

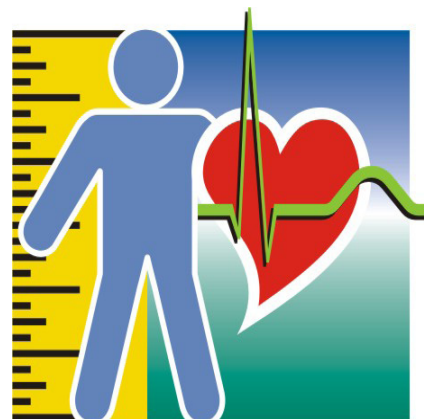
Article

Health Fact Sheet

**Iodine status of Canadians,
2009 to 2011**

Health Statistics Division

November 2012



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- | | |
|----------------|--|
| . | not available for any reference period |
| .. | not available for a specific reference period |
| ... | not applicable |
| 0 | true zero or a value rounded to zero |
| 0 ^s | value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded |
| P | preliminary |
| r | revised |
| X | suppressed to meet the confidentiality requirements of the <i>Statistics Act</i> |
| E | use with caution |
| F | too unreliable to be published |
| * | significantly different from reference category ($p < 0.05$) |



Iodine status of Canadians, 2009 to 2011

Among Canadians aged 3 to 79, the median iodine concentration in urine was 1.06 micromoles per litre ($\mu\text{mol/L}$). A moderate deficiency of urine iodine levels was found in 7% of the population while 15% had an excessive intake.

Iodine deficiency is among the four major nutritional deficiencies in the world¹ and can lead to several medical disorders, including goiter (swelling of the thyroid gland), stunted physical and intellectual development, stillbirths, and spontaneous abortions. These disorders have been virtually eliminated in Canada through salt iodization. However, care should be taken when consuming iodine-rich food, as excess iodine intake can also cause inhibitory effects on the thyroid gland which can lead to goiter.² The World Health Organization (WHO) has established the optimal iodine concentration in urine required for nutritional sufficiency (Table 1).³

Table 1 World Health Organization (WHO) urinary iodine concentration recommended for nutritional sufficiency³

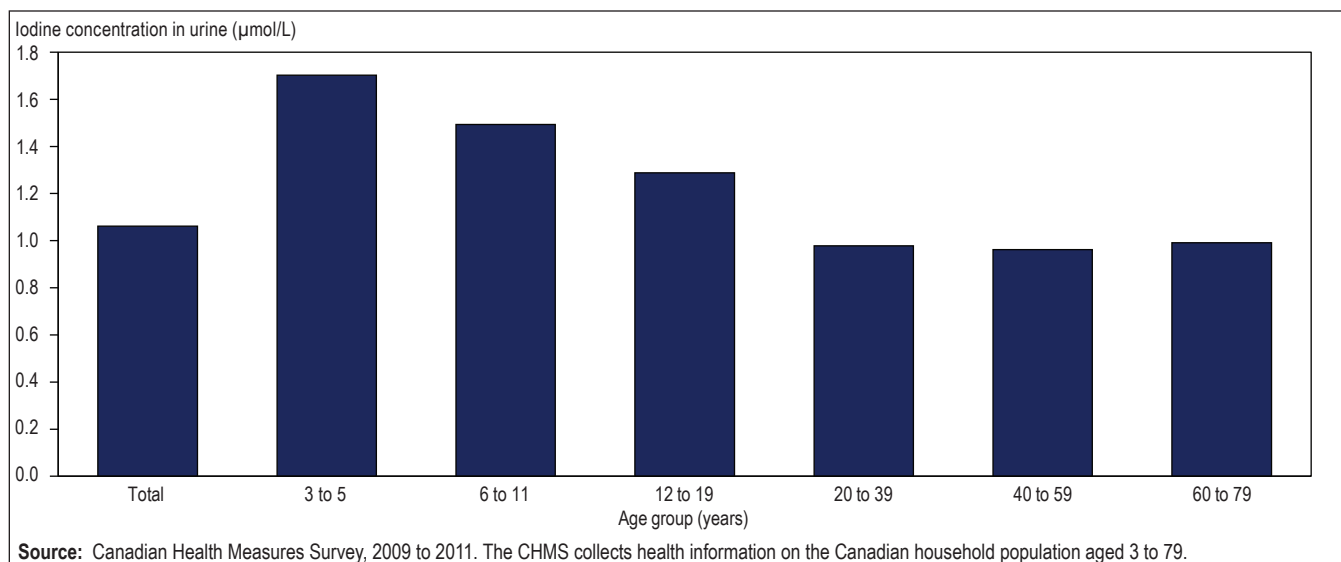
Condition	Concentration of iodine in urine ($\mu\text{mol/L}$)
Moderate deficiency	Between 0.16 and 0.38
Mild deficiency	Between 0.39 and 0.78
Adequate intake	Between 0.79 and 1.57
More than adequate intake	Between 1.58 and 2.36
Excessive intake	2.37 or above

Iodine levels in Canada

Based on results from the Canadian Health Measures Survey (CHMS) the median iodine concentration of Canadians in 2009 to 2011 was 1.06 $\mu\text{mol/L}$ (Chart 1), which is within the range of adequate intake recommended by the WHO. The median iodine concentration in urine was higher in children (1.70 $\mu\text{mol/L}$ for 3 to 5 year olds and 1.49 $\mu\text{mol/L}$ for 6 to 11 year olds) and decreased gradually with age to a median of 0.97 $\mu\text{mol/L}$ in adults 20 years and older.

