

# A prospective study of thyroid - dysfunction in elderly patients and its clinical correlation

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## Abstract

**Aims and objectives:** the study was undertaken with an objective to study the spectrum of thyroid dysfunction in elderly and to correlate clinical symptoms with abnormal thyroid function.

**Methods:** a total of 100 subjects aged more than 60 years, admitted to General Medicine IPD of MVJMC & RH who were suspected to be suffering from thyroid disorders or subjects with vague symptoms like generalized weakness, easy fatigability, lethargy, disinterest in daily activities, to be suspicious of thyroid disorder, were subjected to detailed clinical examination & thyroid function testing by biochemical means. Those who were found to have altered thyroid functions, thyroid antibody (TPO) test were done. When thyroid nodule was present, further relevant investigations like USG/FNAC neck was performed to make appropriate diagnosis.

**Results:** a total of 100 patients were included in the study. Thyroid disorders were present in 25%. Overt hypothyroidism in 11%, subclinical hypothyroidism in 9% cases, hyperthyroidism in 2% and subclinical hyperthyroidism in 3% patients was noted. In this study 38 patients were males and 62 were females. Females (18%) had high incidence of thyroid disorders than males (7%). As the age advanced the incidence of thyroid dysfunction increased which was statistically significant. Overt hypothyroidism was more common among elderly (11%). Classical clinical features of hypothyroidism and hyperthyroidism were present in 9 and 2 patients respectively. All patients with hypothyroidism had positive TPO AB. Patients with thyroid dysfunction have higher values of TGs, T. Chol and LDL which was found to be statistically significant (p value <0.05). Patients with subclinical hypothyroidism have increased levels of total cholesterol and LDL levels as compared to overt hypothyroidism, but it was not found to be statistically significant. Goitre was noted in 4 patients with thyroid dysfunction among whom 2 patients had malignancy; one was follicular variant of papillary carcinoma and the other a primary thyroid Lymphoma, which is a rare tumour of thyroid gland.

**Conclusion:** thyroid dysfunction in elderly is not uncommon. Thyroid abnormalities were more among females (18%) than in males (7%). Clinical diagnosis is difficult to make but TFT always helps in diagnosing the disease. Subclinical state is equally common as clinical state in elderly population. As the age advances the incidence of thyroid disorders increases. Hypothyroidism was more common than Hyperthyroidism. Dyslipidaemia was noted more commonly in patients with thyroid abnormalities as compared to patients with normal TFT. A strong clinical suspicion of thyroid diseases should be considered in elderly patients who present with vague symptoms like generalised weakness, easy fatigability, lethargy and disinterest in daily activities. Elderly patients should be screened for thyroid dysfunction.

**Key words:** TFT, TPO antibody, hypothyroidism, subclinical hypothyroidism, hyperthyroidism, sub-clinical hyperthyroidism, total cholesterol, LDL, malignancy, papillary carcinoma, Lymphoma.



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## Introduction

Over the past few decades, there has been a dramatic increase in the percentage of older people in the general population. People over the age of 65 accounted for 35.9 million (12.3%) of the total U.S. population in 2003, and their numbers are projected to increase to 71.5 million by 2030. In India 60 years and above is considered as geriatric population. Even though Indian statistics regarding thyroid dysfunction in elderly is sparse, a study by Rebecca et al from Puducherry showed that 19% of women over 60 years had elevated TSH above 4.5  $\mu$ U/ml and the percentage of women with elevated TSH was particularly high in the 60-80 years age group. Health care professionals should become and remain aware of the changes that distinguish older from younger patients, because these changes bring new challenges in clinical care resulting from the special needs associated with both normal aging and its related chronic illnesses. Epidemiologic studies have shown a remarkable increase in the incidence and prevalence of thyroid disorders in older populations.

Thyroid gland dysfunction is common in the elderly and is associated with significant morbidity if left untreated. Thyroid gland undergoes slight "Physiological" changes with ageing, either as a result of its participation in the senescence process or as an effect of other system changes. The changes can lead to either clinical/sub clinical states of Hypo/Hyper thyroidism.

