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## Iodine status of women of childbearing age in Scotland

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Iodine deficiency is one of the three key micronutrient deficiencies highlighted as a major public health issue by the World Health Organisation (WHO) and it represents a particular challenge for pregnant women and young children. Indeed, iodine is required for the synthesis of thyroid hormones, which are critical for normal neurodevelopment of the infant. Thus, iodine deficiency has been coined “the most common cause of preventable mental impairment worldwide”<sup>(1)</sup>. With recent evidence that most UK school-girls are iodine deficient<sup>(2)</sup>, this study aimed to assess iodine status of women of childbearing age in Scotland, along with habitual intake of iodine-rich foods.

Women ( $n = 381$ , aged 18–44, median age 30 years,  $SD 8$ ) were recruited in the West of Scotland from July 2010 to August 2011. A casual spot urine sample was collected, and urinary iodine (UI) was analysed using persulfate digestion followed by Sandel-Kolthoff colorimetric reaction<sup>(3)</sup>. Iodine status was classified according to the WHO cut-offs, with mild iodine deficiency defined as  $UI < 100 \mu\text{g/l}$ , moderate deficiency as  $UI < 50 \mu\text{g/l}$ , and severe deficiency as  $UI < 20 \mu\text{g/l}$ <sup>(4)</sup>. Socio-demographic data was collected, and iodine-rich foods consumption was measured using a food frequency questionnaire based on a modified version of an existing questionnaire<sup>(5)</sup>.

The median urinary iodine was  $75 \mu\text{g/l}$ , indicative of mild iodine deficiency; 64% of the samples had a urinary iodine concentration below  $100 \mu\text{g/l}$  while 31% of the samples had a urinary iodine concentration below  $50 \mu\text{g/l}$ . Deprivation (SIMD) quintiles were equally represented among the sample. There was no significant difference in urinary iodine concentration between deprivation quintiles, ethnicity, education and income categories, or age categories (18–26 y, 27–35 y and 36–44 y). Multivariate linear regression revealed a strong correlation between urinary iodine and milk intake ( $r_s = 0.15$ ,  $p < 0.004$ ), but not fish intake.

Our results are consistent with data obtained recently UK-wide for girls aged 14–15<sup>(2)</sup>. According to the WHO, no more than 20% of a population should have urinary iodine values below  $50 \mu\text{g/l}$ <sup>(4)</sup>, but our sample exceeds this threshold. The absence of iodine prophylaxis in the UK makes women of childbearing age and their future offspring a vulnerable group. With iodine requirement increasing from 140 to  $250 \mu\text{g}$  per day during pregnancy, it is essential that women of childbearing age are provided with sufficient information to make dietary choices ensuring adequate amounts of iodine to cover their needs.

1. Zimmermann M, Jooste P & Pandav C (2008) *Lancet* **372**, 1251–1262.
2. Vanderpump M, Lazarus J, Smyth P, *et al.* (2011) *Lancet* **377**, 2007–2012.
3. Ohashi T, Yamaki M, Pandav CS, *et al.* (2000) *Clin Chem* **46**, 529–36.
4. World Health Organization. United Nations Children’s Fund & International Council for the Control of Iodine Deficiency Disorders. *Assessment of iodine deficiency disorders and monitoring their elimination*. 3rd ed. Geneva, Switzerland: WHO, 2007.
5. Lean MEJ, Anderson AS, Morrison C *et al.* (2003) *Eur J Clin Nutr* **57**, 667–673.