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New study suggests UK is now iodine-deficient

New research suggests the UK population is now iodine-deficient and a full review and evidence-based recommendations are needed to safeguard public health. The findings, presented today at the Society for Endocrinology annual conference, provide the only current data on the UK's iodine status and demonstrate iodine-deficiency in a large sample population. Iodine-deficiency is the most common cause of preventable mental impairment worldwide.

In the study, which was funded by the Clinical Endocrinology Trust and is the first of its kind in the UK, Dr Mark Vanderpump (Royal Free Hampstead NHS Trust) and colleagues on behalf of the British Thyroid Association measured urinary iodine levels in samples from 737 14-15 year old girls from nine UK centres. Factors that might skew the results (e.g. diet, ethnicity) were assessed using a questionnaire. Variations due to season and location were corrected for via measurements taken in Summer 2009 and Winter 2009/2010 and water samples from each area were measured for iodine content.

The median urinary iodine level in participants was 80µg/L, making the group 'deficient' by World Health Organisation standards (defined as below 100µg/L). 69% of the samples were in this deficient category (below 100ug/L) and 18% of samples showed very low iodine levels below 50µg/L.

As this was a relatively small audit study that was confined to a single age group and sex, a full-scale investigation into the iodine status of the entire UK population is now warranted to see whether public health bodies need to implement any health measures.

Iodine is an essential trace element which helps the thyroid gland function properly. Most people get their iodine from their diet. Iodine-deficiency is the most common cause of preventable mental impairment worldwide and accordingly, the World Health Organisation has conducted a global programme of salt iodisation since 1993. The UK is yet to join this programme and does not require salt producers to iodise their salt.

Young women of childbearing age are the most susceptible to the adverse effects of iodine-deficiency and even mild deficiency may have an impact on the developing brain of foetuses and young children. It can also cause goitre. According to the World Health Organisation, iodine-deficient communities have IQs up to 13.5 points lower than similar but iodine-sufficient communities¹.

Researcher Dr Mark Vanderpump, Consultant Physician and Honorary Senior Lecturer in Diabetes and Endocrinology at the Royal Free Hampstead NHS Trust said:

“Our data suggest the UK is now iodine deficient, warranting a full investigation of the UK iodine status. We need to look into this now to decide whether public health bodies need to step in.

“The World Health Organisation has made iodine-deficiency a global priority and has been campaigning for at-risk countries to add iodine to their salt, a campaign which has been very successful. If it turns out that we do have a problem, this could be the most viable solution.

“We are very concerned about these findings as the consequences of iodine-deficiency are grave: iodine-deficient communities score lower in IQ tests, and even mild iodine-deficiency during pregnancy can cause serious mental impairments in children.”

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Notes for editors

This research will be presented as a lecture by Dr Mark Vanderpump at the Society for Endocrinology BES meeting on Tuesday 12 April 2011 at 10:00am. The abstract for this talk is reproduced at: <http://www.endocrine-abstracts.org/ea/0025/ea0025oc3.8.htm>.

¹ World Health Organisation. 2007. Assessment of iodine deficiency disorders and monitoring their elimination. http://whqlibdoc.who.int/publications/2007/9789241595827_eng.pdf.

The Society for Endocrinology BES 2011 conference is Britain's biggest scientific meeting on hormones, and is taking place at the Birmingham ICC from 11-14 April 2011. For the full programme, please click [here](#).

The British Thyroid Association is a non-profit learned society of accredited doctors and scientists with an interest in the thyroid gland and thyroid disease: <http://www.british-thyroid-association.org/>.

Please mention the Society for Endocrinology annual meeting in any story

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The Society for Endocrinology is Britain's national organisation promoting endocrinology and hormone awareness. For general information, please visit our website: <http://www.endocrinology.org>

ABSTRACT

Assessment of the UK Iodine Status: A National Survey

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Inadequate dietary iodine intake is the most common cause of preventable mental impairment worldwide and is defined by the WHO as a population median urinary iodine (UI) excretion <100 µg/L. No contemporary data are available for the UK according to the ICCIDD. The UK has no programme of food/salt iodination.

We have performed a systematic assessment of the current UK iodine status in 14-15 year old schoolgirls. 810 participants from nine UK centres provided 737 urine samples. UI concentrations were measured as µg iodine/L by a multiplate persulphate digestion method followed by Sandel-Kolthoff colorimetry in specimens collected in Summer 2009 and Winter 2009/2010. Ethnicity, postcode and a diet questionnaire assessing sources of iodine were recorded. Iodine concentrations were also measured in water samples from each area.

The median UI value for this sample was 80 µg/L with 69% of samples <100 µg/L and 18% <50 µg/L. A multivariate regression analysis confirmed as independent factors a difference in summer versus winter iodine status (R-squared value 0.2, p<0.001) with the median nadir of 76µg/L in summer and a positive association with milk intake (R-squared value 0.2, p<0.001). There was no correlation with other foods, ethnicity or city of origin.

These findings suggest that the UK is now iodine-deficient, consistent with a fall in iodine status recently reported in Australia and USA. Young women of child-bearing age are the most susceptible to the adverse effects of iodine deficiency. Even mild perturbations of fetal and maternal thyroid function have an impact upon neurodevelopment so these findings are consequently of huge public health importance. These findings indicate an urgent need for a comprehensive investigation of UK iodine status and evidence based recommendations on the need to implement a policy of iodine prophylaxis.