results have been obtained by (Habib, et.al, 2020); (Jin, 2018); (Ünüvar, et.al, 2014); which showed a positive association between TSH and BMI, also (Maria, et.al, 2019); found that BMI reduction was a unique predictor of the decrease of TSH, and alterations of thyroid function and structure in children with obesity are reversible after weight loss. On the contrary, (Dündar and Akıncı, 2022); (Patel, et.al, 2021); found that the mean body mass index was similar in both subclinical hypothyroidism and the control group and (Patel, et.al, 2021); and (ÇELİK, 2019); found that BMI- SDS were similar in both groups and did not find a correlation between TSH levels and BMI.

Regarding anthropometric parameters describing abdominal obesity, waist circumference WC was found to be higher in the SCH group compared to the control group in our study and TSH was significantly positively correlated with WC, yet no statistically significant difference between both groups regarding abdominal obesity was observed. This came in agreement to (Dahl, et.al, 2017); who reported a positive correlations of TSH and fT4 with waist/ height ratio W/HtR suggesting that abdominal obesity, independent of the overall degree of obesity, augments the risk of concurrent thyroid abnormalities in children and adolescents with obesity. (Maria, et.al, 2019) reported a significant decrease of waist/height ratio after weight loss. (Cerbone, et.al, 2016); reported that TSH concentrations were associated positively with waist hight ratio W/HtR but not with BMI z-score. (Rumińska, et.al, 2016); in the multivariate regression analysis with TSH, as a dependent variable, they found TSH was significantly correlated with WC. On the other hand, although (Patel, et.al, 2021); noted that subjects with subclinical hypothyroidism had higher fat%, than those with normal TSH levels, no difference in BMI z-score, waist circumference and other metabolic parameters was observed.

Regarding body composition, in our study, SCH cases showed higher values of body fat percentage compared with non SCH cases. Furthermore, a positive correlation was found between TSH and body fat percentage values in the SCH group. Similar results have been obtained by (Patel, et.al, 2021); who reported higher fat percentage and android to gynoid fat ratio despite same level of BMI in subjects with SCH which indicates its role in the development of visceral obesity. (Odabasi, et.al, 2020); reported that fat mass% (FM%) and fat mass (FM) were found higher in children with mild subclinical hypothyroidism, but this was not statistically significant. (Krause, et.al, 2016); found that measures of adiposity, including BMI z-score and fat mass, had a significant positive relationship with TSH and a negative relationship with FT4, Both BMIz and fat mass were positively associated with TSH. (Maria, et.al, 2019) found a significant decrease of FM%, TSH, with weight loss. Nevertheless, some studies came in disagreement with our results. (Barjaktarovic, et.al, 2017) reported that the percentage of FM was found similar to controls and adiposity was uncorrelated with TSH and (Rumińska, et.al, 2016) found that subjects with SCH had higher BF%, than those with normal TSH levels and observed a trend for the association between TSH and the lean body mass% and not FM%.

Conclusion:

The present study supports previous findings, that obesity is the cause of moderate increase in TSH and fT3 levels causing subclinical hypothyroidism. TSH positively correlated with the anthropometric parameters describing abdominal obesity and body composition regarding body fat.

Recommendations:

Since serum TSH concentration, even remaining within the norm, could adversely affect abdominal obesity and body composition regarding body fat. Therefore, well- designed studies are needed to evaluate the necessity of taking a thyroid hormone for subclinical hypothyroidism in obese children.

References:

1. Abd- Elmaqsoud, M, Abu Saif, H, Ghanem, S, et.al. (2018). 'Thyroid Function In Obese Children And Adolescence', **Al- Azhar Journal of Pediatrics**, 21(1), pp. 1904- 1917. doi:10.21608/azjp.2018.70312.
2. Adegbija O, Hoy WE, Wang Z. Corresponding waist circumference and body mass index values based on 10- year absolute type 2 diabetes risk in an Australian Aboriginal community. **BMJ Open Diabetes Res Care**. 2015 16;3(1).
3. Akici N, Onal ZE, Gürbüz T, Sağ C., et.al. "Atherogenic indices in the assessment of cardiovascular disease risk in children with obesity and subclinical hypothyroidism". **Acta Endocrinol (Buchar)**. 2020 Jul-Sep; 16(3): 334- 338. doi:10.4183/aeb.2020.334.PMID:33363656; PMCID:PMC7748231.
4. Barjaktarovic M, Korevaar TIM, Gaillard R, et.al. Childhood thyroid function, body composition and cardiovascular function. Eur J Endocrinol. 2017 Oct; 177(4): 319- 327. doi:10.1530/EJE-17-0369. Epub 2017 Jul 19. **PMID**: 28724570.
5. Budnik A, Henneberg M. Worldwide Increase of Obesity Is Related to the Reduced Opportunity for Natural Selection. **Journal**. **pone**. 2017;12(1).
6. Cerbone M, Capalbo D, Wasniewska M, et.al. Effects of L- thyroxine treatment on early markers of atherosclerotic disease in children with sub- clinical hypothyroidism. **EJE**. 2016; 175: 11- 19.
7. ÇELİK, N. (2019). The prevalence of subclinical hypothyroidism in obese children and adolescents and its effects on metabolic parameters. **Cumhuriyet Medical Journal**, 41(4), 691- 697. https://doi.org/10.7197/ cmj.vi.551051
8. Dahl M, Ohrt JD, Fonvig CE, et.al. Subclinical hypothyroidism in Danish lean and obese children and adolescents. **J Clin Res Pediatr Endocrinol**. 2017;9:8- 16.
9. Dündar İ, Akıncı A. The Frequency of Subclinical Hypothyroidism in Obese Children and Adolescents and Its Relationship with Metabolic Parameters and Atherogenic Index. **Turk Arch Pediatr**. 2022 May; 57(3): 316- 322. doi:10.5152/TurkArchPediatr.2022.21264.PMID: 35781235;PMCID:PMC9131820.

Anthropometric Measures		Thyroid Profile (TSH)		T- Test Or Chi- Square		
		SCH-Ve	SCH+Ve	T• Or X^{2}*	P-Value	Sig
		No.= 66	No.= 34			
Abdominal obesity n (%) (WC centile≥ 90th)	Yes	56 (84.8%)	33 (97.1%)	3.417*	0.065	NS
	No	10 (15.2%)	1 (2.9%)			

P- value> 0.05: Non significant; P- value< 0.05: Significant; P- value< 0.01: Highly significant, *Chi- square test; •Independent t- test; Sig: significance, HS: Highly significant, NS: non significant, WC: waist circumference.

Table (7) Body Fat% And Obesity According BF% Among The Studied Groups

Body Composition		Thyroid Profile (TSH)		T- Test Or Chi- Square		
		SCH-Ve	SCH+Ve	T• Or X^{2}*	P- Value	Sig
		No.= 66	No.= 34			
Bf%	Mean±SD	37.43 ± 6.33	46.67 ± 5.69	-7.151•	0.000	HS
	Range	23.4- 49.3	30.6- 56			
Obesity (High Bf%) N (%)	No	10 (15.2%)	0 (0.0%)	5.724*	0.017	S
	Yes	56 (84.8%)	34 (100.0%)			

P- value> 0.05: Non significant; P- value< 0.05: Significant; P- value< 0.01: Highly significant, *Chi- square test; •Independent t- test; Sig: significance HS: Highly significant, S: significant, BF%: body fat%

Waist circumference, body fat% and obesity based on body fat% were significantly higher in the SCH (+ve), no statistically significant difference between both groups regarding abdominal obesity.

Table (8) Correlation between TSH and age

	TSH		
	r	P- Value	Sig
Age	0.082	0.416	NS

P- value> 0.05: Non significant; P- value< 0.05: Significant; P- value< 0.01: Highly significant, r: spearman correlation coefficients. Sig: significance, NS: non significant

In the currant study, there is a non- significant positive correlation between TSH and age.

