

Review Article

DOI: <http://dx.doi.org/10.22192/ijamr.2020.07.05.003>

## Frequency of thyroid dysfunction in patients of Type 2 Diabetes Mellitus

**Dr. Narendra Singh, M.B.B.S. M.D. (Medicine)**

Physician (Department of Medicine) under CMO Barabanki and COVID Hospital, Barabanki, Uttar Pradesh, India.

E-mail: [narendrasingh0011@gmail.com](mailto:narendrasingh0011@gmail.com)

### Introduction

Type 2 diabetes mellitus is a chronic heterogeneous group of disorder and one of the two major types of diabetes in which the cells of pancreas produce insulin but the body is unable to use it effectively because the cells of the body are resistant to the action of insulin. But in type 1 diabetes there is lack of insulin secretion from  $\beta$  cells of pancreas. The thyroid is a butterfly shaped gland located in the front of the neck just above the trachea, produces  $T_3$  and  $T_4$  which influence basal metabolic rate.

1. Subclinical hypothyroidism is more frequently associated with type 2 diabetes mellitus.
2. Patient with hypothyroidism have also associated with type 2 diabetes mellitus.
3. Thyroid dysfunction is reported in type 2 diabetes mellitus.

### Criteria for diagnosis of diabetes mellitus

Diabetes mellitus positive findings of any two of the following testing on different days.

### Symptoms of diabetes mellitus

1. Polyuria,
2. Polydipsia
3. Unexplained weight loss.
4. Polyphagia
5. Weakness
6. Lethargy

Plasma glucose level  $> 200$  mg/dl without regard to time since last meal

Fasting plasma glucose  $> 126$  mg/dl

2 hours post prandial glucose  $> 200$  mg/dl after a 75 gm glucose load

### Symptoms of hypothyroidism;

1. Fatigue
2. Increase sensitivity of cold
3. Constipation
4. Dry skin
5. Weight gain
6. Puffy face.
7. Hoarseness of voice
8. Neck swelling

### Symptoms of hyperthyroidism

1. Polydipsia
2. Arrhythmia
3. Loss of weight
4. Increase appetite
5. Tremor
6. Eye sign

Thyroid dysfunction mostly decided on the basis of TSH,  $T_3$ , and  $T_4$ .

1. When TSH level less 0 to 4  $\mu$ /litre that is normal and  $T_4$  is normal.
2. When TSH level 4 to 10  $\mu$  /litre and  $T_4$  is normal it is subclinical hypothyroidism
3. When TSH level more than 10  $\mu$ /litre and  $T_4$  is low that is clinical hypothyroidism K.

## Results

This article considering about four study that are Dr Ravshankar, S N, Dr Champakamalini, Dr Venkatesh, Dr Mohsin – a prospective study of thyroid dysfunction in patient with type 2 diabetic in general population, Wei Zhao, Xinyuli, Xuhan Liu, Lu Lu, and Zhengnan Gao - Thyroid function in patients with typ2 diabetes mellitus and diabetic nephropathy, Laloo Demitrost and Salam Ranbir ; thyroid dysfunction in type 2 diabetes mellitus; a retrospective study, and Alok Marwar, Pawan Kumarkare, Kamala Pati Misra Raj Kumari Chahar - study of thyroid dysfunction in type 2 diabetes mellitus patients of agra city and some literature from Davidsons's principle and practice of medicine.

In prospective study of thyroid dysfunction in patient with type 2 diabetic in general population there is 15 case are subclinical hypothyroidism and 1 is hypothyroidism and 13 is hyperthyroidism cases are present in which male are 1,4,6 and 39 and female are 0,11,7 and 32 hypothyroidism, subclinical hypothyroidism, hyperthyroidism and normal simultaneous sequentially.

In thyroid function in patient with type 2 diabetes mellitus and diabetes nephropathy the male female ratio in control group is 55/58, patient without DN is 54/46 and patient with DN are 76/63 and subclinical hypothyroidism and low T3 syndrome; the control group are 4/0, patient without DN are 2/3 and patient with DN are 15/29.

In thyroid dysfunction in type 2 diabetes mellitus are retrospective study type 2 diabetes mellitus patient 61 are male and 141 are female in which euthyroid 139 and subclinical hypothyroidism 33 hypothyroidism are 23.

In study of thyroid dysfunction in type 2 diabetes mellitus patient of Agra city the male and female ratio in control group 30/20 and case group are 28/22, the TSH level in control group and diabetes group are 1.54/5.34 and T4 level are 7.64/8.02.

