EVALUATION OF ANTHROPOMETRIC CHANGES IN DIFFERENT PATHOLOGIES OF THYROID GLAND HORMONE FUNCTIONS

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Abstract. *In this article, the authors conducted a retrospective analysis of studies of various thyroid factors and their effects on anthropometric parameters worldwide.*

Keywords: *method of extraction, decrease in sensitivity to insulin, weight, body mass index, polycyclic aromatic hydrocarbons, triiodothyronine (T3), thyroxine (T4), thyrotropin-releasing hormone (TRH).*

Objective: Currently the world scale obesity and excess weight are the most current problems one being is coming To the main reasons one endocrine glands activity violation. Thyroid hormones affect metabolism in the human body, causing obesity and anthropometric indicators of other body parts.

Purpose: World scale thyroid gland the disease anthropometric pointers to change the effect study _

Materials and Methods: Same to the topic circle articles, abstracts, and dissertations the results PubMed, web of science, and from google scholar databases taken, this scientific research on retrospective analysis was conducted.

The results of the study: In this study, Olga Gimenez-Palop and researchers studied the relationship between ghrelin levels, decreased insulin sensitivity, and energy balance in patients with thyroid dysfunction. The study included 24 hyperthyroid and 17 hypothyroid patients and their body mass index-matched controls. Plasma ghrelin levels decreased insulin sensitivity, hunger levels, three-day average caloric intake, and anthropometric parameters were measured. Hyperthyroidism had lower ghrelin levels and higher insulin resistance compared to its control group. After treatment, these levels were normalized. Glucose, a component of insulin resistance, was the only predictor of ghrelin levels. Decreased ghrelin levels and insulin sensitivity in hypothyroidism were similar to those in the control group. There was no correlation between changes in ghrelin levels and changes in free T4, free T3, anthropometric parameters, total caloric intake, and hunger ratings in both cases of thyroid dysfunction. The study concluded that in cases of thyroid dysfunction, ghrelin levels are associated with reduced insulin sensitivity rather than regulation of energy balance and food intake. [1]

It aimed to assess the effects of prenatal exposure to polycyclic aromatic hydrocarbons (PAHs) on pregnant women's anthropometric indices and neonatal thyroid-stimulating hormone. The study involved 126 pregnant women and measured the priority compounds of polycyclic aromatic hydrocarbons using gas chromatography-mass spectrometry after separating blood serum and liquid-liquid extraction. Anthropometric indices, neonatal thyroid-stimulating hormone levels, and respondents' data were obtained from medical records and questionnaires. The mean concentration of PAH varied from 0.29 to 327.91 ng/g lipid. There was no significant difference

between PAU measured in maternal serum after the seventh month and at the termination of pregnancy, except for one compound. The results of the regression analysis showed a significant relationship between secondhand smoke exposure and total PAH concentrations. There was no significant correlation between PAU exposure and neonatal weight, height, head circumference, and Apgar score. However, the study found that as one of the PAUs increased, thyroid-stimulating hormone levels decreased. The study is the first to assess the relationship between prenatal exposure to PAHs and the effects on newborn health parameters, including thyroid-stimulating hormone levels, in a Middle Eastern population. Future studies are recommended to perform a detailed assessment of sources of PAU intake, especially in vulnerable populations such as pregnant women and children. [2]

The study was conducted by Tinne Geens and co-investigators to determine the levels of bisphenol A (BPA) and triclosan (TCS) in the urine of Belgian overweight, obese, or lean people. The study involved 151 overweight and obese individuals and 43 lean individuals, and four urine samples were collected from overweight and obese individuals at different time points: before they started the diet or before undergoing bariatric surgery, and three additional samples were collected at three, six, and Program/12 months after surgery. The study found that BPA and TCS were present in more than 99% of the samples, and the average concentration of both compounds was higher in the urine of overweight and obese people compared to the lean group. However, TCS concentrations were not significantly different between the two groups. The study also found that BPA concentrations in the obese group were negatively related to age, with no significant correlation found between TCS levels and age, sex, or body mass index. The study shows that single-point urine samples can predict long-term exposure to BPA and TCS. Multiple linear regression analyses also revealed an association between urinary BPA/TCS levels and thyroid hormone levels in some groups.[3]