Table (9) Correlation between TSH and the anthropometric parameters

Anthropometric parameters	TSH		
	r	P- Value	Sig
Wt	0.373	0.000	HS
Wt Z-score	0.707	0.000	HS
Ht	0.001	0.990	NS
Ht Z-score	0.001	0.990	NS
BMI	0.629	0.000	HS
BMI z-score	0.843	0.000	HS
BMI Percentile	0.845	0.000	HS
WC	0.627	0.000	HS

P- value> 0.05: Non significant; P- value< 0.05: Significant; P- value< 0.01: Highly significant, r: spearman correlation coefficients. Sig: significance, NS: non significant. HS: Highly significant. Wt: weight, Ht: hight. BMI: Body mass index, WC: waist circumference

There is a highly significant positive correlation between TSH and weight (Wt), (Wt) z-score, BMI, BMI z-score, BMI percentile, waist circumference (WC) and a non- significant positive correlation between TSH and both Height (Ht) and (Ht) z-score.

Table (10) Correlation between TSH and body fat%

	TSH		
	r	P- Value	Sig
Bf%	0.806	0.000	HS

P- value> 0.05: Non significant; P- value< 0.05: Significant; P- value< 0.01: Highly significant, r: spearman correlation coefficients. Sig: significance, HS: Highly significant. BF%: body fat%

There is a highly significant positive correlation between TSH and body fat%.

Discussion:

Obesity is a risk factor for noncommunicable diseases such as diabetes, cardiovascular diseases, and musculoskeletal disorders, resulting in dramatic decrease of life quality and expectancy (Lin& Li, 2021). In the past decades, a number of reports tried to explain whether thyroid dysfunction is the cause or rather the consequence of excess adipose tissue; the answer, however, remains unclear. (Walczak& Sieminska, 2021)

Our study is a cross- sectional study conducted on 100 obese adolescents aged (10- 16) years, subclinical hypothyroidism was found in 34% of studied cases. The FT3 level was found to be higher in the SCH (+ve) group compared to the SCH (-Ve) but no significant difference was found between both groups in terms of fT4. This came in agreement with studies performed by (Kara, 2020); (Jin, 2018); (Yadav, et.al, 2018); (Dahl, et.al, 2017); (Fontenelle, et.al, 2016); who suggested that the most common thyroid disorder in obese children and adolescents is increased serum TSH and fT3 levels.

In the current study, no difference was found between both groups regarding age, gender, and socioeconomic status. This came in concordance with findings reported by (Akici, et.al, 2020); and (Abd-Elmaqsoud, et.al, 2018); who found no statistically significant difference regarding age and gender between SCH and EU groups. Moreover, (Krause, et.al, 2016); found no significant sex, age, or socioeconomic status effects with TSH in the entire population. However, (Rumińska, et.al, 2016); reported that serum TSH values were correlated with age but in the obese and non- obese children taken together. Also, (Dahl, et.al, 2017); found higher TSH levels in boys than girls in a study encompassed 1796 aged (6- 18) years obese/overweight subjects.

In our study, there was no significant difference between the two groups regarding pubertal status. Our results are consistent with (Dündar and Akıncı, 2022); (Kara, 2020); (Maria, et.al, 2019); and (Dahl, et.al, 2017) who did not find difference between groups concerning puberty status. On the other hand, (Giannakopoulos, et.al, 2019); reported that only in females of both obesity and normal weight groups, serum TSH concentrations were lower during puberty compared to prepuberty.

Our results showed a high statistically significant difference between both groups in terms of BMI and BMI z-score and a positive correlation between TSH levels and both BMI and BMI z-score was found. Similar

Table (2) Comparison between the studied groups regarding socio- demographic characteristics

Socio- Demographic Characteristics		Thyroid Profile (TSH)		T- Test Or Chi- Square		
		SCH−Ve	SCH+Ve	T• Or X^2*	P- Value	Sig
		No.= 66	No.= 34			
Age	Mean±SD	11.45± 1.48	11.58± 1.48	−0.427•	0.67	NS
	Range	10- 15.3	10- 15.8			
Gender N (%)	Female	24 (36.4%)	11 (32.4%)	0.159*	0.69	NS
	Male	42 (63.6%)	23 (67.6%)			
SES N (%)	Low	60 (90.9%)	28 (82.4%)	1.556*	0.21	NS
	Middle	6 (9.1%)	6 (17.6%)			

P- value> 0.05: Non significant; P- value< 0.05: Significant; P- value< 0.01: Highly significant, *Chi- square test; •Independent t- test; Sig: significance, NS: non significant, SES: socioeconomic standard

In our study, there was no statistically significant difference between both groups regarding age, sex and socioeconomic standard.