Hypothyroidism occurs in 10% of females and 2% of males in patients older than 60 years. Hyperthyroidism, on the other hand, is more common in the younger population. The prevalence in the elderly is approximately 2% but from another perspective, 10 to 15% of patients with hyperthyroidism are older than 60 years. In younger adults, the classic symptoms of thyroid dysfunction are usually present and make the diagnosis easier. In the elderly, the diagnosis is more often overlooked or misdiagnosed, as the symptoms are often subtle or absent and are easily confused with coexisting illnesses.

Symptoms may often be attributed to normal aging, and a high index of suspicion of thyroid dysfunction in the elderly is needed. Interpretation of thyroid function tests in older adults is difficult because of the age dependent physiologic changes in thyroid function, coexistent chronic illness, and polypharmacy.

However, thyroid dysfunction is common in older adults and maybe associated with significant morbidity if not treated. The classic symptoms of thyroid dysfunction are usually absent or may be overlooked in older patients, making the diagnosis and subsequent management challenging.

Acute states can lead to alteration in TFT; hence it should be examined during normal phase of the population.

TFT should be carried out in those with prior history of thyroid disorder, auto immune diseases, unexplained disease states, cognitive dysfunction, hypercholesterolemia states, weight loss or atrial fibrillation.

The management of thyroid disorders in older adults remains controversial. There are conflicting literature regarding the approach. Despite the ongoing debate, current guidelines suggest, considering treatment on an individual basis according to symptoms and possible treatment benefit. However, in older patients the risk of harm from treatment complicates the decision-making process.

Hence this study is undertaken to know the burden and spectrum of thyroid dysfunction in elderly population.

## Objectives of the study

1. To assess the thyroid dysfunction in elderly population.
2. To correlate clinical symptoms with abnormal thyroid function.

## Materials and methodology

### Source of data

100 patients aged more than 60 years with clinical suspicion of thyroid disease were selected from MVJMC & RH IPD of General Medicine, and were included in this study.

### Method of collection of data

A prospective cross sectional study of 100 patients aged more than 60 years admitted to General Medicine IPD of MVJMC & RH who were suspected to be suffering from thyroid disorders or vague symptoms like generalized weakness, easy fatigability, lethargy, disinterest in daily activities to be suspicious of thyroid disorder, were subjected to detailed clinical examination & testing by biochemical means, as per protocol. Those who were found to have altered thyroid functions, thyroid antibody (TPO) test were done. In those patients demographic details, anthropometric measurements & clinical details were collected. Cognitive function tests were done. When nodule was present, further relevant investigations like USG/FNAC neck was performed. CBC, RBS, Lipid profile, PS, ESR, ECG, ECHO (when indicated) was done.

The laboratory evaluation of thyroid functions was done by estimation of serum T3, T4 and TSH levels by Chemiluminescence assay method.

Two ml of blood was drawn and centrifuged and serum (500 microml) collected from that and incubated with the reagent (separate for T3, T4 and TSH) for 1 hour at room temperature. Later the readings were taken from the instrument COBAS 6000.

### The normal values for the laboratory in elderly are:

T3 – 0.4- 1.8 ng/ml

T4 – 5- 10.7 mcg/dl

TSH- 0.5- 8.9 mIU/ml

TPO antibody was estimated using chemiluminescence method. Normal range in elderly is upto 34 IU/ml.

### Inclusion criteria

100 patients aged more than 60 years with clinical suspicion of thyroid disorders were included in this study.

### Exclusion criteria

- a) All patients who were acutely sick
- b) Patients with established thyroid disorders
- c) Patients on thyroid supplements and drugs known to alter the thyroid functions.
- d) Patients who have undergone thyroid surgery, taken radioactive iodine therapy.
- e) Patients on iodine containing vitamins or minerals.
- f) Patients evaluated with radiological tests using contrast media in the recent past.

## Results

In this study, 100 elderly patients who were suspected to be having thyroid disease as per inclusion & exclusion criteria were evaluated in detail with clinical examination and laboratory investigations, including thyroid function tests and TPO antibodies.

1. In this study 25 patients were found to have abnormal thyroid function tests, of which 11 patients had clinical features suggestive of thyroid disorders (9 + 2). Remaining patients showed biochemical abnormality suggesting subclinical state.

