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Sunt FOR RESEARCE	Original Research Paper	Medicine
international	A STUDY ON PREVALENCE OF HYPOTHYROIDISI IN PATIENTS ATTENDED LIFE STYLE MANAGEMENT C	M LINIC
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ABSTRACT Obesity of	nd hypothyroidism are two common clinical conditions that has been linked	together closely.

The link has become more relevant in the context of unprecedented rise in prevalence of obesity worldwide. The study was conducted to get the prevalence of hypothyroidism in 244 patients attended Lifestyle management clinic of Government Medical College Hospital, Thiruvananthapuram, Kerala. Results: 12.3% of study population were hypothyroid. Majority of them belonged to the age group of 40-49 years. None of the

males were affected. 14.5% female studied population were affected. Hypothyroidism was seen in 18% of those with normal BMI, 12% of overweight, 12% of obese.

KEYWORDS : BMI, Fat %, WHR, Obesity, Hypothyroidism.

INTRODUCTION

According to common perception, hypothyroidism is held responsible for obesity. However, linking them causally is controversial. Overt hypothyroidism is associated with modest weight gain, but there is a lack of clarity regarding subclinical hypothyroidism.

Novel view indicates that changes in thyroid-stimulating hormone (TSH) could well be secondary to obesity. The increasing prevalence of obesity further confounds definition of normal TSH range in population studies.

Here we will review the intriguing relationship between obesity and hypothyroidism

OBJECTIVES

To study the prevalence of hypothyroidism in patients attended Lifestyle management clinic in the Department of PM&R, Government Medical College, Thiruvananthapuram, Kerala, India from January 2017 to December 2017.

METHODOLOGY

- STUDY SETTING
- Lifestyle Management Clinic
- The Dept. of PM&R
- Government Medical College
- Thiruvananthapuram

STUDY PERIOD

One year, from January 2017 to December 2017.

STUDY POPULATION-

All patients who attended Lifestyle management Clinic during the period.

Variables

Age, sex, height, weight, waist-hip ratio, body mass index, fat percentage, thyroid status and co-morbidities.

Data Analysis:

Data was entered into Excel sheet, qualitative variables were expressed as proportion, quantitative variables were expressed as mean and standard deviation. Chi-square test was done to find the association.

OBSERVATIONS



Age in years	Frequency	Percent
<20	18	7.4
20-29	30	12.3
30-39	57	23.4
40-49	82	33.6
>50	57	23.4
Total	244	100.0
Sex	Frequency	Percent
Male	36	14.8
Female	208	85.2
Total	244	100.0
Height	Frequency	Percent
140-149	60	24.6
150-159	117	48.0
160-169	52	21.3
170-179	15	6.1
Total	244	100.0
BMI	Frequency	Percent
Normal	14	5.7
Over weight	55	22.5
Obese	175	71.7
Total	244	100.0
fat%	Frequency	Percent
<25	1	.4
25-34	16	6.6
35-44	62	25.4
45-54	105	43.0
55-64	58	23.8
>65	2	.8
Total	244	100.0
WHR	Frequency	Percent
0.889	17	7.0
0.999	192	78.7

>1	35	14.3
Total	244	100.0
weight	Frequency	Percent
60-79	108	44.3
80-99	87	35.7
100-119	32	13.1
>120	17	7.0
Total	244	100.0



Āge	Hypothyroidism							Total			
	Present			Absent			t				
	N	ſ	%		N		%		N	%	
<20	1		5.6			17		94.4	18	100.0	
20-29	3		10.0			27	Ģ	90.0	30	100.0	
30-39	9		15.8			48		84.2	57	100.0	
40-49	14	1	17.1			68		82.9	82	100.0	
>50	3		5.3			54	Ģ	94.7	57	100.0	
Total	30	כ	12.3		2	214 87.7		87.7	244	100.0	
Gender			Hy	pothy	vroidism				Total		
	Present					Abs	sen	t			
	N	[%	N %		N	%			
Male	0		C	0.0		36	1	00.0	36	100.0	
Female	30)	1	4.4]	.78	85.6		208	100.0	
Total	30	כ	1	2.3	2	214	8	87.7	244	100.0	
Weight			Hy	pothy	roi	dism			Total		
		Pres	sent			Abs	sen	t			
	N	ſ		%		Ν		%	N	%	
60-79	17	7	1	5.7		91	8	84.3	108	100.0	
80-89	9		1	0.3		78	8	89.7	87	100.0	
100-119	1		3	3.1		31	0,	96.9	32	100.0	
>120	3		1	7.6		14	82.4		17	100.0	
TOTAL	30	כ	1	2.3	2	214	87.7		244	100.0	
									Total		
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RESULTS

