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Prevalence of thyroid dysfunction among patients with type 2 diabetes mellitus in a Tertiary care hospital

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ABSTRACT

Objective

To find the prevalence of thyroid dysfunction (TD) among patients with type 2 diabetes mellitus (DM) in a Tertiary care hospital.

Study method

Retrospective hospital based descriptive study in a tertiary care hospital

Study population

All Type 2 DM patients who attended the hospital between the periods of January 2015 to December 2015 were included.

Results

A total of 415 Type 2 DM patients were selected for this study, from which 59.76% (248) were females and 40.24% (167) were males. The mean age of the study sample was 51.82 years (±10.66). From the total 415 study subjects, 20(4.8%), 80(19.3%), 270(65.1%) and 45(10.8%) study subjects belonged to the age group of 20-34, 35-44, 45-64 and ≥65 years respectively.

The mean duration of diabetes in the study sample was 8.23 years (±7.28). Among the thyroid dysfunction, commonest type was found to be hypothyroidism (20.14%), followed by Sub clinical hypothyroidism (5.78%). The prevalence of Primary hyperthyroidism and Sub clinical hyperthyroidism are 2.17% and 0.72% respectively. Prevalence of TD among females, 39.1 %(97), was higher than males, 18.6 %(31.

Conclusions

Screening of thyroid dysfunctions should be done in all diabetic patients especially in female diabetic population and poor diabetic control

Keywords: Thyroid dysfunction, Type 2 diabetes mellitus

INTRODUCTION

Thyroid diseases and Type 2 Diabetes Mellitus (DM) are the two most common endocrine disorders encountered in clinical practice. Various studies among Indian and foreign population have shown that prevalence of Thyroid Dysfunction (TD) is higher in Type 2 DM patients compared to the non diabetic subjects[1.] This study intends to find the prevalence of TD among patients with Type 2 DM attending the medicine opd of a Tertiary care hospital.

Diabetes mellitus is one of the modern pandemics and an important health problem worldwide. The association between both the conditions has long been reported. Thyroid hormones contribute to the regulation of carbohydrate metabolism and pancreatic function and on the other hand, diabetes also affects thyroid function tests to a variable extent. However, underlying thyroid disorders may go undiagnosed because the common signs and symptoms of thyroid disorders are similar to those for diabetes and can be overlooked or attributed to other medical disorders. The recognition of this interdependent relationship between thyroid disease and diabetes is of importance to guide clinicians on the optimal management of both these conditions. Determine the prevalence of clinical and subclinical thyroid disease in DM patients in our country and its implications in the diabetes course and known factors for necessary risks for cardiovascular. Studies reveals that hypothyroidism is the most commonly diagnosed thyroid dysfunction which has a greater implication on type-2 diabetes with a pre-existing dyslipidaemia and the risk of cardiovascular disease is increased [2.]The present study was conducted to find out the prevalence of thyroid disorders in patients of type 2 diabetes mellitus.

METHODOLOGY

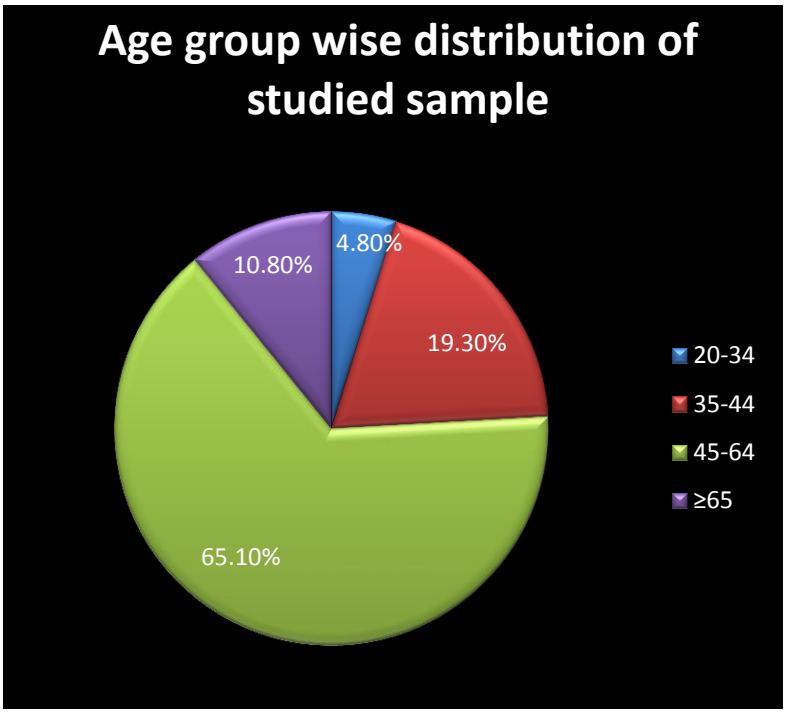
All the Type 2 DM cases who attend the medicine opd of saveetha medical college hospital, undergo physical and laboratory tests as a part of routine screening for thyroid dysfunction. Inclusion criteria include cases of Type 2 DM. Both new cases of TD, as well as previously diagnosed cases of TD were included in the study. Exclusion criteria include those cases with inadequate data availability. Data was extracted from case sheets of the study subjects and basic demographic details and blood test results like Fasting Blood Sugar, Post Prandial Blood Sugar, Glycosylated Haemoglobin (HbA1C), Thyroid Stimulating Hormone (TSH), Triidothyronine (T3), Total thyroxin (T4) and Thyroid peroxidase antibodies (TPOab) were analyzed using Epi Info 7 software.

