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Subclinical Hypothyroidism; Clinical Features among the Young Adult Females, Hyderabad Telangana, India

Rama Veeramachaneni[1*], Jyothi Avvari[2]

[1]*Research Scholar, Department of Home Sciences, Sri Padmavathi Mahila Visva Vidhyalayam, Tirupati, India*

[2]*Professor, Department of Home Sciences, Sri Padmavathi Mahila Visva Vidhyalayam, Tirupati, India*

***Abstract*: Clinical manifestations of thyroid dysfunction vary considerably among patients in their character and severity. Associated symptoms and signs are often non-specific and progress slowly. As per American thyroid association guidelines for detecting thyroid dysfunction (2000), several symptoms and signs are the well-established manifestations of thyroid dysfunction. As per the available literature, in a patient with Subclinical Hypothyroidism and no suspicion of pituitary abnormality, a serum TSH concentration assessment is sufficient for monitoring thyroid status and adjusting the dose of thyroid hormone. (Christian, 2016). This study aimed to assess the existence and severity of various signs and symptoms of subclinical Hypothyroidism and to measure the TSH levels of participants. The study was conducted on 180 young adult females suffering from Subclinical Hypothyroidism and staying in different hostels in Hyderabad, Telangana, India. Symptom severity was assessed by using the developed and standardized rating scale. In addition, the TSH levels of the subjects were measured by collecting blood samples. In the present study majority (31.1%) of the subjects are B. Tech students and at the age group of 20 – 22 years (70.6%) in both groups. More percentage (78.3%) of the subjects belongs to the Hindu religion. Subjects with the nativity of Hyderabad have occupied a more effective rate (38.3%). The majority of the subjects are drinking municipal water. The percentage of subjects with 'A' blood group were high (39.4%). More than half the percentage (57.2%) of the subjects use mostly iodized salts in their diet. 53.3 percent of the subjects followed three meal per day pattern. Maximum percentage (72.8%) of the subjects are taking fish and fish products monthly once only. 59.4 percent of the subjects are consuming weekly once goitrogenic foods. Three-fourths of subjects (77.2%) take more than 250 ml of milk and milk products per day. 15.6 percent of the subjects have a family history of medical disorders. At the same time, 23.3 percent of subjects have a family history of thyroid problems. The highest percentage (71.4%) The family members were the subjects' mothers. The severity of symptoms related to subclinical Hypothyroidism among subjects was accessed by using the rating scale symptoms were rated as 0-normal, 1- a mild symptom, 2-moderate symptom, and 3-severe symptom. Symptoms which are mild among the majority (60-70%) of the subjects are tiredness and sluggishness, dryness of skin, muscle Weakness, poor memory depression, puffiness of eyes, puffiness of hands and feet, difficulty with calculations, hard stools and brittle nails. The moderate symptoms among the majority (60-70%) of the subjects are irregular periods, excessive menstrual flow, easy weight gain, constantly feeling cold, and dryness of hair. Symptom of unusual hair loss is severe among more than half percent (52%) of the subjects. Symptom of slow thinking is not seen among 62% of the subjects. Forty-five percent of the subjects have serum TSH levels ranging between 5-10 mIU /ml. 26.67% of the subjects had 3-;5 mIU/ml, and the remaining 26.11 percent had 10- 15 mIU/ml. The majority of the subjects have a minimum of 5-6 symptoms related to Subclinical Hypothyroidism.**

***Keywords*: Clinical features, Subclinical hypothyroidism, and Young adults.**

1. Introduction

Thyroid diseases are one of the most common endocrine diseases in the World. India also has no exception; it has been estimated that about 42 million people in India suffer from thyroid diseases. However, thyroid diseases are different from other diseases due to their pattern of diagnosis and accessibility of medical treatment. Therefore, early diagnosis and treatment remain the cornerstone of management (Ambika et al. (, 2011). Subclinical Hypothyroidism is a chronic endocrine disorder in which the thyroid gland cannot produce an adequate number of thyroid hormones to fulfil body requirements. It is very tough to identify (S)ubclinical Hypothyroidism with the symptomatic assessment clinically. So, most of the time, patients remain undetected and (S)ubclinical Hypothyroidism will be converted into overt Hypothyroidism in majority cases. The global prevalence of Hypothyroidism ranged between 1 percent and 10 percent (Sethi et al., 2018). The status of Subclinical Hypothyroidism as one of the alarming non-communicable diseases is because of modern lifestyle changes, socioeconomic changes, environmental changes, urbanization, and technology advancement that modify the food habits of the people, especially youngsters. As a result, there has been an increase in the incidence and prevalence of Subclinical Hypothyroidism among youngsters. This may impact the coming generation, as these youngsters reproduce the subsequent offspring. As per the