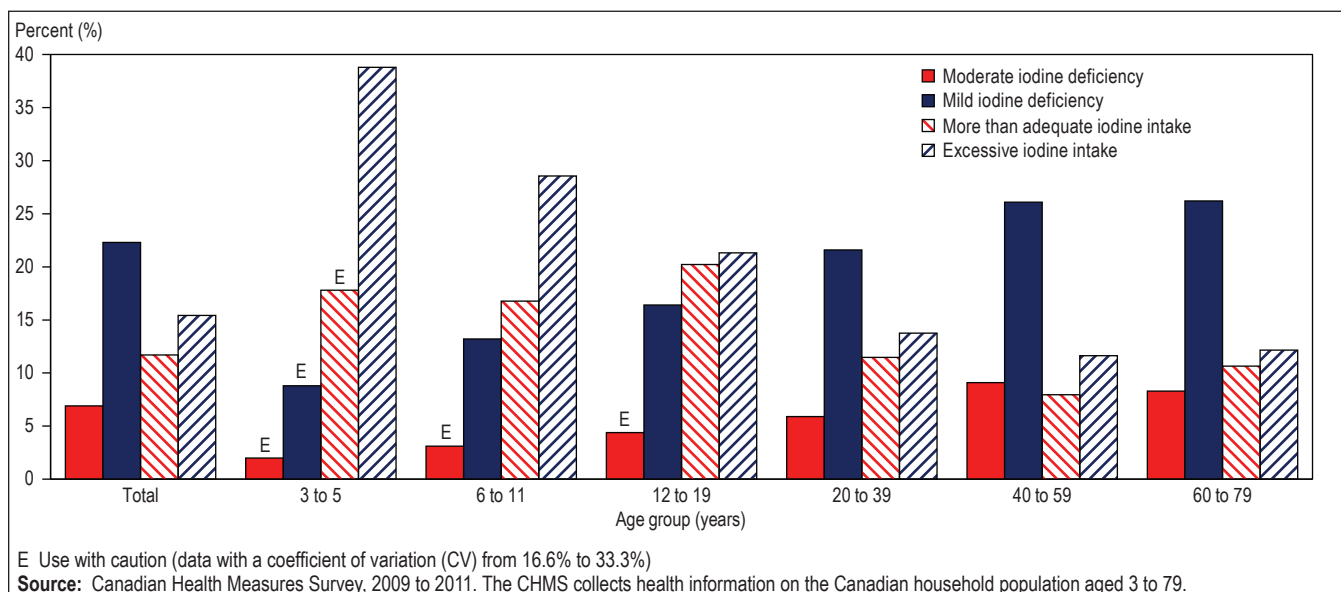


Chart 1 Median iodine concentration in urine, by age group, household population aged 3 to 79, Canada, 2009 to 2011



Iodine levels indicating a mild deficiency were found in 22% of Canadians aged 3 to 79 while a moderate deficiency was found in 7% (Chart 2). For children, only 2% of 3 to 5 year olds and 3% of 6 to 11 year olds had urine iodine levels indicating a moderate iodine deficiency, whereas this number was higher in adults (8% for 20 to 79 year olds). Recent North American surveys have shown an increasing prevalence of low iodine levels.⁴ This increase in low iodine levels could be attributed to a change in food production and consumption, such as a reduction of salt in the diet, the increasing popularity of non-iodized salt like sea salt, the reduction of iodine supplementation in commercial dairy products and the replacement of iodine with bromine salts as dough conditioner in breads.^{5,6}

Chart 2 Percentage of the population with low and high urine iodine levels, by age group, household population aged 3 to 79, Canada, 2009 to 2011





The percentage of children and youth having an excessive urine iodine level (39%, 29% and 21% of children and youth aged 3 to 5, 6 to 11 and 12 to 19, respectively) was significantly higher than adults, based on the upper threshold of 2.37 $\mu\text{mol/L}$ set by the WHO.³ These high levels could be attributed to dairy and grain products naturally rich in iodine that are consumed in higher portions by children than adults.

About iodine

Iodine is an essential component of several hormones produced by the thyroid gland. These iodine-rich thyroid hormones, such as thyroxine and triiodotyronine, are important in the development of the body and the brain, especially at a young age. Iodine is an element that is obtained from our diet, mainly from iodized salt, but also from natural sources, such as seafood, milk and grain products. The CHMS measured the iodine concentration in spot urine (in micromoles per litre - $\mu\text{mol/L}$) on a nationally representative population sample. Urine samples are used to measure iodine, as over 90% of iodine ingested in food and beverages is excreted in urine. Therefore, iodine levels in urine reflect the amount of iodine consumed and present in the body.⁷

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For more information on the Canadian Health Measures Survey, please contact Statistics Canada's National Contact Centre (toll-free 1-800-263-1136; 613-951-8116; infostats@statcan.gc.ca).