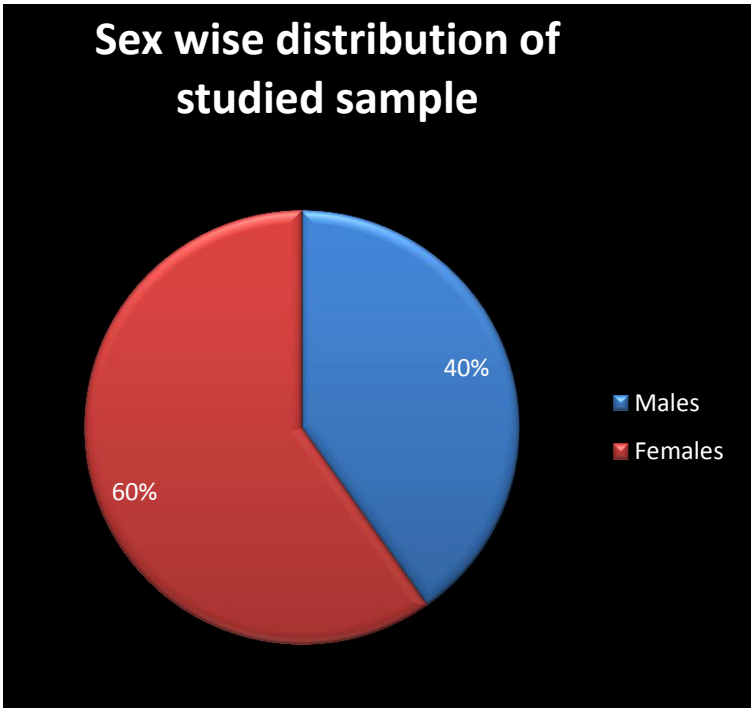
Normal values

T3 = 0.60 – 1.81 ng/ml
T4 = 4.50 – 10.90 µg/dl
TSH = 0.35 – 5.50 mIU/L

Subclinical hypothyroidism was defined as an elevated TSH level with normal serum thyroid hormone levels. Hypothyroidism was defined as an elevated TSH together with a decreased serum thyroid hormone levels. Subclinical hyperthyroidism was defined as a decreased TSH with normal thyroid hormone levels and hyperthyroidism was defined as a decreased TSH with elevated thyroid hormone levels. The correlation of prevalence of thyroid disorder with gender distribution, age distribution, HbA1C, duration of diabetes, hypertension, family history of thyroid disorder, BMI, usage of OHAs and insulin and dyslipidaemia was then done. The observations and interpretations were recorded and results obtained were statistically analysed.