Carlos Ramos Urrea and other researchers say the relationship between obesity and thyroid hormones, including triiodothyronine (T3), thyroxine (T4), thyrotropin-releasing hormone (TRH), and thyrotropin (TSH), is still controversial, especially in children and adolescents. This population has high rates of overweight and obesity, and several treatments have been used, including nutritional, psychological, and exercise interventions. This large-scale review aimed to analyze 16 studies published between 1999 and 2019 that assessed hormonal levels during interventions aimed at treating overweight and obesity in children and adolescents. The main goal was to determine the changes in hormonal levels during weight loss. Most studies have shown that changes in body composition parameters in response to various regimens are positively correlated with fT3/TT3/TSH. The most common finding related to freeT4/TT4 was unchanged levels and therefore no association with weight loss. Importantly, the response to the intervention was found to be unaffected even by free T4 supplementation. Further research is needed to determine whether changes in hormone levels are associated with the development and recovery from overweight/obesity in children/adolescents. Understanding the importance of thyroid axis hormones in managing overweight and obesity can help maintain healthy body composition.[4]

This article discusses the prevalence of comorbidities in children and early adolescents with Tomomi Niegasha Down syndrome in Japan. In the study, biochemical data, thyroid function, and anthropometric parameters were evaluated and their correlation was analyzed. The study found that there was no significant difference in the prevalence of obesity and overweight between boys and girls. Boys had higher uric acid levels than girls, and the prevalence of hyperuricemia

was also higher in boys. The study showed that the prevalence of subclinical hypothyroidism in children with Down syndrome is about 20%, with no significant gender differences. Uric acid and dehydroepiandrosterone sulfate levels were positively related to age, whereas thyroid-stimulating hormone and free thyroxine levels were negatively related to age. In general, hyperuricemia was more common in children with Down syndrome, suggesting the need to monitor uric acid levels and thyroid function in this patient group from childhood to early adulthood. 102 children with Down syndrome, including 62 boys and 40 girls aged 5-15 years, participated in the study. Blood samples were taken, and blood pressure and anthropometric parameters were measured. The study excluded children treated with thyroid or heart medications. Results are expressed as mean ± SD, and sex differences for several parameters were calculated using unpaired t-tests. Simple linear regression coefficients and multiple regression analysis were used to examine the correlation between each parameter. [5]

This study aimed to investigate the differential risk of thyroid cancer among anthropometric factors, including body mass index (BMI) and height, among the indigenous population of French Polynesia. A total of 219 thyroid cancer patients and 359 population controls were included in the study. Eligible cases were identified from French Polynesia's cancer registry, health insurance files, and four endocrinologists in Tahiti. Date- and sex-matched controls were randomly selected from birth registers. Data were collected through face-to-face interviews using a structured questionnaire administered by trained Polynesian interviewers and health workers. The questionnaire includes information on demographic factors, smoking habits, lifetime recreational physical activity, gynecological and reproductive factors for women, medical X-rays, and weight and height at different ages. The height and weight of the participants' parents were also recorded, and their contours were selected from five different somatotype charts. Conditional logistic regression was used to analyze the association between anthropometric factors and thyroid cancer risk. The study found that women who were overweight or obese at age 18 and before diagnosis had a 6.2-fold increased risk of thyroid cancer compared to those with a normal lifetime weight. Height was positively associated with thyroid cancer among men and women. The study found that excess body weight, especially when it started in early adulthood, and increased height played a role in the differential thyroid cancer risk in populations born in French Polynesia. [6]