Table (3) Comparison Between The Studied Groups Regarding Pubertal Status

Pubertal Status		Thyroid Profile (TSH)		Chi- Square		
		SCH−Ve	SCH+Ve	X^2	P- Value	Sig
		No.= 66	No.= 34			
Pubertal Status N (%)	Pre- Puberty Stage: I	23 (34.8%)	11 (32.4%)	0.363	0.834	NS
	At puberty stage: II-III	29 (43.9%)	17 (50.0%)			
	late puberty stage: IV-V	14 (21.2%)	6 (17.6%)			

P- value> 0.05: Non significant; P- value< 0.05: Significant; P- value< 0.01: Highly significant, *Chi- square test, Sig: significance, NS: non significant.

There was no statistically significant difference between both groups regarding puberty.

Table (4) Comparison between the studied groups regarding height and weight parameters

Anthropometric Measures		Thyroid Profile (TSH)		T- Test Or Mann- Whitney		
		SCH−Ve	SCH+Ve	T• Or U‡	P- Value	Sig
		No.= 66	No.= 34			
Wt	Mean±SD	64.87 ± 14.45	75.54 ± 16.45	−3.335•	0.001	HS
	Range	41- 98	51- 110			
Wt Z-score	Median (IQR)	1.98 (1.79- 2.27)	2.58 (2.19- 2.8)	−5.382‡	0.000	HS
	Range	0.94- 4.21	1.38- 3.38			
Ht	Mean±SD	1.49± 0.11	1.49 ±0.09	0.109•	0.914	NS
	Range	1.31- 1.71	1.33- 1.65			
Ht.Z-score	Median (IQR)	−0.15(−0.87- 0.85)	−0.11(−0.68- 0.66)	−0.087‡	0.930	NS
	Range	−0.15(−0.87- 0.85)	−1.54- 1.52			

P- value> 0.05: Non significant; P- value< 0.05: Significant; P- value< 0.01: Highly significant, •Independent t- test; ‡Mann- Whitney test, Sig: significance, NS: non significant, HS: highly significant, Wt: weight, Ht: hight

There is a high statistically significant difference between the studied groups in terms of weight and weight z-score and no statistically significant difference between both groups, regarding height or height z-score.

Table (5) Comparison between the studied groups regarding body mass index (BMI) and Severe obesity

Anthropometric Measures		Thyroid Profile (TSH)		T- Test Or Mann- Whitney Or Chi- Square		
		SCH−Ve	SCH+Ve	T• Or U‡ Or X^2*	P- Value	Sig
		No.= 66	No.= 34			
BMI	Mean±SD	28.75± 2.87	33.44± 5.40	−5.691•	0.000	HS
	Range	23.4- 34.9	20.3- 47.2			
Bmi Z-score	Median (IQR)	2.01 (1.88- 2.26)	2.76 (2.46- 3.05)	−6.098‡	0.000	HS
	Range	1.74- 3.04	1.89- 4.55			
BMI Percentile	Mean±SD	97.47± 2.54	99.30± 0.84	−4.074•	0.000	HS
	Range	79.93- 99.88	97.09- 100			
Severe Obesity N (%)	No	38 (57.6%)	8 (23.5%)	10.472*	0.001	HS
	Yes	28 (42.4%)	26 (76.5%)			

P- value> 0.05: Non significant; P- value< 0.05: Significant; P- value< 0.01: Highly significant, •Independent t- test; ‡Mann- Whitney test, *Chi- square test; Sig: significance, HS: Highly significant. BMI: Body mass index

There is a high statistically significant difference between the studied groups in terms of BMI, BMI z-score, BMI Percentile and severity of obesity.