Hypothyroidism was seen in 20% cases & 5% had hyperthyroidism. Out of which 11 had overt hypothyroidism and 9

## Thyroid Disorders in elderly

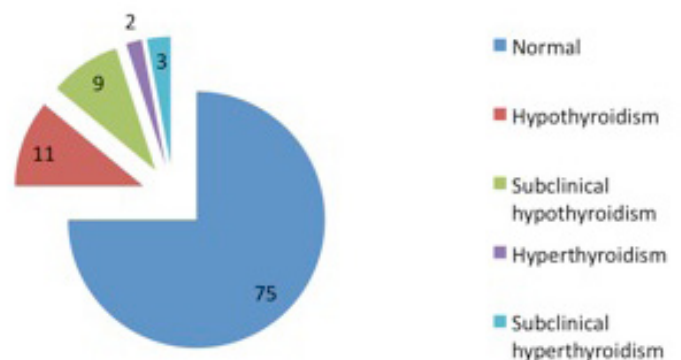


Figure: Spectrum of Thyroid Disorders in elderly.

had Sub-clinical hypothyroidism. Overt hyperthyroidism was noted in 2 subjects and subclinical hyperthyroidism noted in 3 patients. This may be because; our study population comprised of patients admitted to hospital why are more likely to present with clinical features late in the course of the disease.

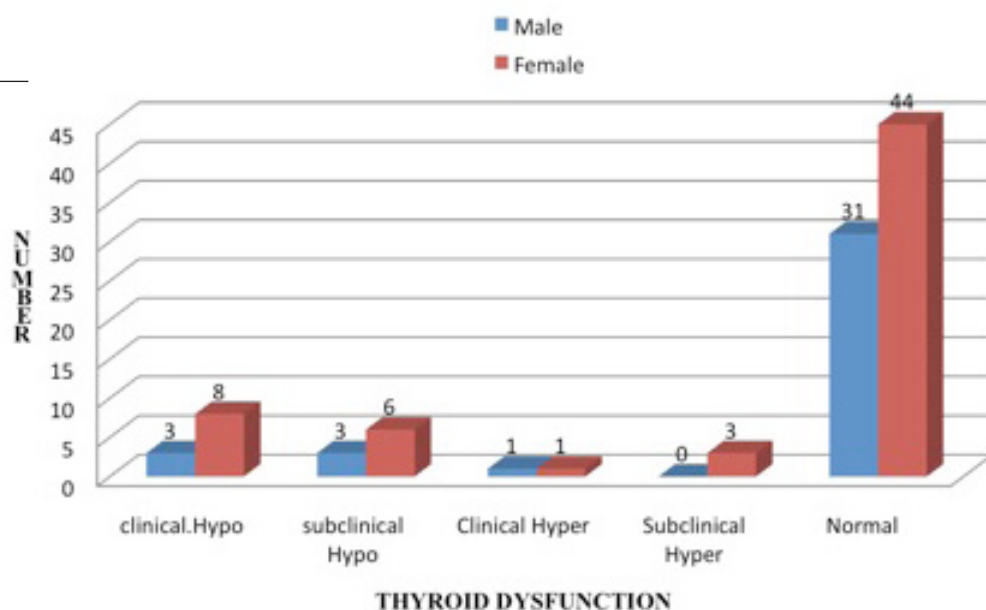
Overt Clinical state vs. sub clinical state was in the ratio of 11:9.

Overt clinical state was seen in more number of cases than Sub clinical state 11:9 in hypothyroidism, whereas, subclinical state was more common in respect to hyperthyroidism compared to hypothyroidism in the ratio of 3:2, but the sample size is too small to comment.