*Corresponding author: vrrsms@gmail.com

KAP study conducted by Shailesh et al. (2016) at Indore city of Madhya Pradesh, 29.2 percent of the subjects do not have heard the word "THYROID," only 49.20 percent knew about hypo and hyperthyroidism,25.2 percent have undergone thyroid

Table 1
Distribution of the subjects according to their Demographic profile

S. No	Attribute	Types of attributes				Total
1.	Course studying	B. Tech	B. Pharmacy	B.Sc. Nsg	Other Degree	
		56(31.1)	52(28.9)	37(20.6)	35(19.4)	180(100)
2.	Age	20-22 yrs	23-25 yrs	26-28 yrs	29-31yrs	180(100)
		127(70.6)	33(18.3)	16(8.9)	4(2.2)	
3.	Socio- economic status	Poor	Lower Middle class	Middle class	Rich	
		32(17.8)	45(25.0)	82(45.6)	21(11.7)	180(100)
4.	Religion	Hindu	Muslim	Christian	Others	180(100)
		141(78.3)	29(16.1)	8(4.4)	2(1.1)	
5.	Native place	R.R. Dist.	Nalgonda.Dist	MBNR. Dist.	Hyderabad	
		56(31.1)	28 (15.6)	27(15.0)	69(38.3)	180(100)
6.	Blood group	A	B	AB	O	180(100)
		71(39.4)	50(27.8)	32(17.8)	27(15.0)	
7.	Source of drinking water	Well water	Borewell water	Tank water	Municipal water	180(100)
		12(6.7)	56(31.1)	8(4.4)	104(57.8)	

Figures in the parenthesis indicate the percentage

Table 2
Distribution of subjects according to their Dietary habits

S. No	Food item	Frequency of consumption				Total
1.	Iodized salt	Always	Mostly	Rarely	Never	180(100)
		42(23.3)	103(57.2)	31(17.2)	4(2.2)	
2.	Number of meals/days	Two	Three	Four	More than four	180(100)
		18(10.0)	96(53.3)	50(27.8)	16(8.9)	
3.	Fish and fish products	Once-daily	Once every alternate day	Once a Week	Once a Month	180(100)
		5(2.78)	8(4.44)	36(20.0)	131(72.78)	
4.	Goitrogenic foods	11(6.1)	48(26.7)	107(59.4)	14(7.8)	180(100)
5.	Milk and milk products	More than 250ml/day	250 ml/day	More than 250 ml/week	250 ml/week	180(100)
		139(77.22)	36(20.0)	2(1.11)	3(1.67)	

Figures in the parenthesis indicate the percentage.

Table 3
The severity of the Subclinical hypothyroidism symptoms (N=180)

S. No	Symptom	None	Mild	Moderate	Severe
1.	Tiredness and Sluggishness	17(9.44)	93(51.67)	37(20.56)	15(8.33)
2.	Dryness of the hair	5(2.7)	44(24.44)	72(40.00)	50(27.78)
3.	Unusual hair loss	5(2.7)	42(23.33)	64(35.56)	18(10.0)
4.	Dryness of skin	8(4.44)	87(48.33)	74(41.1)	9(5.00)
5.	Muscle weakness	52(28.89)	92(51.11)	33(18.33)	3(1.7)
6.	Need for more sleep	22(12.22)	72(40.0)	71(39.44)	15(8.33)
7.	Muscle pains	31(17.22)	114(63.33)	31(17.22)	4(2.22)
8.	Constantly feeling cold	9(5.0)	50(27.77)	83(46.11)	38(21.11)
9.	Poor memory	25(13.88)	119(66.11)	34(18.88)	2(1.11)
10.	Depression	20(11.11)	108(60.00)	50(27.77)	2(1.11)
11.	Slow thinking	83(46.11)	77(42.77)	18(10.0)	2(1.11)
12.	Puffiness of eyes	35(19.44)	110(61.11)	29(16.11)	6(3.33)
13.	Difficulty with calculations	35(19.44)	110(61.11)	29(16.11)	6(3.33)
14.	Hard stools	37(20.55)	104(57.77)	35(19.44)	4(2.22)
15.	Puffy hands and feet	48(26.66)	93(51.66)	35(19.44)	2(1.11)
16.	Easy weight gain	1(0.55)	60(33.3)	86(47.77)	33(18.33)
17.	Irregular periods	5(2.77)	54(30.00)	82(45.55)	39(21.66)
18.	Excessive menstrual flow	7(3.88)	56(31.11)	99(55.00)	18(10.00)
19.	Brittle nails	30(16.66)	95(52.77)	22(12.22)	6(3.33)

