

Abstract

Diet, Inflammation, Gut Microbiome, and Mental Health

By

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Omega-3 fatty acids (ω -3 FAs) are an essential fatty acid necessary for healthy development in mammals. They possess anti-inflammatory properties and have more recently been shown to impact gut microbiota, both factors hypothesized to be associated with depression and anxiety. Thus, empirical efforts have begun to examine the benefit of ω -3 FAs as a treatment option for various psychological disorders. Although there is evidence that ω -3 FAs have favorable outcomes on depressive symptoms, the relationship between ω -3 FAs and anxiety and the pathways by which ω -3 FAs produce beneficial health effects are poorly understood. Both inflammation and the gut microbiome have shown to have an impact in the development of anxiety and depression, thus these factors may play a fundamental role as mechanisms explaining the beneficial effect of ω -3 FAs on psychological health. This study aims to 1) to examine the cross-sectional relationship between ω -3 FAs, gut microbiome bacteria and inflammatory markers, and stress, anxiety and depressive symptoms, and 2) to examine if the gut microbiome and inflammatory markers mediate the relationship between ω -3 intake and stress, anxiety and depressive symptoms. Results indicate that higher levels of omega-3 index and DHA were associated with lower reported trait-anxiety symptoms, depressive symptoms, and lower concentrations of the inflammatory marker IL-1 β . Although there was no evidence that gut bacteria or inflammation mediated the relationship between ω -3 FAs and stress, anxiety, or depression symptoms, several significant path coefficients were noted. In particular, findings suggest that increased omega-3 index and DHA levels predicted fewer trait-anxiety and depression symptoms. Additional research is warranted to elucidate the interplay of mechanisms that may explain the impact of ω -3 FAs on mental health outcomes.