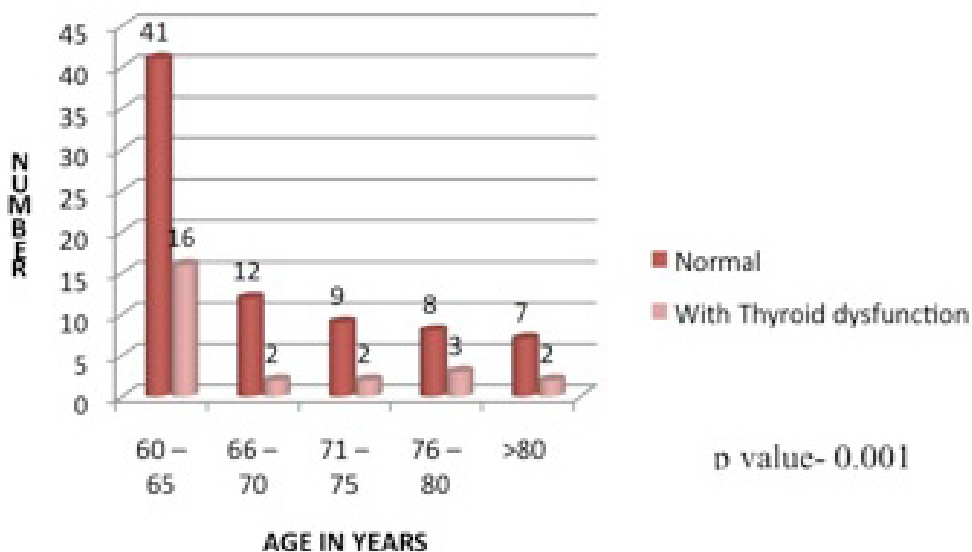
2. In the present study of 100 patients, 38 were males and 62 were females. We have found that prevalence of thyroid dysfunction was more among females (18%) than in males (7%), with a ratio of 5:2, showing a female preponderance. This was seen both hypo & Hyper thyroid states. This may be because of increased autoimmune diseases observed in females.
3. In the present study, prevalence of thyroid disorders in male and female where 18% and 29%, of which 13% females had hypothyroidism, 9.6% had sub-clinical hypothyroidism, 1.6% had hyperthyroidism and 4.8% had subclinical hyperthyroidism. Among males hypothyroidism was seen in 7.8%, Sub-clinical hypothyroidism was seen in 7.8%, hyperthyroidism in 2.4% and none had subclinical hyperthyroidism.

As the age advances, the incidence of thyroid disorder also increases. But between the age group of 60-65, the incidence is high. It may be due to large number of study subjects, in this group. When it was observed statistically between the groups, it was found significant P value- 0.001.

**Figure:** Sex distribution of thyroid dysfunction in elderly.



**Figure:** Age distribution of Thyroid disorders.



4. Clinical features: the clinical features found in the present study are as follows – All the patients suspected to be suffering from thyroid disorders had easy fatigability (100%), generalised weakness (100%), lethargy in 26%, anorexia in 20% cases.

When the symptoms were analysed on the basis of clinical state, they are as follows:

**Table 1.** Symptoms of Hypothyroidism.

	Clinical (In % ) (n=11)	Subclinical (In % ) (n=9)
Easy fatigability	11 (100)	9 (100)
Generalised weakness	11 (100)	9 (100)
Lethargy/disinterest in daily activities	8 (81.8)	4 (44.4)
Anorexia	7 (63.6)	2 (22.2)
Swelling of limbs/face	8 (81.8)	3 (33.3)
Weight gain	6 (54.5)	2 (22.2)
Constipation	5 (45.4)	1 (11.1)

Tissue metabolism is reduced in hypothyroidism giving rise to manifestations of easy fatigability, lethargy and disinterest in daily activities. Even in subclinical state also, there are minimal symptoms present suggesting thyroid disorder.

**Table 2.** Signs of hypothyroidism.

	Clinical (in %) (n=11)	Subclinical (in %) (n=9)
Sluggish ankle jerk	8 (81.8)	2(22.2)
Dry/coarse skin	7 (63.6)	2(22.2)
Hoarseness	7 (63.6)	1(11.1)
Goitre	3 (27.2)	-
Bradycardia (50–60/min)	4 (36.3)	-

Classical features of hypothyroidism is seen in elderly also as in adult subjects, like dry skin, hoarse voice & sluggish ankle jerk. Bradycardia is seen only in 1/3<sup>rd</sup> subjects. Goitre is seen in 27%, which is compared to adult hypothyroidism.

**Table 3.** Symptoms of Hyperthyroidism.

	Clinical (in %) (n=2)	Subclinical (in %) (n=3)
Heat intolerance, sweating, palpitations	2 (100)	-
Weight loss	2 (100)	-
Increased appetite	2 (100)	1 (33.3)
Diarrhoea	-	-

Number of cases of hyperthyroidism is only 2 cases. All the features of hyperthyroidism are seen in elderly also.

