e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2023; 15(5); 591-593

Original Research Article

# A Study of Prevalence of Subclinical Hyperthyroidism and Overt Hyperthyroidism in Bidar District, Karnataka

**Zahoorunnisa Deba[1], Ashwini Deshpande[2], Syed Abdul Jaweed[3]**

[1]Assistant professor, Department of Biochemistry, Bidar Institute of Medical Sciences, Bidar Karnataka 585401

[2]Senior Resident, Department of Biochemistry, Bidar Institute of Medical Sciences, Bidar Karnataka 585401

[3]Professor and HOD, Department of Biochemistry, Bidar Institute of Medical Sciences, Bidar Karnataka 585401

**Received: 01-03-2023 / Revised: 16-04-2023 / Accepted: 15-05-2023**

**Corresponding Author: Dr. Zahoorunnisa Deba**

**Conflict of interest: Nil**

**Abstract**

Subclinical hyperthyroidism is defined biochemically when thyroid stimulating hormone (TSH) concentrations are low to undetectable but free thyroxine i.e t4 and t3 concentrations are normal without obvious symptoms. Overt hyperthyroidism is thyroid stimulating hormone (TSH) concentrations are low but free thyroxine i.e. t4 and t3 concentrations are raised and patient has clinical symptoms.

**Aim:** The aim of the present study is to find out the prevalence of subclinical hyperthyroidism and overt hyperthyroidism among the adult population of Bidar District.

**Materials and Methods:** A prospective hospital study of 1485 subjects who were referred to Department of Biochemistry, Bidar institute of Medica Sciences, Bidar was undertaken for assessment of thyroid functions investigated between Jan 2022 and December2022.Statistical analysis was done in terms of percentage and chi square test.

**Results:** Of the 1485 subjects (198 men and 1287 women), 593 subjects (40%) were euthyroid,362 subjects( 27 men and 335 women ) had subclinical hypothyroidism, 331 subjects (56 men and 275 women ) had overt hypothyroidism; 30 subjects(6 men and 24 women ) had subclinical hyperthyroidism ;162 subjects (3 men and 159 women) had overt hyperthyroidism and 7 subjects(2 men and 5 women) had euthyroid sick syndrome

**Conclusion:** prevalence of overt hyperthyroidism is more then subclinical hyperthyroidism. Regular screening of highrisk patients is necessary for early diagnosis and treatment.

**Keywords:** Hyperthyroidism, Subclinical Thyroid Disorders, Subclinical Hyperthyroidism.



## Introduction

Thyroid disorders have become the most common disorder in recent times. It is a medical condition that affects the function of the thyroid gland. Thyroid disorders are the most common among endocrine disorders in India. There are various types like hypothyroidism, subclinical hypothyroidism, hyperthyroidism and subclinical hyperthyroidism.[1]

Subclinical has been applied to many clinical conditions like subclinical cardiovascular disease, subclinical Lyme disease and subclinical thyroid disease etc.[2] Subclinical thyroid diseases are more common clinical entities that encompasses mild degrees of thyroid dysfunction without obvious symptoms affecting 4-20% of adult population. It is more common in women than men and prevalence increased with age.[2]

Subclinical thyroid disease ie subclinical hyperthyroidism is defined biochemically when thyroid stimulating hormone (TSH) concentrations are low to undetectable but free thyroxine i.e t4 and t3 concentrations are normal without obvious symptoms. Subclinical hyperthyroidism can be divided into two categories: low but detectable TSH levels 0.1 to 0.4 mIU/L) and suppressed TSH levels (less than 0.1 mIU/L) [3].

