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Intake of micronutrients implicated in depression amongst young adults consuming vegetarian diets: a secondary analysis of the 2011-12 National Nutrition and Physical Activity Survey

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Major depressive disorder ('depression') is significantly more prevalent amongst young adults in Australia relative to older ages. The inefficacy of current treatment options for many individuals[(1)] warrants investigation of additional approaches to alleviating the burden of this illness. Incidentally, diet often becomes unhealthier during the transition from adolescence to young adulthood[(2)]. This can result in poorer micronutrient consumption, and there is a growing body of evidence indicating that an inverse relationship exists between intake of certain micronutrients and depressive symptoms[(3)]. Given this, diet may be an important modifiable risk factor or adjunctive means of ameliorating depression for young adults. Young adult vegetarians in particular have an increased risk of some micronutrient deficiencies which have been implicated in depression[(4)]. In combination, their age and dietary choice suggest they may be especially vulnerable to depression and therefore benefit from clear guidance to adequately meet their micronutrient requirements. The present study aimed to elucidate the need for such guidance by comparing the proportions of vegetarian and omnivorous young adult participants in the 2011-12 National Nutrition and Physical Activity Survey (NNPAS) who had inadequate intakes of micronutrients implicated in depression. The NNPAS collected the most recent nationally-representative data pertaining to the dietary intake (via two 24-h recalls) of Australians and included 2,397 young adults (18-34 years). Participants who were pregnant, lactating, or who mis-reported intakes according to Goldberg equation-derived cut-off values were excluded ($n = 791$). The dietary data were used to estimate usual intakes via the Multiple Source Method. Inadequate intakes were identified according to the Estimated Average Requirement (EAR) cut-point method for all micronutrients with an EAR except iron, for which the full-probability method was applied. Survey weights allocated for inference to the total Australian population were implemented throughout the analysis. The final sample was composed of 66 vegetarians (did not report any animal tissue consumption) and 1540 omnivores. The mean intake of long-chain omega-3 fatty acids (EPA, DPA, DHA) from both diet and supplementation was significantly lower in vegetarians compared to omnivores (96.3mg/day vs. 264.5mg/day, $p<0.001$). A significantly greater proportion of vegetarians compared to omnivores had inadequate total B12 (22.7% vs. 1.4%), iron (58.3% vs. 18.9%), selenium (30.8% vs. 3.5%) and zinc (58.8% vs. 33.3%) intakes (all $p<0.05$). These results suggest that young adult vegetarians are likely to have significantly lower consumption of long-chain omega-3 fatty acids and an increased risk of inadequately consuming vitamin B12, iron, selenium and zinc compared to their omnivorous counterparts. These findings support the notion that young adult vegetarians may have an increased risk of depression from a nutritional standpoint, and therefore stand to benefit from tailored dietary advice on a public and individual level designed to support their mental health.

Keywords: micronutrients; depression; vegetarianism

Ethics Declaration

Yes

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