Figures in the parenthesis indicate the percentage

screening test, and 55.2 percent thought that thyroid disorders could be cured by using alternative medicine. A retrospective study by Mallikarjun et al. (2017) at Nizams Institute of Medical Sciences, Hyderabad, reveals that Hypothyroidism was an incidental finding in 25 percent of asymptotic patients evaluated for a general health check-up. Therefore, this study was conducted to determine the clinical features of subjects with subclinical Hypothyroidism with this background.

2. Methodology

This observational study was conducted on young adult females who had not started thyroid hormone replacement in two stages. In the first stage, a health survey was conducted in 20 randomly selected hostels with an occupancy of 250- 300 in Hyderabad with prior permission from management and students to trace out the subjects with (S)ubclinical Hypothyroidism. Two hundred subjects with (S)ubclinical Hypothyroidism were identified through purposive sampling and enrolled for the present study. One hundred eighty members gave informed consent and participated in the study. In the second stage, symptomatic assessment and serum TSH analysis were done on the selected subjects.

Data collection was done about the demographic profile of the subjects by using a structured self-administrating questionnaire and the severity of the symptoms related to (S)ubclinical Hypothyroidism by using the standardized rating scale. Symptom's severity was measured by performing physical examination from the head to foot about the impairment of different systems in the body due to inadequate secretion of the thyroid hormones and with the help of detailed history collection from the subjects. Each symptom severity was given a rating of 0-3. (0) None, (1) mild, (2) moderate and (3) severe with the help of a particular analytical technique. TSH levels of the subjects were measured by collecting blood samples (3-4 ml) in the early morning hours (6-8 a.m.) after 10-12 hours fast. An enzyme-linked immunosorbent assay method was used to determine the serum TSH levels of the subject's blood samples. Data analysis was done using SPSS package version 20, the distribution ratio of the subjects as per their demographic profile and percentage of symptom severity was determined.

3. Results

1) The demographic profile of the subjects shows that

Of the 180 young adult females, 31.1% are studying B. Tech, 28.9% B. Pharmacy, 20.6% B.Sc. Nursing and the remaining 19.4% are studying other Degrees. It shows less influence of the course studying on the lifestyle pattern for controlling subclinical Hypothyroidism. 70% of the subjects were in the age group of 20- 22 years. The middle class (45.6%) and lower middle class (25.0%) were occupied a higher percentage among the selected sample. Greater than 50% of the subjects were with the nativity of Hyderabad (38.3%) and Ranga Reddy district (31.1%). These two districts are almost merged and with urban lifestyle. The majority of them are drinking water supplied by the municipal corporation. Subjects with 'A' blood group are more (39%). Data was presented in Table no: 1

2) Dietary habits of the subjects

Only 23.3% of the sample consumed iodized salt always, whereas 57.2% were consumed most of the time. Out of the remaining 19.4%, about 17.2% were rarely consumed, but the remaining 2.2% never consumed iodized salt in their life. More than half percentage of the sample (53.3%) were following three-meal/ day pattern, at the same time (27.8%) subjects were following four meal pattern, 8.6% followed the small and frequent pattern (>4 times/day), and 10% are taking the food only twice a day. The frequency of the fish and fish products intake is too less, once a month by the maximum (72.78%) percentage of the subjects, once a week by 20% of the subjects, once on alternate days by 4.44% and daily 2.78% are having in one or the other form like pickles, dry fish, fresh fish main course recipes or snacks. The consumption rate of foods labelled as goitrogenic (cabbage, cauliflower, lettuce, radish, soya etc.), was 59.4% weekly once, 26.7% alternative day, 7.8% once a month and 6.1% once daily. Intake of milk and milk products was more than 250 ml by 77.22 subjects, 250 ml/day by 20% more than 250 ml/week by 1.11% and 250 ml/week by 1.67%. Data was presented in Table no: 2.