**Table 4.** Signs of Hyperthyroidism.

	Clinical (%) (n=2)	Subclinical (%) (n=3)
Tremors	2 (100)	1 (33.3)
Goitre	1 (50)	-
Tachycardia (110-120/min)	2 (100)	-

**Table 5.** Table showing the Mean and SD for normal subjects and for different thyroid disorders.

	TFT in Normal cases (n=75)	Hypothyroidism (n=11)	Subclinical Hypothyroidism (n=9)	Hyperthyroidism (n=2)	Subclinical Hyperthyroidism (n=3)
TSH	2.71±1.66	45.62±20.96	13.94±3.33	0.01	0.49±0.09
T3	1.20±0.52	0.73±0.44	1.15±0.28	5.30±1.70	1.48±0.97
T4	6.92±1.70	3.31±2.70	5.62±2.39	22.80±2.96	10.45±2.33

No of patients with hyperthyroidism were less (5), out of which 2 had frank features of hyperthyroidism and 3 had hyperthyroidism, of which one had subclinical hyperthyroidism. Clinical features are quite obvious in overt hyperthyroidism but some early features are also present in subclinical state.

**5. Thyroid function tests:**

The mean TSH values were higher & T3 & T4 values were lower in patients with overt hypothyroidism.

Subclinical hypothyroidism cases had high TSH values but T3, T4 values were within normal range.

Patients with overt hyperthyroidism had low TSH values, with increased T3, T4 levels, whereas subclinical hyperthyroid patients demonstrated a normal T3, T4 values with reduced TSH levels.

**6. TPO antibodies were estimated in all cases with altered thyroid functions. TPO was positive in 18 cases (68%) of these cases.**

**Table 6.** Thyroid abnormalities and TPO AB positivity.

	Total no	TPO positivity
Hypo	11	11(100%)
Subclinical Hypo	9	6 (66.6%)
Hyperthyroidism	2	1 (50%)
Subclinical Hyper	3	-

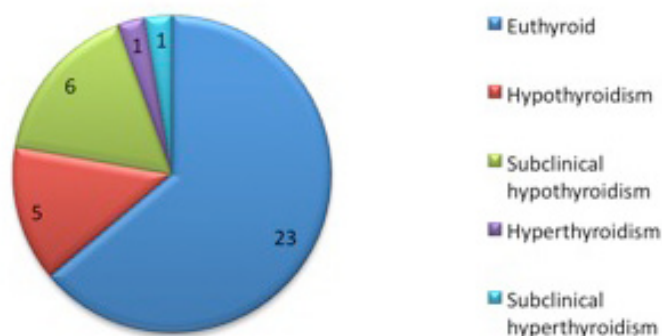
All patients with hypothyroidism had positive TPO antibodies, probably indicating auto immune cause for this disorder, 66.66% patients with subclinical hypothyroidism were positive for TPO AB. Subjects with TPO positive subclinical hypothyroid cases are more likely to progress into frank hypothyroid state.

Hence follow up of these cases are essential to detect frank hypothyroidism.

Hyperthyroidism is less likely to have TPO AB, and less autoimmune in nature, than hypothyroidism.

7. Lipid abnormalities and thyroid dysfunction: total patients having lipid abnormalities in this study was 36%.

### Patients with lipid abnormalities



**Figure:** Thyroid state and lipid abnormalities.

Thyroid function abnormalities were seen in only 25% patients, but lipid abnormalities was seen in 36% patients. This could be because of other cause of dyslipidemia seen in these elderly patients like DM, obesity.

Not all patients with hypothyroidism had dyslipidaemia. It was observed only in 44 % patients with abnormal thyroid functions.

Hyperthyroidism had a lesser incidence of lipid alterations.

### Lipid abnormalities and thyroid dysfunction

Lipid abnormalities are known to be present in patients with thyroid dysfunction.

Patients with thyroid dysfunction have higher values of TGs, T. Chol and LDL which was found to be statistically significant (p value <0.05).

