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Small Differences in Thyroid Function May Be Important for Body Mass Index and the Occurrence of Obesity in the Population

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Context: Increasing prevalence of overweight in the population is a major concern globally; and in the United States, nearly one third of adults were classified as obese at the end of the 20th century. Few data have been presented regarding an association between variations in thyroid function seen in the general population and body weight.

Objective: The aim of this study was to investigate the association between thyroid function and body mass index (BMI) or obesity in a normal population.

Design: A cross-sectional population study (The DanThyr Study) was conducted.

Participants: In all, 4649 participants were investigated, and 4082 were eligible for these analyses after exclusion of subjects with previous or present overt thyroid dysfunction.

Main Outcome Measures: The study examined the association between category of serum TSH or serum thyroid hormones and BMI or obesity in multivariate models, adjusting for possible confounding.

Results: We found a positive association between BMI and category of serum TSH (P 0.001) and a negative association between BMI and category of serum free T4 (P 0.001). The difference in BMI between the groups with the highest and lowest serum TSH levels was 1.9 kg/m², corresponding to a difference in body weight of 5.5 kg among women. Similarly, the category of serum TSH correlated positively with weight gain during 5 yr period.

Conclusions: “Our results suggest that thyroid function (also within the normal range) could be one of several factors acting in concert to determine body weight in a population. Even slightly elevated serum TSH levels are associated with an increase in the occurrence of obesity.” Consequently, sub-optimal “normal” thyroid levels can result in weight gain, obesity and inability to lose weight, and optimizing thyroid levels can be considered beneficial and possibly necessary for the maintenance of normal weight.

