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Abstract

Impact of Nutrition Intervention on Mental Health Outcomes in Adults: Preliminary Evidence from a Systematic Review and Meta-Analysis [†]

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Abstract: Background and objectives: Mental health disorders are the leading cause of ill health and disability in adults, with depression and anxiety being the most prevalent. Emerging evidence indicates roles for specific nutrients—particularly, omega-3 fatty acids, vitamin D, folate, and the metabolically related B vitamins (B12, B6 and riboflavin)—in protecting against depression and anxiety, but the evidence is conflicting. The aim was to conduct a systematic review and meta-analysis investigating the effect of intervention with nutritional factors on mental health outcomes in adults. Methods: Searches were conducted using the following electronic bibliographic databases: MEDLINE, EMBASE and PsycINFO. Inclusion criteria were randomised controlled trials (RCTs) or controlled dietary interventions, participants aged ≥ 18 years, study duration ≥ 12 weeks and depression or anxiety outcome measures. The risk of bias and quality of the evidence were assessed using the Cochrane Risk of Bias 2 tool and the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) framework, respectively. Results: A total of 83 studies met the inclusion criteria, of which 73 were included in the meta-analysis. Regarding the role of specific nutrients in depression, RCTs with B vitamins (standardised mean difference, SMD, -1.91 95% CI $-3.69, -0.13$) and zinc (SMD -0.59 95% CI $-0.86, -0.30$) indicated significant benefits in reducing depression. Although no overall effect of vitamin D intervention in reducing depression for studies was found, subgroup analysis showed a beneficial effect of 12-week duration (SMD -0.29 95% CI $-0.57, -0.01$), while no significant effect of omega-3 fatty acid intervention was observed (SMD -0.47 95% CI $-0.98, 0.04$). RCTs with vitamin D indicated beneficial effects in reducing anxiety (SMD -0.69 95% CI $-1.27, -0.11$). No significant effect of omega-3 fatty acids on anxiety was shown, while there were insufficient RCTs with B vitamins and zinc in relation to anxiety. Discussion: This preliminary analysis demonstrated a potential role for B vitamins, vitamin D and zinc, but no benefit of intervention with omega-3 fatty acids, on depression. Vitamin D may play a role in reducing anxiety, whereas omega-3 does not. Confirmation of these preliminary findings is required from new RCTs with relevant nutrients.

Keywords: mental health; depression; anxiety



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