Table (6) Comparison between the studied groups regarding waist Circumference and abdominal obesity

Anthropometric Measures		Thyroid Profile (TSH)		T- Test Or Chi- Square		
		SCH−Ve	SCH+Ve	T• Or X^2*	P-Value	Sig
		No.= 66	No.= 34			
WC	Mean±SD	82.91 ± 7.26	92.88 ± 6.13	−6.846•	0.000	HS
	Range	70- 99.00	78- 107			

Introduction:

Obesity is most likely a result of complex interactions between genetic predispositions, environmental factors and human behaviour (Budnik and Henneberg, 2017). The prevalence of childhood obesity continues to increase in all age groups which is defined as a BMI greater than the 95th percentile for their age and sex. (Singer and Lumeng, 2017)

Body composition and thyroid hormones appear to be closely related. Thyroid hormones regulate basal metabolism, hpothyroidism is associated with decreased thermogenesis, decreased metabolic rate, and has also been shown to correlate with a higher body mass index (BMI). (Sanyal and Raychaudhuri, 2016)

Insulin resistance in obese children is associated with body fat, especially abdominal fat. Body composition analysis using bio- impedance analysis (BIA), have been frequently applied in children and adolescents not only to research but also to clinical practice. (Yang and Chang, 2016)

Hypothyroidism has long been recognized as a cause of impaired puberty. This is consistent with a role for TSH in the pathophysiology of hypothalamic- pituitary axis activation, probably through interaction with the FSH receptor and TH receptors in both testicular and ovarian cells. However, most of these abnormalities either improve or normalize with L-thyroxine treatment, after the restoration of a euthyroid state. (Léger, 2015)

Aims:

To detect thyroid dysfunction in obese adolescent and to study its relation to anthropometric parameters and pubertal status.

Design of Study:

It is a cross- sectional study.

Subjects:

A total of 100 obese adolescents aged (10- 16) years of both sexes, BMI at or greater than 95th percentile for age and sex, who attended the Endocrine Pediatric Clinic, Children's Hospital, Ain Shams University in the period from January 2022 to December 2022 were recruited.

All obese patients diagnosed with endocrine disorders (overt hypothyroidism or hyperthyroidism, Diabetes Mellitus) or with any genetic syndrome and any other chronic disease or on long- term medication were excluded from this study.

Ethical Aspects:

Approval was obtained from the ethical committee of the Faculty of childhood postgraduate studies, Ain Shams University and informed written consent was obtained from the care givers of the patients.

Methods:

All patients were subjected to:

1. Personal and sociodemographic characteristics including age, gender and socioeconomic status which was assessed using El- Gilany (SES) scale. (El- Gilany, et.al, 2012)
2. History taking: A full detailed medical history was taken.
3. Clinical examination: A full through general examination focussing on signs suggestive of endocrine disorders, genetic syndromes, complications of obesity.
4. Anthropometric measurements assessment; (Weight in Kg, Height in cm, Waist circumference in cm and Body mass index in Kg/m^2) (Adegbija, et.al, 2015). Measurements were plotted on age and sex standard percentiles according to CDC 2000 growth charts. (Kuczmarski, et.al, 2002) Obesity is defined as a BMI at or above the 95th percentile and severe obesity is defined as a BMI greater than the 99th percentile for children and teens of the same age and sex (Güngör, 2014). Abdominal circumference (AC) was measured to the nearest millimeter using a tapeline at each child's maximum waist girth in a standing position. Abdominal obesity is defined as AC greater than or equal 90th percentile for the child's age and gender (or adult cut- off if lower) according to the International Diabetes Federation definition of metabolic syndrome. (Zimmet, et.al, 2007)
5. The stage of puberty (P1- P5) was determined according to Tanner's guidelines and the subjects were classified to three groups, prepubertal (Tanner stage 1), "at puberty" (stages 2 and 3 of Tanner), and "Completing Puberty" (stages 4 and 5 of Tanner). (Medeiros, et.al, 2014)
6. Whole- body composition was assessed by bioelectrical impedance analysis to measure fat and muscle mass percentages (Junqueira, et.al, 2018) using commercially available (BIA) (Granzia, Model Number: BF500, Genova, Italy, certified by SGS) measuring weight and body fat.