The thyroid hormone is known to play a role in regulating the synthesis, metabolism, and the mobilization of lipids. In patients with overt hypothyroidism, there is an increase in serum total cholesterol, low-density lipoprotein (LDL) cholesterol, apolipoprotein B, lipoprotein (a) [Lp(a)] levels, and possibly, triglyceride levels. Normally, thyroid hormones increase the expression of the cell surface LDL receptors, thus leading to LDL clearance from the serum.

In hypothyroidism, the depletion of the thyroid hormones leads to a reduced number of LDL receptors in the liver, thereby decreasing the biliary excretion of cholesterol, thus resulting in elevated serum LDL and VLDL levels. It also decreases the lipoprotein lipase activity and causes hypertriglyceridaemia.

Patients with overt hypothyroidism have increased levels of TGs as compared to other lipids.

We noted that patients with subclinical hypothyroidism have increased levels of total cholesterol and LDL levels as compared to overt hypothyroidism, but it was not found to be statistically significant.

It may be explained by the presence of other comorbid conditions and confounding factors like overweight, DM that were present in subclinical hypothyroid patients.

Hyperthyroidism was not associated with gross lipid alterations.

HDL levels were normal in all groups.

A report from Netherlands demonstrates that subclinical hypothyroidism is a strong indicator of risk for atherosclerosis and myocardial infarction in elderly females.

**Table 7.** Comparison of lipids in different thyroid abnormalities.:

Mean and SD for various biochemical values of lipids in patients with dysfunction				
Parameter	Hypothyroidism	Subclinical Hypothyroidism	Hyperthyroidism	Subclinical Hyperthyroidism
TG	221.27±72.94	206.66±69.16	169.5±43.13	175±85.77
T.Chol	203.54±50.51	216.22±67.14	189.5±20.50	140.66±34.48
HDL	44.09±12.91	44.33±10.30	42.5±2.12	39±12.52
LDL	120.0±48.57	129.33±57.20	119.0±18.38	103.33±26.57

- 8. None of the patients had family history of thyroid disorders.
- 9. In this study, 16 patients were diabetics, 12 were known diabetics and 4 were newly detected diabetics. Among these 16 diabetics, 4 (25%) patients had thyroid dysfunction. 2 subjects had hypothyroidism, one had subclinical hypothyroidism and one subject had hyperthyroidism.
- 10. ECG changes were seen in 10 patients.

The heart rate in subjects with bradycardia was between 50-60/min, and in subjects with tachycardia was between 110-120/min.

Cardiovascular involvement in these cases is in the form of variability of HR depending on the thyroid state. Long stan-

ding hypothyroid state can lead to IHD as in one of our case. VPC may not be related to thyroid disorder.

One patient with overt hypothyroidism demonstrated a mild pericardial effusion.

- 11. USG and FNAC were done in 4 patients having thyroid swelling.

Among patients having goitre, 3 of them had hypothyroidism and one had hyperthyroidism. Hashimoto's thyroiditis was seen in one subject.

We noted malignancy in 2 patients having thyromegaly, one was follicular variant of Papillary carcinoma and the other a primary thyroid Lymphoma, which is a rare tumour of thyroid gland.

**Table 8.** USG/FNAC of Thyroid gland and clinical state.

No	USG	FNAC	Thyroid state
1.	Single Nodule	Diffuse Toxic Hyperplasia	Hyperthyroidism
2.	Diffuse thyroiditis	B-cell lymphoma of MALT type with extensive plasma cell differentiation in a background of Hashimoto's thyroiditis.	Hypothyroidism
3.	Multinodular goitre	Hashimoto's thyroiditis	Hypothyroidism
4.	Multinodular goitre	Follicular variant of Papillary carcinoma	Hypothyroidism

**MULTINODULAR GOITER**



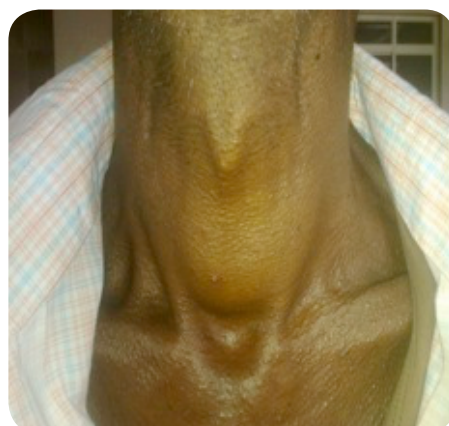
**DIFFUSE GOITER**



**MULTIPLE LYMPHNODES**



**SOLITARY NODULE**



## Discussion

Thyroid diseases are common clinical problems associated with aging.

