

Iodine intake in pregnancy – the effects of the Australia wide public health campaign in regional West Victoria.

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ABSTRACT

We aimed to establish if iodine deficiency was present in pregnant women in regional West Victoria and the impact of national health campaigns to eliminate the problem. We performed a retrospective cohort study of 747 women in the first trimester of pregnancy attending a private Obstetrician in Ballarat from November 2005 to July 2013. We established iodine intake was deficient and that measures have been successful in rectifying the problem.

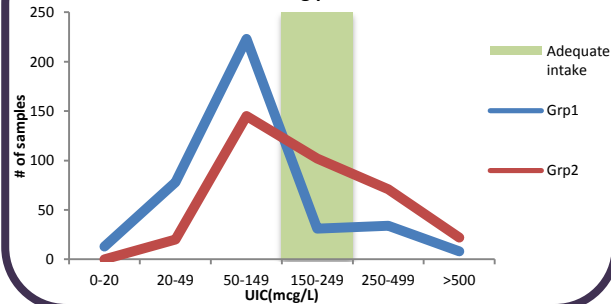
BACKGROUND

Iodine is vital for thyroid hormone production. Thyroid hormone and hence dietary iodine demands increase during pregnancy and lactation¹. Iodine deficiency is the most common preventable cause of intellectual impairment². To address country wide iodine deficiency in Australia, in October 2009 it was mandated that bread be manufactured with iodized salt². Women from the point of pregnancy planning through to the end of breastfeeding were advised to take additional iodine supplements^{1,4}.

METHODS

- Urinary iodine concentrations (UIC) were collected during trimester one of pregnancy prior to October 2009 (Group 1, n=360) and after (Group 2, n=387)
- Data was interpreted according to WHO epidemiological criteria for assessing iodine nutrition (Table 1)
- The median UIC for each group was calculated to estimate the population iodine intake
- Distributions of sample were calculated to demonstrate the proportions within each dietary range (Figure 1)

Fig 1: Change in distribution of urinary iodine concentrations following public health measures



References

1. RANZCOG. College Statement: Vitamin and Mineral Supplementation and Pregnancy. RANZCOG 2013.
2. WHO, United Nations Childrens Fund and International Council for control of Iodine Deficiency Disorders. Assessment of iodine deficiency disorders and monitoring their elimination – a guide for program managers. Geneva, Switzerland: WHO, 2007
3. Food Standards Australia and New Zealand. Standard 2.1.1- Cereals and cereal products. Australian New Zealand Food Standards Code. Australian Government, Canberra. 2009.
4. National Health and Medical Research Council. Iodine supplementation for pregnant and Breastfeeding Women. Ref no. 45. Jan 2010

RESULTS

The median UIC of Group 1 was 83mcg/L (IQR 53-131) corresponding to mild iodine deficiency. Group 2 however demonstrated no iodine deficiency with a median UIC of 163 mcg/L (IQR 100-250) ($p < 0.0001$). 81.2% of women in Group 1 had a UIC below the adequate iodine intake range compared with 45.9% of Group 2

Table 1: Proportion of samples within urinary iodine ranges corresponding to iodine intake for Group 1 and 2

| Iodine intake | UIC (mcg/L) | Group 1 n (%) | Group 2 n (%) |
|---------------------|-------------|---------------|---------------|
| Severe deficiency | <20 | 13 (3.4) | 0 (0) |
| Moderate deficiency | 20 - 49 | 78 (20.2) | 20 (5.6) |
| Mild deficiency | 50 - 149 | 223 (57.6) | 145 (40.3) |
| Adequate | 150 - 249 | 31 (8) | 102 (28.3) |
| More than adequate | 250 - 499 | 34 (8.8) | 71 (19.7) |
| Excessive | >500 | 8 (2.1) | 22 (6.1) |

CONCLUSIONS

Pregnant women were iodine deficient prior to the public health measures of 2009, which included bread fortification and supplementation advice. Ongoing education is warranted to ensure women planning pregnancy are aware of the importance of adequate iodine intake. Of concern we noted an increase in women with excessive dietary iodine from 2% to 6.1% ($p < 0.001$). Further research is needed into the effects of oversupplementation.