3) Medical history of the subjects:

15.6% of subjects had a family history of medical disorders. 23.3% of the subjects were with a family history of thyroid disorders. The majority (71.4%) of them are mothers of the subjects who have thyroid problems, 19% siblings and 9.5% fathers of the subjects have thyroid problems.

4) The severity of the symptoms related to subclinical Hypothyroidism

Patients suffering from Subclinical Hypothyroidism generally show similar symptoms of Hypothyroidism but varied with the severity and difficulty for self-recognition. Usually, patients will be suffering from any one or more symptoms due to sluggish systemic performance, as per the available evidence. This study all together assessed 19 symptoms about the Integumentary system, musculoskeletal system, Digestive system, Reproductive system, cognitive function. Data was presented in Table no: 3 below.

5) The severity of the Subclinical hypothyroidism symptoms (N=180)

Among all the symptoms, dryness of the hair was severe among 27.78% of the subjects, the problem of severe irregularity in getting periods was detected among 21.66percentage of the subjects, severely and constantly feeling coldness was among 21.11%, easy weight gain was severe among 18.33%, and 10% were suffering from severe, unusual hair loss and excessive menstrual flow. In addition, 8.33% of the subjects suffered from severe tiredness and sluggishness. The remaining symptoms were reported severely by less than 5% of subjects, as shown in Table no: 3.

More than half percentage of the subjects (55%) were suffering from moderately excessive menstrual flow, 47.77% subjects were identified with gaining weight in a moderately easy way, 45% subjects were identified with moderate irregularity in getting periods, 41.1% had moderate dryness of the skin, 40.00% were observed with moderate dryness of the

hair, 39.44% were suffering from the need for moderately more sleep, 35.56% had moderately unusual hair loss, 27.77% were facing the moderate depression, 19.44% were having the problems of hard stools and swollen hands and feet and remaining symptoms were reported moderately among less than 20% subjects. 66.11% of subjects identified mildly poor memory, 63.33% were suffering from mild muscle pains, 61.11% subjects reported mild difficulty with the calculations, puffiness of the eyes, mild depression was noticed among 60.00% and 57.77% are suffering from hard stools, mild tiredness and sluggishness, brittle nails and muscle weakness was reported by around 51% of the subjects, mildly more sleep and mildly slow thinking were detected in around 40% of the subjects, irregularity in periods and mildly excessive menstrual flow was observed nearly among 30.00% subjects, mild dryness of the hair and unusual hair loss was seen in nearly 20% of the subjects, and 27.77% subjects were constantly feeling mild coldness.

Some of the subjects were free from a few symptoms, 46.11 percent of the subjects could think usually. Weakness of the muscles was not seen among 28.89% of subjects. 26.66% of the subjects were shown normal hands and feet, without any puffiness. Normal stools were observed among 20.55% of young adults. 19.44% of subjects can perform calculations without any difficulty and at the same time have normal eyes. Between 15-20% of the subjects are with normal nails, memory, sleep, and any depression. Hardly less than 5% of the young adult females were reported with normal menstrual flow, regular periods, healthy skin, hair and usual hair loss.

6) TSH analysis

Forty-eight members (26.67%) had a 3-5 mIU/ml range of serum TSH levels. Eighty-one members (45%) were having 5-10 mlU/ml, 47 members (26.11%) had 10-15 mIU/ml, and only four members (2.22%) had 15-20 mIU/ml TSH levels.

4. Conclusion

The majority of the subjects are at the age of 20-22 years, studying B. Tech, belongs to the Hindu religion, with middle-class family background, from Hyderabad, with A blood group, and municipal drinking water. More than 50 percent of the subjects consumed Iodized salt, despite being prone to get overt Hypothyroidism. Maximum number (131) of the subjects are consuming fish and fish products once a month only, after iodized salt this one of the rich sources of iodine. Although many studies report (S)ubclinical Hypothyroidism as a condition with no known apparent symptoms, in the present study, all the subjects have one or more symptoms of thyroid hormones depletion. Therefore, awareness programs need to be planned by different authorities to enhance the youngsters' knowledge mainly, as they are vulnerable in many aspects to develop thyroid gland dysfunction.