244 patients were studied

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Majority of the study population was in age group-40-49(33%), Females (85%), Height 150-159 (48%), Weight 60-79 (44%), Obese (71.7%), Fat % 45-54 (43%), WHR 0.9-.99 (78.7%).

12.3% of study population was hypothyroid, Majority of them had following characteristics: 17.1% were in the age group of 40-49 yrs, No males were affected, only 14.5% female studied population were affected. Analysing the association between BMI and hypothyroidism, the latter was found to be affected in all the ranges of BMI. 18% of the studied population with normal BMI, 12% of those with overweight, 12% of obese were found to be hypothyroid.

DISCUSSION

Hypothyroidism was found to be affecting 12.3% of the study population . The results are consistent with previous studies. Female gender and older age group were found to have significant association with hypothyroidism. No significant association was seen with BMI/WHR/FAT%.

In a study by Ambika Gopalakrishnan et al, the overall prevalence of hypothyroidism was 10.95% which was an epidemiological study in eight cities of India.

In another study conducted to get the prevalence of primary hypothyroidism in an obese population by Selma Souto et al, where a sample of 257 women having a mean age of 40.9 ± 11.2 years old and a mean BMI of 44.6 ± 7.1 kg/m² was evaluated. They found a primary hypothyroidism prevalence of 13.2%.

REFERENCES

- AmbikaGopalakrishnanUnnikrishnan, Sanjay Kalra, lRakesh Kumar Sahay, 2GanapathiBantwal, 3Mathew John, 4 and Neeraj Tewan5. Prevalence of hypothyroidism in adults: An epidemiological study in eight cities of India.IndianJ EndocrinolMetab. 2013 Jul-Aug; 17(4): 647–652. doi: 10.4103/2230-8210.113755PMCID: PMC3743364
- SelmaSoutol, Joana Mesquital, Ana Oliveira2, Paula Freitas2, Flora Correia3, Ana Varela1, DavideCarvalho2, Jose Luis Medina1& D Braga1. Prevalence of primary hypothyroidism in an obese population. Endocrine Abstracts (2008) 16 P815
- Knudsen N, Laurberg P, Rasmussen LB, Bülow I, Perrild H, Ovesen L, et al. Small differences in thyroid function may be important for body mass index and the occurrence of obesity in the population. J ClinEndocrinolMetab. 2005;90:4019–24. [PubMed]
- Biondi B. Thyroid and obesity: An intriguing relationship. J ClinEndocrinol Metab. 2010;95:3614–7
- Tagliaferri M, Berselli ME, Calò G, Minocci A, Savia G, Petroni ML, et al. Subclinical hypothyroidism in obese patients: Relation to resting energy expenditure, serum leptin, body composition, and lipid profile. Obes Res. 2001;9:196–201. [PubMed]
- Chomard P, Vernhes G, Autissier N, Debry G. Serum concentrations of total T4, T3, reverse T3 and free T4, T3 in moderately obese patients. Hum NutrClinNutr. 1985;39:371–8. [PubMed]
 Longhi S, Radetti G. Thyroid function and obesity. J Clin Res
- Longhi S, Radetti G. Thyroid function and obesity. J Clin Res PediatrEndocrinol. 2013;5(Suppl 1):40–4.[PMC free article] [PubMed]
- Nannipieri M, Cecchetti F, Anselmino M, Camastra S, Niccolini P, Lamacchia M, et al. Expression of thyrotropin and thyroid hormone receptors in adipose tissue of patients with morbid obesity and/or type 2 diabetes: Effects of weight loss. Int J Obes (Lond) 2009;33:1001–6. [PubMed]
- 9. Radetti G, Longhi S, Baiocchi M, Cassar W, Buzi F. Changes in lifestyle improve body composition