Statistical Analysis:

Statistical analysis was performed using statistical package for Social Science (IBM SPSS) version 27. The quantitative data were presented as mean, standard deviations and ranges when parametric and median, inter-quartile range (IQR) when data found non- parametric. Also qualitative variables were presented as number and percentages. Chi square test is used to elucidate significance between qualitative variables. Independent (t) test and Mann- Whitney test are used to compare two independent groups (quantitative data, parametric distribution and non-parametric distribution respectively) was used to test association or significance between quantitative variables and qualitative variables. Spearman correlation coefficients was used to assess the correlation between two quantitative parameters, the p- value was considered significant as the following: P- value> 0.05: Non- significant (NS), P- value< 0.05: Significant (S), P- value< 0.01: Highly significant (HS).

Results:

Table (1) Subclinical hypothyroidism among obese patients

Thyroid profile (TSH serum level)	n	%
Group A: SCH- ve	66	66
Group B: SCH+ve	34	34
Total	100	100

SCH-ve: Euthyroid, subclinically hypothyroid negative
SCH+ve: subclinically hypothyroid positive

Our results showed that (34%) of the studied cases were sub- clinically hypothyroid SCH (+ve) and (66.0%) were euthyroid SCH (+ve).

Thyroid Function Among Obese Adolescents and Its Relation to Growth Parameters and Pubertal Status

Nesreen M. Modar, [1]Hayam K. Nazif, [2]Nermine H. Amr, [3]Noha R. Mohamed, [4]Reham S. Turkan
[1]Professor of Pediatrics, Faculty of Postgraduate Childhood Studies, Medical Studies Department, [2]Professor of Pediatrics, Faculty of medicine, Ain Shams University, [3]Ass. professor of Chemical Pathology, Faculty of medicine, Ain Shams University, [4] Ass. professor of Pediatrics Faculty of Postgraduate Childhood Studies, Ain Shams University

نسرين محمد مودر، [١]هيام كمال نظيف، [٢]نرمين حسين عمرو، [٣]نها رفعت محمد، [٤]ريهام صبري تركان
[١]أستاذ طب الأطفال كلية الدراسات العليا للطفولة جامعة عين شمس
[٢]استاذ طب الأطفال كلية الطب جامعة عين شمس
[٣]استاذ مساعد التحاليل الطبية كلية الطب جامعة عين شمس
[٤]استاذ مساعد طب الأطفال كلية الدراسات العليا للطفولة جامعة عين شمس

Summary

Introduction: Subclinical hypothyroidism is common in obese children and adolescents. Thyroid dysfunction among obese patients has profound effects on growth, anthropometric parameters and pubertal development.

Objectives: To identify thyroid dysfunction in obese adolescents and its relation to anthropometric parameters and pubertal status.

Methodology: A cross- sectional study conducted on 100 obese adolescents aged (10- 16) years who attended the Diabetes and Endocrine Pediatric Clinic, Children's Hospital, Ain Shams University in the period from January 2022 to December 2022. Anthropometric measurements including body composition (Bioelectrical Impedence Analysis) (BIA), pubertal development were assessed in all children.

Ethical aspects: Approval from the ethical committee of the Faculty of Childhood Postgraduate Studies, Ain Shams University.

Results: Subclinical hypothyroidism (SCH) was found in 34% of studied cases, where serum free T3 (FT3) was significantly higher in the subclinical hypothyroidism group SCH (+ve) than the euthyroid group SCH (- ve) while serum free T4 (FT4) was not significantly different between both groups. The SCH (+ve) adolescents demonstrated a significantly higher mean/median weight, weight z- score, body mass index (BMI), BMI z- score, BMI percentile and severity of obesity, waist circumference (WC), body fat (BF%) and obesity according to body fat (BF%). Age, sex, socioeconomic status (SES), puberty status, height (Ht), height z- score and abdominal obesity were not different between the two groups. There was a statistical significant correlation between thyroid stimulating hormone (TSH) and weight, weight z- score, BMI, BMI z- score, BMI percentile, waist circumference (WC) and body fat (BF%). While there was no statistical significant correlation between TSH and height, height z- score and age.