By contrast Overt hyperthyroidism is thyroid stimulating hormone (TSH) concentrations are low but free thyroxine ie t4 and t3 concentrations are raised and patient has clinical symptoms. Subclinical hyperthyroidism can be caused by the same thyroid disorders that result in overt hyperthyroidism. Suppressed TSH levels may occasionally result from nonthyroidal causes. The

most common cause of subclinical hyperthyroidism is excessive thyroid hormone therapy.[1]

The causes for subclinical and overt hyperthyroidism are endogenous thyroid conditions such as grave's disease, autonomous adenoma, multinodular goitre, thyroiditis (subacute, silent, autoimmune) and exogenous or non- thyroidal conditions are euthyroid sick syndrome, acute psychiatric disease, pituitary and hypothalamic disorders, drugs like thyroxine, dopamine, glucocorticoids, aspirin, furosemide.[1,4]

The most important implication of Subclinical hyperthyroidism is it is highly progressive to overt hyperthyroidism ie estimated to be 5% per year and more with subjects with autonomous thyroid adenoma and nodular goitre and other complications related to overt hyperthyroidism like cardiac effects and skeletal effects.[1]

Hence in the present study we tried to find out the prevalence of subclinical hyperthyroidism which can be treated early to prevent the development of overt hyperthyroidism and its complications leading to mortality.

**Aims and objectives of the study**

1. To estimate the serum ft3, ft4 and tsh levels .
2. To find out the presence of subclinical and overt hyperthyroidism based on biochemical data.

**Materials and Methods**

**Type of study:** Prospective, Hospital based study.

**Place of study:** Department of Biochemistry, Bidar Institute of Medical Sciences, BRIMS BIDAR.

**Study Duration:** 1 year from Jan 2022 to December 2022.

**Sample Size:** 1485 subjects.

**Inclusion Criteria:** Healthy subjects in the age group from 20 to 60 years of either sex.

**Exclusion Criteria:** Patients with history of medication of any thyroid disorder, thyroidectomy or any exposure to radioactive iodine.

Patients with history of any renal, hepatic or pancreatic disorder, diabetes mellitus or familial hypercholesterolemia.

**Statistical Analysis:** The data was represented as percentage. The chi square test was used to calculate the significance. The data were considered significant at a P value of 0.05.

**Result**

In the present study 44.04% of subjects were of the age group less than 30 years, 40% were of the age group between 30 and 50 years and 15.96% were above 50 years (Table 1)

Of the 1485 subjects (198 men and 1287 women), 593 subjects (40%) were euthyroid, 362 subjects(27 men and 335 women) had subclinical hypothyroidism, 331 subjects (56 men and 275 women) had overt hypothyroidism; 30 subjects(6 men and 24 women) had subclinical hyperthyroidism ;162 subjects (3 men and 159 women) had overt hyperthyroidism and 7 subjects(2 men and 5 women)had euthyroid sick syndrome (Table 2).

**Table 1: Age wise distribution of the study subjects**

| Age group | n(%) |
|---|---|
| < 30 years | 654(44.04) |
| 30-50 years | 594(40.00) |
| >50 years | 237(15.96) |
| Total | 1485(100) |

**Table 2: Thyroid status among study subjects**

| Thyroid status | Men N (%) | Women N (%) | Subtotal |
|---|---|---|---|
| Euthyroid | 104(17.54) | 489(82.46) | 593 |
| Subclinical hypothyroid | 27(7.46) | 335(92.54) | 362 |
| Overt hypothyroidism | 56(16.92) | 275(83.08) | 331 |
| Subclinical hyperthyroid | 6(20) | 24(80) | 30 |
| Overt hyperthyroid | 3(1.85) | 159(98.15) | 162 |
| Euthyroid sick syndrome | 2(28.57) | 5(71.43) | 7 |
| Grand total | 198(13.33) | 1287(86.66) | 1485 |

$X^2$: 44.607, degree of freedom: 5, p value: <0.05

**Discussion**

The burden of thyroid disease in general population is more common. It Being the most common endocrine disorder it is frequently misdiagnosed. Thyroid function is crucial to human health, so any disruption to its function can have serious implications.[1]

The prevalence of hyperthyroidism in various studies around the world shows a considerable variation. A survey done in united states population 0.7% were found to have subclinical hyperthyroidism and 0.5% overt hyperthyroidism.[5]

In the TEARS Scottish study subclinical hyperthyroidism was found to have a prevalence of 0.63% and an incidence of 29 per 100000 individuals. Also 6.1% of individuals with subclinical hyperthyroidism progressed to overt hyperthyroidism in the first year, of the remainder 0.7% developed hyperthyroidism over 7 years. Few returned to normal and few remained in subclinical state.[6]