Thyroid disorders in the elderly are associated with significant morbidity if they are not treated. In the elderly, the diagnosis is more often overlooked or misdiagnosed, as the symptoms are often subtle or absent and are easily confused with co-existing illnesses.

The present study is compared with other studies from India & abroad, it shows some variation in the pattern of the disease. It may be because of variation in sample size or ethnic variation.

### Spectrum of thyroid disorders in elderly

In the present study of 100 elderly patients 38 were males and 62 females. We have found that 25% patients have thyroid disorders.

We have noted that as the age advances the incidence of thyroid dysfunction increases (p value significant).

Thyroid abnormalities seen in different studies were variable. Western studies show a lower incidence compared to Indian series. It may be due to selection bias as present study has selected strongly suspicious cases for the study. Another factor is the numbers of cases studied by the other authors are more. Hence the incidence may be less in other series than the present series.

We noted a higher prevalence of thyroid dysfunction in females which is comparable to other studies, because of autoimmune nature of the disease.

Present study noted overt hypothyroidism and subclinical hypothyroidism in almost equal proportion when compared to other studies which demonstrated a more prevalence of subclinical hypothyroidism. This could be attributed to the late presentation of the rural population who had lack of knowledge about their symptoms. May be due to genetic factors also.

### Clinical features of thyroid disorders in elderly:

Our study population had frank features of hypothyroid state compared to Chassagne, P. et al. as our patients presented late in the course of the disease. Hence the clinical features are more pronounced than the other series.

**Table 9.** Comparative studies-prevalence of Thyroid disorders in elderly and sex wise distribution: (> 60 years).

	Cappola, A. R. et al.	Iglesias, P. et al.	Marwaha, R. K. et al.	Present study
Total thyroid abnormalities (%)	18.33	13.4	28.8	25
Males (%)	4.43	4.3	11.2	7
Females (%)	13.9	9	17.6	18

**Table 10.** Comparative studies of Prevalence of thyroid abnormalities in elderly.

	AML Chau	Cappola, A. R. et al.	Glauca, et al.	Iglesias, P. et al.	Marwaha, R. K. et al.	PRESENT STUDY
Total patients	184	2639	399	447	1277	100
Hypothyroidism	13.1%	1.6%	4.3%	3.1%	2.5%	11%
Subclinical hypothyroidism	2.2%	15%	8.1%	6%	25%	9%
Hyperthyroidism	0.5%	0.23%	0.8%	5%	0.8%	2%
Subclinical hyperthyroidism	-	1.5%	6.5%	2.2%	0.5%	3%



**Table 11.** Comparison of clinical features of hypothyroidism.

Clinical Features of Hypothyroidism	Doucet J, Trivalle Chassagne, P. et al. (n=67) In percentage (%)	Present study (n=20) In percentage (%)
Easy fatigability	67	100
Generalised weakness	52.5	100
Lethargy	45.3	65
Dry skin	34.5	50
Constipation	32.8	9
Hoarseness	28.1	74.7
Anorexia	26.6	40
Weight gain	23.7	35
Sluggish ankle jerk	23.8	45
Bradycardia	12.1	20
Edema	-	45
Goitre	-	15

**Table 12.** Comparison of clinical features of hyperthyroidism.

Clinical Features of Hyperthyroidism	Trivalle, C., Doucet, J., Classagne, C. et al. (n=34), in percentage (%)	Present study (n=5), in percentage (%)
Fatigue	56	100
Weakness	27	100
Weight loss	50	40
Increased appetite	-	80
Tremors	44	60
Heat intolerance Palpitations/Increased sweating	24	60
Diarrhea	18	-

Easy fatigability and generalised weakness are the most predominant features seen in our study.

Sluggish ankle jerks/ hung up reflex which are a good indicator of hypothyroidism, was seen in 45% patients with hypothyroidism.

Our study population is small in number (20) for comparison. Not many papers have noted clinical features of thyroid disorders in elderly for comparison purpose.

