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Maternal dietary vitamin B₁₂ intakes during the first trimester of pregnancy

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Adequate vitamin status in utero is essential for healthy fetal development and optimal adult health and wellbeing⁽¹⁾. During pregnancy, vitamin B₁₂ requirements increase⁽²⁾ due to rapid cell division, placental development and fetal growth⁽³⁾. Low maternal vitamin B₁₂ status has been identified as an independent risk factor for neural tube defects⁽⁴⁾, the incidence of which is increasing in Ireland⁽⁵⁾. Inadequate maternal vitamin B₁₂ status has also been associated with other adverse pregnancy outcomes including preterm birth⁽⁶⁾, small for gestational age⁽³⁾, and cognitive impairment in infants⁽⁷⁾. The Irish RDA for vitamin B₁₂ for women in the first trimester of pregnancy is 1.4 µg/d⁽⁸⁾. The Institute of Medicine (IoM) RDA for pregnancy is 2.6 µg/d⁽²⁾.

This observational study examined maternal vitamin B₁₂ intakes in the first trimester.

Women were recruited at their convenience after sonographic confirmation of a singleton pregnancy in the first trimester. Maternal body composition was measured using 8-electrode bioelectrical impedance analysis, and dietary data collected using an interviewer-assisted 4-day retrospective food diary (FD) in combination with a food frequency questionnaire (FFQ); an approach previously validated against biomarker data⁽⁴⁾. All reported portion sizes were fully quantified using food portion size estimation tools. Nutrient analysis was carried out using Nutritics version 3.7 University Edition which included the most up-to-date nutrient composition for fortified foods.

Of the 481 women recruited, the mean BMI was 26.0 kg/m² (±5.5) and 19.2 % were obese. Mean maternal age was 30.6 (± 5.6) years. In total, 41.8 % (201/481) were defined as energy under-reporters and were excluded from further analysis⁽⁹⁾. Among plausible reporters, the mean (SD) vitamin B₁₂ intake was 5.1 µg/d (±2.2). Overall, 97.9 % (274/280) met the Irish RDA of 1.4 µg/d⁸, and 99.6 % (279/280) met the Irish EAR of 1.0 µg/d⁽⁸⁾. In comparison, 91.8 % (257/280) met the IoM RDA of 2.6 µg/d for pregnancy⁽²⁾.

This study suggests that most pregnant women in Ireland are achieving the current Irish EAR & RDA for vitamin B₁₂. However, the 8.2 % failing to achieve the higher IoM target of 2.6 µg/d⁽²⁾ does present some cause for concern.

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