Conclusion: Subclinical hypothyroidism is common in obese adolescents and it has profound effects on growth and anthropometric parameters.

Recommendations: The impact of thyroid supplementation in this setting needs to be explored.

KeyWords: Obesity, Subclinical hypothyroidism, Adolescents, Puberty, Body composition.

وظيفة الغدة الدرقية لدى المراهقين المصابين بالسمنة وعلاقتها بمعلمات النمو والبلوغ

مقدمة: يعد قصور الغدة الدرقية دون الإكلينيكي شائعا عند الأطفال والمراهقين الذين يعانون من السمنة. إن خلل الغدة الدرقية لدى المرضى الذين يعانون من السمنة له آثار عميقة على النمو والقياسات البشرية (الانثروبومترية) وتطور البلوغ.

الاهداف: تحديد خلل الغدة الدرقية لدى المراهقين الذين يعانون من السمنة وعلاقته بالقياسات الانثروبومترية وتكوين الجسم وحالة البلوغ.

المنهجية: دراسة مقطعية أجريت على ١٠٠ مراهق يعاني من السمنة تتراوح أعمارهم بين (١٠- ١٦) سنة والذين ترددوا على عيادة مرض السكري والغدد الصماء للأطفال، مستشفى الأطفال، جامعة عين شمس في الفترة من يناير ٢٠٢٢ إلى ديسمبر ٢٠٢٢. تم تقييم كل القياسات البشرية بما في ذلك تحليل تكوين الجسم (BIA) وتطور البلوغ في جميع الأطفال.

النتائج: وجد قصور الغدة الدرقية دون الإكلينيكي في ٣٤% من الحالات، وكان هناك فرق احصائي معنوي بين المجموعتين SCH (+ve) وSCH (-ve)، من حيث هرمون ثلاثي ايودوثيرونين (FT3)، (FT3 z- score). لم تكن مستويات هرمون الثيروكسين (FT4) و(FT4 z- score) مختلفة بين المجموعتين. أظهر المراهقون الذين يعانون من قصور الغدة الدرقية دون الإكلينيكي متوسطا أعلى بكثير بالنسبة للوزن (Wt) و(Wt z- score)، ومؤشر كتلة الجسم (BMI) و(BMI z- score)، والنسبة المئوية لمؤشر كتلة الجسم (BMI Percentile) ودرجة شدة السمنة، ومحيط الخصر (WC)، ونسبة دهون الجسم (BF%)، والسمنة وفقا لـنسبة دهون الجسم (BF%) بينما وجد ان متوسط العمر والجنس والوضع الاجتماعي الاقتصادي (SES) وحالة البلوغ والطول (Ht) و(Ht z- score) والسمنة البطنية لم يكن مختلف بين المجموعتين. كان هناك ارتباط معنوي احصائي بين (TSH) وكل من الوزن (Wt) و(Wt z- score)، ومؤشر كتلة الجسم (BMI) و(BMI z- score)، النسبة المئوية لمؤشر كتلة الجسم (BMI Percentile) ومحيط الخصر (WC)، ونسبة دهون الجسم (BF%)، بينما لم يكن هناك ارتباط معنوي احصائي بين (TSH) وكل من السن والطول (Ht) و(Ht z- score).

الخلاصة: قصور الغدة الدرقية تحت الإكلينيكي شائع لدى المراهقين الذين يعانون من السمنة وله آثار عميقة على النمو والقياسات الانثروبومترية وتطور البلوغ.

التوصيات: يجب دراسة تأثير علاج الغدة الدرقية في حالة اضطراب النمو والقياسات الانثروبومترية.

Accepted at: 28/ 7/ 2024