## Discussion

In Dr Ravishankar. S. N., Dr Champakamalini, Dr Venkatesh, Dr Mohsin, 1 a total of 100 type 2 diabetes mellitus were studied all were confirmed case of diabetes mellitus in which 50 were male and 50 were female and all of them 29 were having thyroid

disorder and 15 had hypothyroidism, 1 had overt hypothyroidism and 13 had hyper thyroidism.

Wei Zhao, Xinyu Li, Xuhan Liu, Lu Lu, and Zhengnan Gao 2 this study considered 342 patient taken in which 103 were healthy, 100 were T2 dm without DN and 139 were T2 DM with DN patient. Patients TSH and T4 level were having more subclinical hypothyroidism and over hypothyroidism in T2 DM with DN patient in compare to T2dm without DN.

Laloo Demitrost and Salam Ranbir 3 in this study 202 T2 DM patients were taken in which 61 were male and 141 were female over all 139 were euthyroid, 33 were subclinical hypothyroidism. In this subclinical hypothyroidism were 10 were male 23 were female patient and in the study 23 were overt hypothyroidism.

Alok Marwar, Pawan Kumarkare, Kamala Pati Misra Raj Kumari Chahar 4 this study considered 100 subject in which 50 were male patient and 50 were female patient. Serum TSH level was significantly higher in diabetic patient than control subjects but male and female ratio was not different significantly.

## Conclusion

Thyroid dysfunction is more common in patient with uncontrolled diabetes mellitus as compared to that with controlled diabetes mellitus.

A high prevalence of thyroid dysfunction in type 2 diabetes mellitus. patient particularly female but in study Wei Zhao Xinyullxuhan Anlu-Lu et al show that there is male are more having diabetes nephropathy and in these patient thyroid disorder are more with type 2 diabetes mellitus, are at a high risk for symptomatic thyroid dysfunction but Alok Marwar study the male and female ratio is not significance.

Therefore should be routine monitoring of thyroid function screening. In the early stage of diabetes that help in improvement of their health and reduce patient morbidity rate. Failure to management of abnormal thyroid hormone level in diabetes may be a primary cause of poor management of thyroid disorder and diabetes. There is therefore need for the routine assay of thyroid hormone in diabetes particularly in those patients whose condition is difficult to manage. Thyroid disorder is more common in diabetes mellitus with having diabetic nephropathy.

## References

1. Dr. Ravishankar. S. N., Dr. Champakamalini, Dr. Venkatesh, Dr. Mohsin. A prospective study of thyroid- dysfunction in patient with type 2 diabetes in general population. Inight medical publishing Imedpub Ltd Journal . 2013 Vol. No. 1;2 Doi 10.3823/105
2. Wei Zhao, Xinyu Li, Xuhan Liu, Lu Lu, and Zhengnan Gao. Thyroid function in patients with type 2 diabetes mellitus and diabetic nephropathy; a single center study. Volume 2018. Article id 9507028 (7). <https://doi.org/10.1155/2018/9507028>
3. Laloo Demitrost and Salam Ranbir. Thyroid dysfunction in type 2 diabetes mellitus; a retrospective study. Indian Journal of Endocrinology and Metabolism. 2012 Dec ;16 (2): s334-s335 PMID: PMC3603066
4. Alok Marwar, Pawan Kumarkare, Kamala Pati Misra Raj Kumari Chahar—Study of thyroid dysfunction in type 2 diabetes mellitus patients of Agra city. ISSN 0976-9633 online 2455-0566 Coden IJBRFA.
5. Davidsons, S. Principles and practice of Medicine. 2018. Edited by Stuart Ralston Ian Penman Mark Strachan Richard Hobson. 23<sup>rd</sup> Edition.

Access this Article in Online	
	Website: <a href="http://www.ijarm.com">www.ijarm.com</a>
	Subject: <a href="#">Medicine</a>
Quick Response Code	
DOI: <a href="https://doi.org/10.22192/ijamr.2020.07.05.003">10.22192/ijamr.2020.07.05.003</a>	

### How to cite this article:

Narendra Singh. (2020). Frequency of thyroid dysfunction in patients of Type 2 Diabetes Mellitus. Int. J. Adv. Multidiscip. Res. 7(5): 17-19.

DOI: <http://dx.doi.org/10.22192/ijamr.2020.07.05.003>