In national health and nutrition examination survey (NHANES) 0.7% of people had serum TSH below 0.4mU/L and 1.8% individuals less then 0.4mU/L , and 75% of the study population had serum TSH in range of 0.1 to 0.4 mU/L and remainder had less than 0.1mU/L.[7]

In a study done in patients older than 55 years subclinical hyperthyroidism was more common than clinical hyperthyroidism after ruling out the cause of lower levels of TSH was not related to ageing.[8] In this prospective study of 1485 adult general population , 44.04% of the subjects were of age group less than 30 years,40% were of the age group between 30 and 50 years and 15.96% were above 50 years (Table 1) this finding are similar to study done by Narayana murthy C et al.[9] Of the 1485 subjects in the present study euthyroid was 104(17.54%) were males and 489(82.46%) were females. The prevalence of male euthyroid in comparison to the total study subjects(1485) was 7%, while the female prevalence of euthyroid in comparison to the total study subjects (1485) was 32.93%. Of the total 1485 subjects in the present study overt hyperthyroidism was seen in 162 subjects(10.91%). 0f theses 162 overt hyperthyroid subjects 3 (1.85%) were males and 159 (98.15%) were females. The prevalence of male overt hyperthyroidism in comparison to the total study subjects (1485) was 0.20%, while the female prevalence of overt hyperthyroidism in comparison to total study subjects (1485) was 10.70%

Of the total 1485 subjects in the present study. Euthyroid sick syndrome was seen in 7 subjects (0.47%). Of these 7 euthyroid sick syndrome subjects 2 (28.57%) were males and 5(71.43%) were females. The prevalence of male euthyroid sick syndrome in comparison to total study subjects (1485) was 0.13%, while the female prevalence of euthyroid sick syndrome in comparison to total study subjects (1485) was 0.34%.

## Conclusion

The present study concludes that prevalence of thyroid disorder is high in the age group below 30 year and more common in females and prevalence of subclinical thyroid disorders ie subclinical hypothyroid is more compared to subclinical hyperthyroidism and overt thyroid disorders (hyperthyroidism) is more prevalent then overt hypothyroidism. The difficulty to diagnose subclinical cases due to absence of clinical symptoms is challenging. Hence community based mass screening for subclinical thyroid disorders in high risk group is suggested to identify the disease and treat them on time.

**Ethical Clearance:** Obtained from Institutional ethics committee, Bidar Institute of Medical Sciences.

## References


1. Kek P C, Ho S C , Khoo D H. Subclinical thyroid disease. Singapore Medical Journal 2003; 44(11): 595-600.
2. Cooper D S, Biondi B. Subclinical thyroid disease. Lancet 2012;379:1142-54.
3. Donangelo I, D Glenn, Braunstein et al. Update on subclinical hyperthyroidism. American Family Physician 2011; 83(8).
4. Donangelo I, Suh S Y et al. Subclinical hyperthyroidism: when to consider treatment. American Family Physician 2017; 95(11).
5. Singh s Duggal J, Molnar j et al. Impact of subclinical thyroid disorders on coronary heart disease, Cardiovascular and all-cause mortality: a meta-analysis. Int J cardiol. 2008;125:41-48.
6. Andersen s, Pedersen KM et al. narrow individual variations in serum t4 and t3 in normal subjects: a clue to understanding of subclinical thyroid disease. J Clinendocrinol Metab. 2002;87 : 1068-72.
7. Copper DS. Subclinical hyperthyroidism. New engl J Med. 2001;345:260-265.
8. Tunbridge WM, Evered DC et all. The spectrum of thyroid disease in a community: The Ehickham Survey. Clin Endocrinol (oxf).19977:481-493.
9. Murthy N C, Shetty STK. Prevalence of thyroid dysfunction at Chitradurga district, Karnataka. J Pub Health Med Res. 2013;1 (2): 86-88.
10. Delange F et al. The disorders induced by iodine deficiency. Thyroid.1994;4:107-128.
11. Parle JV, Cross FK, Jones SC, sheppard MC et al. Prevalence and follow up of abnormal thyrotropin concentrations in the elderly in the Unite kingdom. Clin Endocr 1991; 34:77-83.
12. Biondi B, Copper DS. The clinical significance of subclinical thyroid dysfunction. Endocr Rev 2008; 29:76-131.