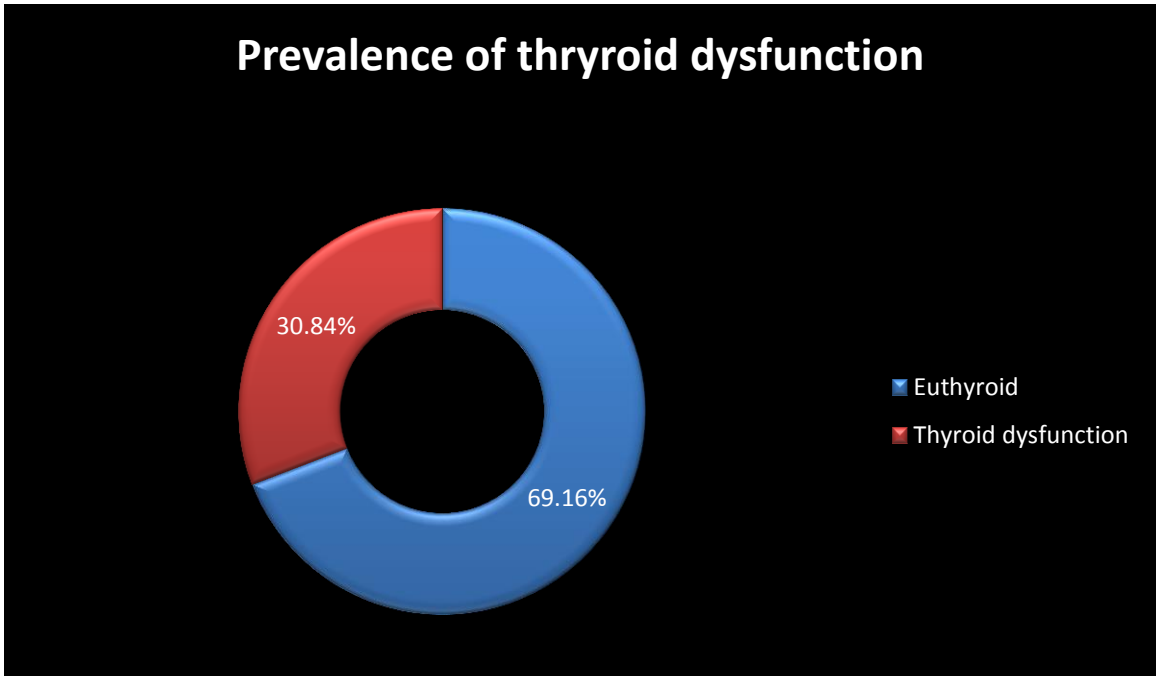
RESULTS



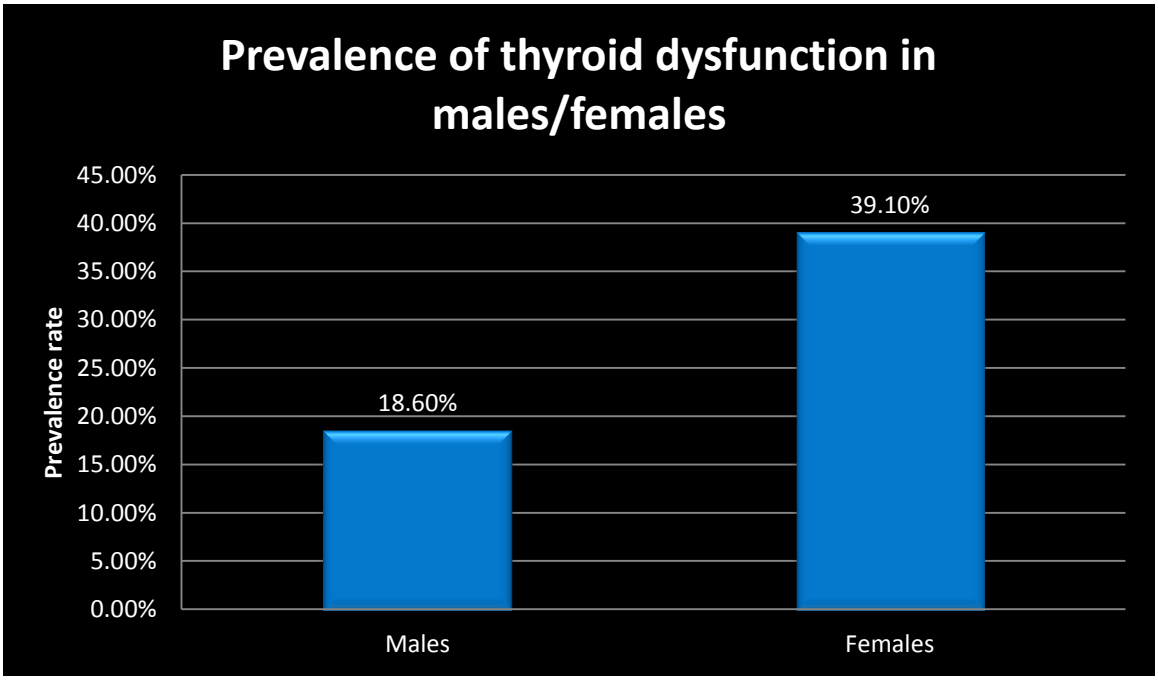


Prevalence of Thyroid dysfunction

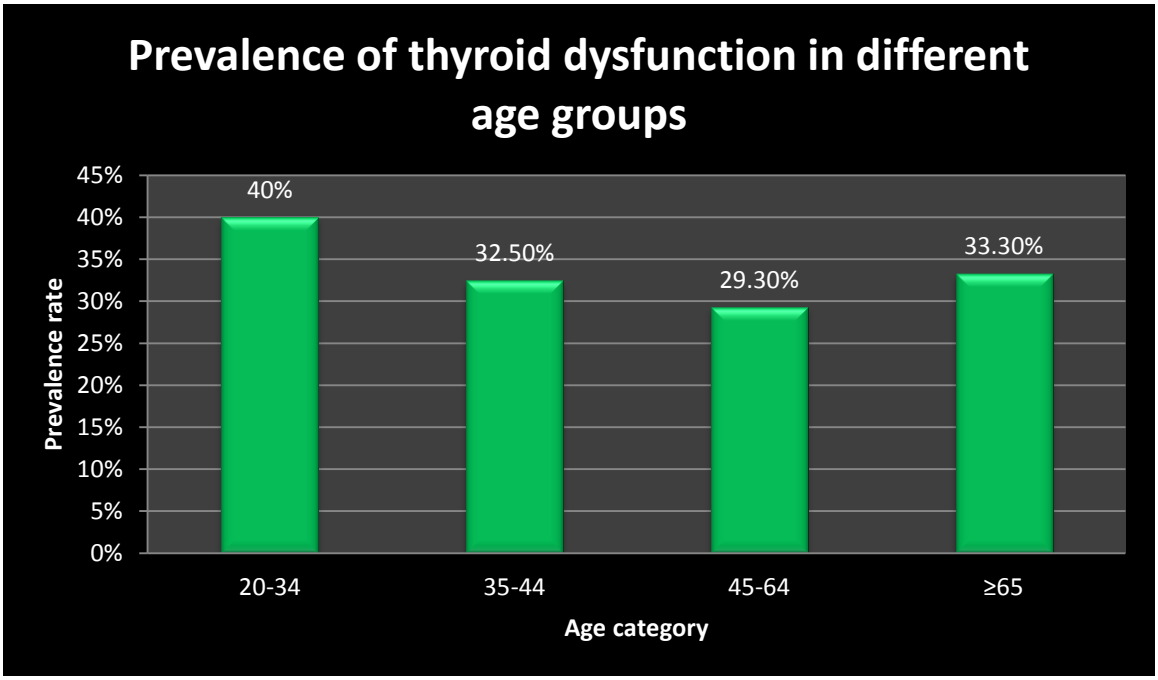
Majority of the patients were euthyroid with a prevalence of 69.16% (287). The prevalence of thyroid dysfunction (TD) among the studied sample was found to be 30.84% (128).



Prevalence of TD among females, 39.1 %(97), was higher than males, 18.6 %(31) and this difference in prevalence rate was found to be statistically significant (p<0.001).

