

# New World Health Organization reference values for thyroid volume by ultrasound in iodine-sufficient schoolchildren

## Project: 315

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## Background

The goiter rate in school-age children is an indicator of the severity of the iodine deficiency disorders (IDD) in a population. In areas of mild to moderate IDD, measurement of thyroid volume using ultrasound is preferable to palpation for grading goiter, but interpretation requires reference criteria from iodine-sufficient children.

## Methods

Thyroid volume was measured by ultrasound in 6-12 yr-old children living in areas of long-term iodine sufficiency in North and South America, Central Europe, the Eastern Mediterranean, Africa, and the Western Pacific. Measurements were done by 2 experienced examiners using validated technique. Data were log transformed, used to calculate percentiles based on the Gaussian distribution, and then transformed back to the linear scale. Age- and body surface area- specific 97<sup>th</sup> percentiles for thyroid volume were calculated for boys and girls.

## Results

The sample included 3529 children evenly divided between boys and girls at each year (mean age±SD, 9.3±1.9 yr). The range of median urinary iodine concentration was 103-288 µg/L among the six study sites. There were statistically significant differences in age- and BSA-adjusted mean thyroid volume between sites, suggesting that population-specific references in countries with long-standing iodine sufficiency may be more accurate than a single international reference. However, overall differences in age- and BSA-adjusted thyroid volume between sites were modest relative to the population and measurement variability, supporting the use of a single, site-independent set of references.

**Conclusion** These new international reference values for thyroid volume by ultrasound can be used for goiter screening in the context of IDD monitoring.