Differentiated thyroid carcinoma (DTC) is a type of thyroid cancer that is more common in certain populations. In particular, the incidence of DTC is lower in people of African descent and higher in island populations, but there is no clear explanation for these differences. A recent study focused on a multiethnic Cuban population of African and Hispanic origin to determine risk factors for the development of DTC. The study analyzed 203 DTC patients treated in two hospitals in Havana and 212 controls living in the area covered by these hospitals. The researchers found that non-African ethnicity, never smoking, parity and high body mass index were risk factors significantly associated with DTC. In addition, positive Rh factor, personal history of thyroid disease, agricultural occupation, and consumption of artesian well water are also associated with a significantly increased risk of developing DTC. showed that it is the most common histological type and that papillary carcinomas are larger than follicular carcinomas. However, a BMI between 25-30 was significantly associated with an increased risk of DTC compared to normal weight, and a positive but non-significant association was observed with a BMI > 30. Overall, this study found that DTC in the Cuban population, including non-African ethnicity, positive Rh factor, farming, and drinking water from artesian wells. Although the study did not establish a causal relationship

between these factors and DTC, it provides important information for future research and may be useful in developing prevention and intervention strategies to reduce the incidence of DTC in high-risk populations. [7]

Researchers have been interested in the fact that the main key element of success in various sports is the region of residence. This study was conducted by Getachew Wassihun Dessalew and co-authors on anthropometric parameters among Ethiopian 10,000m runners and how these parameters influence running performance. A total of 32 top 10,000m runners took part in the study and based on their anthropometric measurements, several conclusions were drawn. It was found that height has a positive effect on running time in men, while it hurts women, and a small circumference of arms and legs in athletes of both genders has a positive effect [8].

Flavio Hojaij and other authors studied the anatomical location of the thyroid gland and its effect on anthropometric and demographic parameters. The purpose of this study is to provide information to the surgeon about where the thyroid gland can be located during surgery. During the research, a total of 56 cadavers were studied. Carnoy's solution was used histologically to identify ectopic gland tissue in the tissues taken from the pelvic area and neck area. In 89.3% of the tissues taken for the study, four or more thyroid glands were found. Upper glands on the medial side and the lateral location of the lower glands were found. In addition, in 42.8% of cases, the location of the ectopic lower thyroid gland was found. In addition, the study revealed many ectopic zones of the thyroid gland. The main ones are the thoracic cavity and the thyroid gland (19.6%), the thyroid gland and subscapular cavity (12.5%), thyroid gland parenchyma (5.4%). and location does not affect anthropometric and demographic parameters. [9]

Lukas Schwingshackl et al. studied anthropometric changes in fruit and vegetable consumers using systematic review and meta-analysis methods in adults. This study analyzed a total of 17 studies and analyzed data from a total of 563,277 participants. High fruit and vegetable consumers have been found to have lower body mass and a smaller waist circumference, and in addition, high fruit and vegetable consumption has been shown to reduce the risk of excess fat accumulation.[10]

Two hundred and fifty healthy schoolchildren over 6 years of age, 12 years old (male: 9.3 ± 2; female: 9.4 ± 1.9) participated in this study. Their lung function, such as forced expiratory volume in 1 second (FEV1), forced vital capacity (FVC), and peak expiratory flow rate (PEF), was assessed using a micro-computerized spirometer. In addition, anthropometric variables including height, weight, chest circumference, waist circumference, and hip circumference were measured. Anthropometric variables are strong determinants of lung function in children. In addition, higher BMI had a positive effect on FEV1 and FVC values.[11]