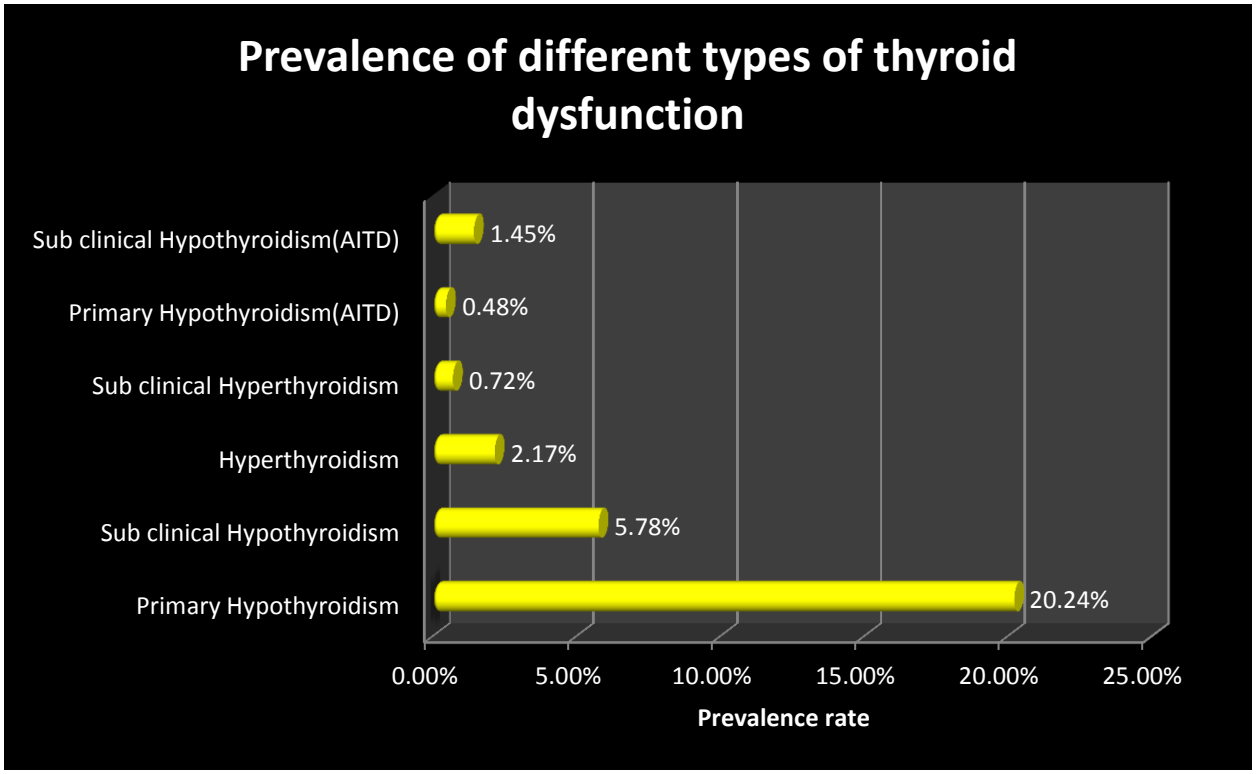


Prevalence of thyroid dysfunction in the age groups 20-34, 35-44, 45-64 and >=65 years were 40%, 32.5%, 29.3% and 33.3% respectively (p=0.720).



Prevalence of different types of TD

Most common type of TD was found to be Primary hypothyroidism (20.14%), followed by Sub clinical hypothyroidism (5.78%). The prevalence of Primary hyperthyroidism and Sub clinical hyperthyroidism are 2.17% and 0.72% respectively. A few auto immune thyroid disorder cases were also present. The prevalence rate of Auto immune primary hypothyroidism and Auto immune sub clinical hypothyroidism were 0.48% and 1.45% respectively.



In both males and females, more prevalent type of TD was hypothyroidism than hyperthyroidism. This difference in prevalence was found to be statistically significant (p<0.01).

		Prevalence of different types of thyroid dysfunction among males and females								P value
		Euthyroid	**Hypothyroidism**	**Sub Clinical Hypothyroidism**	**Hyperthyroidism**	**Subclinical Hyperthyroidism**	**Primary Hypothyroidism (AITD)**	**Sub clinical Hypothyroidism (AITD)**	**Total**	
Sex	Male	81.4%(136)	10.8%(18)	4.2%(7)	1.2%(2)	0.6%(1)	0.6%(1)	1.2%(2)	100%(167)	<0.001*
	Female	60.9%(151)	26.6%(66)	6.9%(17)	2.8%(7)	0.8%(2)	0.4%(1)	1.6%(4)	100%(248)	

* Fischer Exact test

DISCUSSION

DM is a serious health related problem affecting large number of populations worldwide. The associations between diabetes and thyroid disorders have long been reported and they have been shown to mutually influence to each other [3]. In the present study, out of 415 diabetic patients, 128 (30.84%) patients had thyroid dysfunction and 287 (69.16%) patients were found to be euthyroid. The prevalence of thyroid dysfunction among cases of type 2 diabetes mellitus is found to be 30.84%. This is similar to other studies findings such Diez *et al* (32.4%) [4]. Prevalence is higher among females and more number of cases occurred in 20-34 age group.

In the present study, the prevalence of thyroid disorders was more in females as compared to males (39.1% vs 18.6%) which when evaluated statistically significant (p value < 0.05). Our results are consistent with studies of Celani et al [5], Vondra et al [6] Pimenta et al [7], Babu et al [8], in which they also reported prevalence of thyroid disorders higher in diabetic females as compared to diabetic males. Thus the prevalence of thyroid disorders in diabetic patients is strongly influenced by female gender.

Primary Hypothyroidism (20.24%) was the most prevalent disorder in diabetic patients than subclinical hypothyroidism (1.45%) in our study. Our results are in concordance with the results of Perros et al [9], Nobre et al [11], Chubb et al [11]. There was a significant difference in prevalence of different types of thyroid dysfunction in males and females. In both gender hypothyroidism is more common than hyperthyroidism.

CONCLUSION

In conclusion, the results of this retrospective study showed a high prevalence of Thyroid dysfunction in the diabetic population which indicates that screening for thyroid disease among patients with diabetics should be routinely performed especially in female diabetic's patients.

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