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Abstract

Micronutrient Status of Vegetarians and Non-Vegetarians in a Sample of New Zealand Female Adolescents †

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Abstract: Vegetarianism appears to be increasing in Western countries. The health benefits of following a vegetarian diet include improved cardiovascular health, lower body mass, and a decreased risk of non-communicable diseases. However, restrictive food selection can result in suboptimal intakes of critical nutrients, increasing the risk of deficiencies. This is particularly important for female adolescents who have increased nutritional requirements. Most of the information on vegetarian diets and adolescent health was collected decades ago. Much less is known about the micronutrient status of modern female adolescent vegetarians. We aimed to compare the nutritional and biochemical status of vegetarian and non-vegetarian adolescent females in New Zealand. Adolescent females aged 15–18 years were recruited from eight locations throughout New Zealand. Micronutrient intakes were assessed via two 24 h diet recalls, which were adjusted to represent usual intakes. Blood samples were analysed for haemoglobin, and serum concentrations of ferritin, soluble transferrin receptor, zinc, selenium, retinol binding protein, folate, B12, C-reactive protein, and alpha-1-acid glycoprotein. Of the 182 participants who provided a blood sample, 15% self-identified as vegetarian (n = 27). Vegetarians had significantly lower daily mean intakes of vitamin B12 ($p < 0.001$), zinc ($p < 0.001$) and selenium ($p = 0.039$). On average, vegetarians had 3.1% (95% CI −5.8 to −0.4, $p = 0.025$) lower haemoglobin, 9.5% (95% CI −15.4 to −3.2, $p = 0.004$) lower selenium, and 80.5% (95% CI 45.7 to 123.7, $p < 0.001$) higher serum folate concentrations. Serum B12 concentrations were also lower (−18.2% (95% CI −33.7 to 0.9)), although not statistically significantly different ($p = 0.060$). The prevalence of anaemia, zinc, and selenium deficiency among vegetarians (15%, 50% and 54%, respectively) was higher than for non-vegetarians (5%, 21%, and 30%, respectively). Female adolescent vegetarians may be at increased risk of deficiency of nutrients commonly found in animal products, including iron, selenium and zinc. It is important for vegetarian adolescent females to follow dietary practices that enhance micronutrient intake and absorption.

Keywords: vegetarian; female adolescents; micronutrient status; iron status; iron deficiency; vegetarianism

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