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What is the prevalence of vitamin B12 deficiency among healthy vegans and vegetarians of European ancestry residing in Western Europe or the USA?

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Vegan and vegetarian diets, lacking animal-based foods, increase the risk of vitamin B12 deficiency[1]. Yet, there is limited current data on its prevalence among European ancestry individuals in Western Europe or the USA. This study aimed to provide a consensus on the prevalence of B12 deficiency among vegans and vegetarians of European ancestry residing in Western Europe or the USA.

We identified studies from our systematic review of "Functional Vitamin B12 Status Among Adult Vegans" to develop a narrative review of the prevalence of B12 deficiency based on biomarkers of B12 status among vegan and vegetarians. We then used pooled data from National Diet and Nutrition Survey (NDNS)[2] to calculate UK-specific prevalence information on B12 deficiency and insufficiency using the new NICE[3] criteria among vegan/vegetarian women of child-bearing age (WCBA) (age 18-45) compared with older women.

A total of six studies (2013-2022) with data on the prevalence of B12 deficiency were identified.

These studies were conducted on participants from UK, Norway, Spain, Czech Republic and US. Nearly all used different cut-offs to define B12 deficiency. Among vegans and vegetarians, the reported prevalence of deficiency ranged from 5-52% and 6-14%, respectively. Studies from Norway[4] and Finland[5] highlight low prevalence (5%) and no difference between dietary groups, possibly due to widespread supplement usage. The USA[6], indicated a higher prevalence of inadequate B12 intake among vegans and vegetarians compared to omnivours, with 8% of vegans and 6% of vegetarians exhibiting serum B12 levels < 148pmol/l. Similarly, results from Spain[7] noted subclinical deficiencies in 11% of participants, in both vegans and vegetarians. In the Czech Republic[8], cobalamin deficiency was noted in 15% of vegans, with 17% exhibiting deficiency (Serum B12< 100 ng/L). Notably, regular supplementation significantly reduced deficiency rates, emphasising its role in maintaining normal B12 levels. In the UK[9], only one publication reported B12 deficiency rates (SerumB12 <118pmol/L) among male vegans (52%) and vegetarians (7%). Using data from the NDNS and NICE guidelines, the prevalence of B12 deficiency was (defined as serum B12 < 133pmol/L and Holo-TC <25pmol/L) at 5-8% among vegetarian WCBA (Age 18-45); appropriate data on vegans was not available. B12 insufficiency (potential deficiency), defined by NICE as serum B12 < 258 pmol/L and Holo-TC < 70 pmol/L, translated to 75% of vegetarians within the WCBA cohort being defined as insufficient compared to 39% among older vegetarian women. A similar but more pronounced trend emerges for Holo-TC insufficiency, with 90% of vegetarians exhibiting inadequate Holo-TC < 70 pmol/L, compared to 58% of older women vegetarians and 65% of omnivores.

Few studies report B12 deficiency among Western European vegans and vegetarians, particularly for vegan WCBA. Existing data suggest a high risk can be mitigated with appropriate supplementation or adequately fortified foods.

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