

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 97th 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 \pm SD, 9.3 \pm 1.9 yr). The range of median urinary iodine concentration was 103-288 μ g/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.