Numbers of cases of hyperthyroidism are only five; hence the clinical features are not compared. But all the features are more pronounced as the patients presented to us in advanced state of the disease compared to Trivalle, C., Doucet, J., Classagne, C. study.

In our study patients with hyperthyroidism presented with features of weakness, fatigability, heat intolerance, increased sweating, although diarrhea was not seen in any patients.

### TPO antibodies and thyroid disorders

Our study noted a high (68%) prevalence of TPO positivity among patients detected to have thyroid dysfunction; this is more common in hypothyroidism.

Predominantly patients with TPO positivity were hypothyroid, indicating a autoimmune aetiology (Hashimoto's thyroiditis, chronic lymphocytic thyroiditis) as the most common cause of thyroid dysfunction in elderly.

Autoimmune thyroiditis and positive results for thyroid autoantibody increase in proportion as age advances.

**Table 13.** Comparative table of TPO AB positivity.

Studies	MitraNiafar	Parle JV et al	SirkkaKontinen et al	Present study
Percentage of TPO positivity	60.6	60	47	68

**Table 14.** Table showing comparison of lipid abnormalities.

	Anne R Cuppola et al				Present study			
	Hypo	S.Hypo	Hyper	S.Hyper	Hypo	S.Hypo	Hyper	S.Hyper
T.Chol	228±54	214±41	-	203±41	203±50	216±67	189±20	140±34
LDL	148±53	132±36	-	121±30	120±48	129±57	119±18	103±26
HDL	53±13	54±16	-	52±16	44±12	44±10	42±2	39±52

In this study, a patient having subclinical hypothyroidism in whom TPO was positive was 66.6%, indicating a higher risk of these patients progressing to overt thyroid failure state.

### Thyroid nodules

In all the studies, thyromegaly was seen. But in our series, there were more cases (4%) and 50% of them had thyroid malignancy which is rare.

In our study we noted goitre in 4 patients. The spectrum varied from benign goitre to malignancy.

Bagchi et al. described an increased prevalence of goiter in elderly.

Bjuro, T. et al. demonstrated a prevalence of 15.13% of goitre in their study.

The prevalence of clinically apparent thyroid cancer in adults aged 50 to 70 years is estimated to be 0.1%. As patients age, there is a greater incidence in poorly differentiated types of thyroid cancer.

We noted a case of thyroid Lymphoma in the background of Hashimoto's thyroiditis, which is a rare case.

It has been reported that thyroid lymphoma accounts for 1.8–8% of all thyroid malignancies.

A strong association of malignant lymphoma with Hashimoto's thyroiditis has frequently been reported as noted in our case.

### Dyslipidemias and thyroid disorders

In this study we have also seen disturbances in lipid profile in patients with thyroid dysfunction.

Cuppola, R. A. noted that individuals with hypothyroidism had the highest levels of serum total and low-density lipoprotein cholesterol.

In the present study we found higher values of total cholesterol in subjects with subclinical hypothyroidism.

There was no much variation in HDL levels in both the studies.

Walsh, J. W. et al. and Iglesias, P. et al., in their studies, found a similar increase in lipid abnormalities in patients of subclinical hypothyroidism.

Walsh, J. W. et al., also noted that increased total cholesterol and LDL level increased the cardiovascular morbidity and mortality.

### Conclusion

1. Thyroid dysfunction in elderly is not uncommon.
2. One fourth of geriatric patients admitted to our wards exhibited alterations in thyroid function tests.
3. Thyroid abnormalities were more among females (18%) than in males (7%).
4. Clinical diagnosis is difficult to make but TFT always helps in diagnosing the disease.
5. Subclinical state is equally common as clinical state in elderly population.

6. As the age advances the incidence of thyroid disorders increases.
7. Hypothyroidism was more common than Hyperthyroidism.
8. An increased prevalence of TPO AB was observed in the hypothyroid patients, suggesting autoimmune etiology of thyroid dysfunction.
9. Dyslipidaemia was noted in patients with thyroid abnormalities as compared to patients with normal TFT.
10. A strong clinical suspicion of thyroid diseases should be considered in elderly patients who present with vague symptoms like generalised weakness, easy fatigability, lethargy and disinterest in daily activities.

Elderly patients should be screened for thyroid dysfunction.

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