In the article by Şükrü Aras and other researchers, the effect of fat distribution on anthropometric and laboratory parameters, in particular, metabolic syndrome in obese women, reduced insulin sensitivity, and indicators of thyroid function, was studied. The study was a cross-sectional study in which anthropometric measurements of all participants and biochemical tests were performed on their blood samples. The study found that weight, waist circumference, body mass index, and other measures of fat distribution were significantly increased in all obese compared with control subjects, but there was no significant difference between the centrally and peripherally obese groups. Insulin levels, metabolic syndrome components, free triiodothyronine (T3), and free thyroxine T4 and T4 ratio were significantly higher in the central obesity group than in the peripheral obesity and control groups. Elevated triglycerides can be associated with elevated

glucose and insulin levels, which in turn are associated with metabolic syndrome. Body fat content can affect thyroid tests in obesity, and T3/T4 changes can be a result of fat distribution. The study showed that the presence of three or more components of the metabolic syndrome was more common in the central obesity group. Likewise, thyroid function test results were higher in the central y obesity group than in the peripheral obesity and control groups. In addition, glucose and triglyceride levels were found to be positively correlated with T3/T4. [12]

The Controlled Antenatal Thyroid Screening Study II (CATS-II) is a follow-up study of the original CATS-I randomized controlled trial that examined the effects of levothyroxine therapy for suboptimal gestational thyroid function (SGTF) during pregnancy. The CATS-II study examines long-term effects on anthropometric, bone, and cardiometabolic outcomes in mothers and offspring, including a group with normal gestational thyroid function (NGTF). The study included 332 mothers (197 NGTF, 56 SGTF-U, 79 SGTF-T) and 326 paired children who were 9.3 ± 1.0 years after birth with body mass index (BMI), lean, fat 'and was assessed for various measurements such as bone. mass, blood pressure, thyroid function, lipids, insulin, and adiponectin. The results of the study showed that the addition of levothyroxine in women with SGTF did not affect long-term offspring anthropometric, bone, and cardiometabolic measures. However, lack of treatment was associated with sustained long-term increases in BMI and fat mass in women with SGTF. Untreated mothers (SGTF-U) had higher BMI and thyroid-stimulating hormone (TSH) values than NGTF mothers, whereas treated mothers (SGTF-T) had similar BMI and TSH values to NGTF mothers. Overall, research highlights the importance of early detection and treatment of SGTF during pregnancy to prevent long-term health risks to mothers and offspring. [13]

M. Dvořáková and other authors studied the relationship between hypothalamus-thyroid hormones and anthropometric indicators in the Czech population. The participants included patients with thyroid diseases and obesity. Among them, 1012 include male and 1625 female patients. The amount of thyroid-stimulating hormone, free T3 and free T4 in the blood of the patients was determined. Also, anthropometric indicators such as age, body weight, body size, body mass index, waist - Pelvic circumference, neck circumference, wrist circumference, and several other measurements were taken. As a result, it was found that the ratio of thyroid-stimulating hormone, free T 3, free T 4, T 3, and T 4 in men is negatively related to age. , in women, only the ratio of T 3 and T 4 was found to be negatively correlated with age.[14]

A population-based case-control study was conducted in the French Pacific territory of New Caledonia to investigate the etiology of thyroid cancer and the reasons for its high incidence, particularly among Melanesian women. The study included 332 cases and 412 population controls with papillary or follicular carcinoma diagnosed between 1993 and 1999. The results showed that tobacco smoking and alcohol consumption were negatively associated with thyroid cancer, but no dose relationship was observed. Height was positively associated with thyroid cancer, especially in men. Weight and body mass index (BMI) were strongly associated with thyroid cancer in Melanesian women aged 50 and over, with a BMI of 35 kg/m2 or more 5.5 compared with normal weight women coefficient exists. The study suggests that the high prevalence of obesity among Melanesian women in New Caledonia may partly explain the very high incidence of thyroid cancer in this group. No association was observed with weight or BMI among men. After stratification by ethnic group, the results of the anthropometric characteristics of the women showed that obesity was more common among the Melanesian women than among the European control women. There

was no association with body size variables in women younger than 50 years. Conversely, the odds ratio for weight and BMI increased dramatically in older women, from 4.5 to 5.5 for a BMI greater than 30 kg/m2.[15]

Conclusion: Various pathologies related to thyroid hormones are increasing worldwide. The analysis showed that there are factors affecting the activity of thyroid hormones and the effect of thyroid hormone on anthropometric changes has not been fully studied. is one of the big problems.

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