

Evaluation of Thyroid Status in Primary Obese Adults

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Abstract

Background: Obesity and hypothyroidism are two common clinical conditions that have been linked together closely.

Objective: To determine the status of thyroid function in primary obese adults.

Methods: This cross-sectional study was conducted in the Department of Endocrinology, BMU from September 2022 to March 2025, enrolling 100 adults (aged 18-60 years) with obesity (BMI ≥ 25 kg/m²) and 50 adults (aged 18-60 years) with normal weight (BMI 18.5-22.9 kg/m²), all without known thyroid disorders. Secondary causes of obesity and conditions affecting thyroid function were excluded. Obesity parameters (body mass index, waist circumference, hip circumference, waist-hip ratio, waist-height ratio) were measured. Thyroid function tests including free triiodothyronine (FT3), free thyroxine (FT4), thyroid stimulating hormone (TSH) and anti-thyroid peroxidase antibody were measured by chemiluminescent immunoassay.

Results: The mean age of the obese and normal weight groups were 28.6 (8.5) years and 28.1 (8.8) years, respectively. Serum FT3 [3.2 (0.5) vs. 3.6 (0.4), pg/ml, $p < 0.001$] and FT4 [1.1 (0.2) vs. 1.2 (0.2), ng/dl, $p < 0.001$] levels were significantly lower while TSH [3.9 (3.3) vs. 1.6 (1.1), μ IU/mL, $p < 0.001$] levels were significantly higher in obese individuals compared to those of normal weight individuals. There was a significantly higher frequency of hypothyroidism (24% vs. 2% Total, 17% vs. 2% subclinical and 7% vs. 0% overt, $p = 0.001$) and anti-thyroid peroxidase antibody positivity (27% vs. 12%, $p = 0.037$) in obese adults compared with normal weight adults. None of the participants had subclinical or overt thyrotoxicosis. Multiple linear regression revealed a significant negative correlation between FT4 and hip circumference ($\beta = -2.266$, 95% CI = -0.050 to -0.001).

Conclusions: We found significant association of hypothyroidism with obesity, irrespective of anti-thyroid peroxidase antibody status. [*J Assoc Clin Endocrinol Diabetol Bangladesh*, 2025;4(Suppl 1): S38]

Keywords: Obesity, Hypothyroidism, Anti-thyroid peroxidase antibody

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