References

[1] Ambika Gopalakrishnan Unnikrishnan, and Menon. U.V. (2011). Thyroid disorders in India: An epidemiological perspective. Indian Journal of Endocrinology and Metabolism; 15(2): S78-S81. https://doi.org 10.4103/2230-8210.83329

[2] Amund Maage et al. (2008). Inclusion of marine fish in traditional meals improved iodine status of children in an iodine-deficient area; African Journal of Food Science, 2: 046-53.

[3] Anitha Vadekeetil. (2019). Diet and Thyroid Disease; Acta Scientific Nutritional Health; 3.4: 28-30.

[4] Anukul Garg and Mark P.J. Vanderpump, (2013). Subclinical Thyroid disease; British Medical Bulletin; 107: 101-106.

[5] Baruah MP, Duttachoudhury S, Saikia M, Saikia UK, Bhuyan SB, Bhowmick A, Barman AK, Bora AR, Barkakoti M. Guwahati thyroid epidemiology study: High prevalence of primary Hypothyroidism among the adult population of Guwahati city. Thyroid Res Pract [serial online] 2019 [cited 2021 Dec 14];16:12-9. Available from: https://www.thetrp.net/text.asp?2019/16/1/12/255303.

[6] Bernadette Biondi and David S.Cooper. (2008). The Clinical Significance of subclinical Thyroid Dysfunction; Endocrine Reviews; 29(1):76-131. https://doi.org/10.1210/er.2006-0043.

[7] Brahmbhatt SR, Fearnley R, Brahmbhatt RM, Eastman CJ, Boyages SC. (2001). Study of biochemical prevalence indicators for assessing iodine deficiency disorders in adults at field conditions in Gujarat (India) Asia Pacific Journal of Clinical Nutrition; 10:51–7. [PubMed]

[8] Bhimte B, Vamne A, Agrawal BK et al. (2015). A cross-sectional study of the prevalence of Hypothyroidism in the adult population of Bhopal. International Journal of Health Sciences and Research; 5(9):268-272.

[9] Carmona CA, Bedoya PA, Barona Acevedo, Jacqueline, Cardona-Arias and Jaiberth. (2018). Prevalence of Thyroid Disorders in an Institution Providing Health Services in Medellin-Colombia. Translational Biomedicine. 09. 10.21767/2172-0479.100149.

[10] Bipin Sethi, Deepak Khandelwal, and Upal Vyas. (2019). A Cross-sectional survey to assess knowledge, attitudes and practices in patients with Hypothyroidism in India; Thyroid Research and Practice; 15.1:15-22.

[11] Christian Base, MD; (2016) Is a serum TSH measurement sufficient to monitor the treatment of primary Hypothyroidism? Cleveland Clinic Journal of Medicine; 83:8:571-2

[12] Mallikarjuna Shetty, Krishna Prasad Adiraju and Nageswar Rao. M. (2017). Clinical Profile of Subclinical Hypothyroidism: A Retrospective Study, International Journal of Medical and Dental Sciences 6(2):1475. DOI:10.19056/ijmdsjssmes/2017/v6i2/149899.

[13] Shailesh Rai, Suraj Sirohi, A K Khatri, Sanjay Dixit, and Satish Darlene; (2016). Assessment of knowledge and awareness regarding thyroid disorders among Women of a Cosmopolitan city of central India; National J Community Med; 7(3):219-22.

[14] Ji Sun Kim et al. (2018). Subclinical Hypothyroidism and Incident Depression in young and middle-aged adults; J Clin Endocrine Society; 103(5): 1827-1833.

[15] Joffe RT, Pearce EN, Hennessey JV, Ryan JJ, Stern RA. (2013). Subclinical Hypothyroidism, mood, and cognition in older adults: A review. International journal of geriatric Psychiatry; 28:111-8.

[16] John A Kronsick, (2009). Question and Questionnaire Design.Handbook of Survey Research: 2:1-81.

[17] Kanata Singh, Ila Bhattacharjee. (2019). Prevalence and biochemical profile of Subclinical Hypothyroidism among female patients attending OPD of a teaching hospital in a Bihar: A hospital-based observational study; International Archives of Integrated Medicine; 6(2):102-107.