chains, and more. In contrast systematic and meta-analysis conclude that supplementing with Omega 3 did not improve the performance of autistic children. However, caution is needed when interpreting these findings. To our knowledge, no outcome—positive or negative—has been repeated in additional studies. To better understand the effects of supplementation with -3 FAs, if any, on functional outcomes in children with ASD, large, high-quality RCTs with multidisciplinary teams are still required. In this presentation together we will answer the question is omega -3 has benefit of ADS.