

# A cross-sectional survey to determine iodine status of school girls living in Northern Ireland

P.A. McMullan<sup>1</sup>, L.L. Hamill<sup>2</sup>, K. Doolan<sup>2</sup>, J.V. Woodside<sup>2</sup>, K.R. Mullan<sup>1</sup>



<sup>1</sup> Regional Centre for Diabetes and Endocrinology, Royal Victoria Hospital, Belfast  
<sup>2</sup> Centre for Public Health, School of Medicine and Biomedical Sciences, Queen's University Belfast



## Introduction

Iodine deficiency is the most common cause of preventable mental impairment worldwide. Recent evidence suggests the re-emergence of mild iodine deficiency in the UK possibly due to changing farming practice.

A recent multicentre survey in the UK reported that 68% of school girls were iodine deficient with the lowest levels seen in Northern Ireland (NI)<sup>1</sup>. Unlike many countries, the UK does not have a salt or food iodination program.

The World Health Organisation (WHO) currently recommend median urinary iodine concentration ( $\mu\text{g/L}$ ) to determine population iodine status.

Median urinary iodine ( $\mu\text{g/L}$ )	Iodine intake	Iodine status
<20	Insufficient	Severe iodine deficiency
20-49	Insufficient	Moderate iodine deficiency
50-99	Insufficient	Mild iodine deficiency
100-199	Adequate	Adequate iodine nutrition
200-299	Above requirements	Likely to provide adequate intake for pregnant/lactating women, but may pose a slight risk of more than adequate intake in the overall population
$\geq 300$	Excessive	Risk of adverse health consequences (iodine-induced hyperthyroidism, autoimmune thyroid diseases)

Table 1 – WHO classification of iodine status using median urinary iodine level

## Objectives

To determine median urinary iodine concentration in school girls living in Northern Ireland.

## Methods

A cross-sectional survey of 264 school girls, aged 14-15 years, was carried out in Belfast and Derry/Londonderry as the initial part of an Island of Ireland wide survey (other centres: Dublin, Galway, Sligo, Roscommon and Cork). These are the two largest cities in NI and located on the coast. Belfast is more southern with a latitude of 54.6 vs. 55.0. Participants were surveyed in spring and winter months to assess for any seasonal variations.

Urinary iodine levels were measured from morning spot urine samples using a standardised Sandell-Kolthoff colorimetry method<sup>2</sup>. The laboratory was registered with the US Centers for Disease Control and Prevention EQUIP programme for quality control.

## Participant Demographics

Characteristics	Value
Age (years)	14 -15
City	
- Belfast	n = 121
- Derry/Londonderry	n = 107
Season	
- Spring	n = 121
- Winter	n = 36

Table 2 – Summary of participant characteristics

## Results

Median urinary iodine level was  $119\mu\text{g/L}$  (IQR 78.3-166.3). Ninety participants had mild iodine deficiency (34%); 14 had moderate deficiency (5.3%) and none surveyed had severe deficiency.

There was no significant difference in urinary iodine levels between spring and winter seasons ( $P = 0.7$ ) and no difference between the two cities ( $P < 0.3$ ).

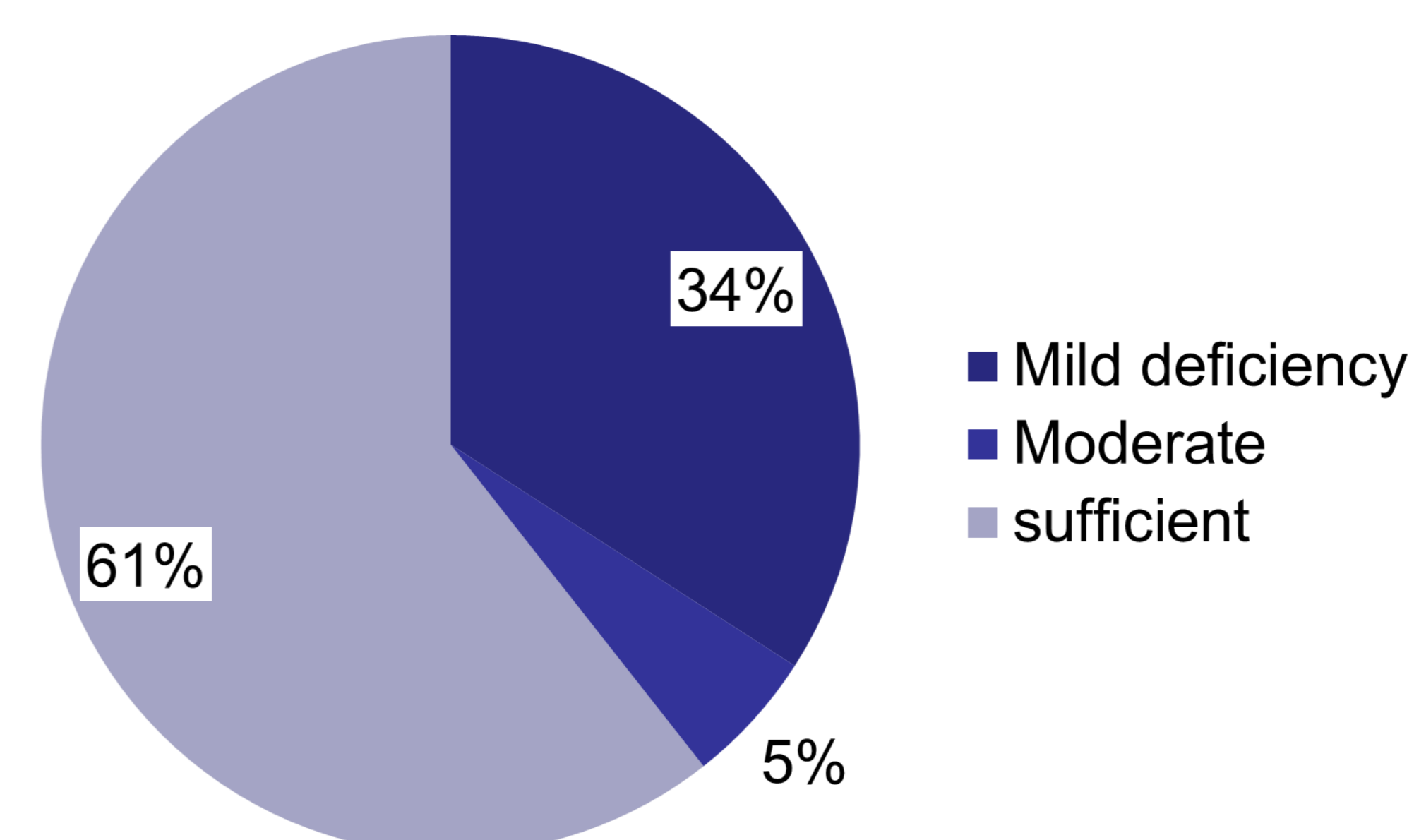


Figure 1 – Iodine status amongst school girls

## Conclusion

These results are in keeping with the previous UK survey and completion of the study in the other 5 geographical areas will enable a clearer understanding of the extent of this public health issue on the Island of Ireland.

## References

- Vanderpump MP, Lazarus JH, Smyth PP et al; on behalf of the British Thyroid Association UK Iodine Survey Group. Iodine status of UK schoolgirls: a cross-sectional survey. *Lancet* 2011; 377(9782):2007-12.
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