

**Research Article**

## **THYROID DISORDERS IN TYPE-II DIABETES MELLITUS IN PUNJAB**

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### **ABSTRACT**

Type 2 diabetes mellitus (DM-2) is a growing problem in our country, it is the commonest endocrine disorder and leading cause of death worldwide. Many patients of DM-2 have associated thyroid disorders and they influence the disease profile of each other. The prevalence of thyroid disorders in these patients need to be studied in more detail studied. Hence, we carried out this study. Aims and Objectives of the study were to find out the prevalence of thyroid disorders in type 2 diabetes mellitus in Punjab. The type 2 DM patients who attended the Medicine outdoor of Punjab Institute of Medical Sciences, Jalandhar from January 2015 to December, 2015 were studied for the presence of thyroid disorders. All patients who were part of this study had been evaluated previously with thyroid function test and they had no signs or symptoms suggestive of thyroid dysfunction. All patients were evaluated for thyroid status by estimation of T3, T4 and TSH levels by chemi-luminescence assay method. The data analysis was done using SPSS software version 20. Out of the 378 type 2 DM patients studied, 183(48.3%) were male and 195 (51.7%) female. The mean duration of type 2 DM was  $64 \pm 13.6$  months. 206 (54.5%) patients were euthyroid, 78 (20.6%) had subclinical hypothyroidism, 52 (13.8%) had clinical hypothyroidism, 27 (7.1%) had subclinical hyperthyroidism and 15 (4.0%) were hyperthyroid. Majority of the patients having thyroid disorders belonged to the 40-55 years' age group. In Punjab, the prevalence of hypothyroidism is high in type 2 diabetes mellitus patients. Most of these patients are aged between 40 and 55 years, more so in female patients. In view of the above observations, it is recommended that all diabetic patients should be evaluated for thyroid diseases during routine yearly check-ups.

**Keywords:** Diabetes Mellitus, Thyroid Diseases, Hypothyroidism, Hyperthyroidism

### **INTRODUCTION**

Diabetes Mellitus is the commonest endocrine disorder and leading cause of death worldwide (Hollowell *et al.*, 2002). Type 2 diabetes mellitus (DM) is a growing problem in our country and we have observed that many patients are associated with thyroid dysfunction later in their life.

Thyroid diseases have been described to be more common in diabetes than expected (American Diabetes Association, 2008).

The association between diabetes and thyroid dysfunction was first published in 1979 (Feely and Isles, 1979). Thyroid dysfunction is a disorders of the thyroid gland which manifests either as hyperthyroidism or hypothyroidism and is reflected in the levels of thyroid stimulating hormone (TSH) (Tunbridge *et al.*, 1977). The prevalence of thyroid disorders in the patients of type 2 diabetes mellitus has been very less studied in the northern India.

It was observed that amongst the diabetic patients, women had more preponderance for hypothyroidism (Witting *et al.*, 2014). These endocrine disorders affect each other in more than one way. Poorly controlled diabetes mellitus may adversely affect thyroid metabolism as uncontrolled hyperglycemia alters plasma triiodothyronine (T3) and in part thyroxine (T4) levels (Gharib *et al.*, 2005). Hyperinsulinaemia can also be associated with goitre as well as with thyroid nodules (Chen *et al.*, 2010; Perros *et al.*, 1995).

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Conversely, hyperthyroidism can cause poor glycemic control by a stimulation of glucose absorption, glycogenolysis and hepatic glucose production (Tunbridge *et al.*, 1977) as well as enhanced insulin resistance (Canaris *et al.*, 2000) and shortened half-life of circulating insulin concentrations (Hollowell *et al.*, 2002).

The aim of this study was to evaluate the prevalence of thyroid dysfunctions in type 2 diabetes mellitus.

## MATERIALS AND METHODS

This study has been conducted in the Medicine department of Punjab Institute of Medical Sciences, Jalandhar. The patients of type 2 diabetes mellitus who attended Medicine outdoor between January, 2016 to December, 2016 were included in this study. Criteria used for diagnosis of type 2 diabetes mellitus were those of America Diabetes Association i.e. 1) Fasting blood sugar  $\geq 110$  mg/dl and 2) Random blood sugar  $\geq 200$  mg/dl or taking hypoglycemic drugs and/or using insulin and did not have any ketosis in the past. A detailed history was taken and examination done as per the Performa. In addition to routine urine work up and target organ damage evaluation for diabetes, all patients were subjected to haematological evaluation. All patients were evaluated for thyroid status by estimation of T3, T4 and TSH levels by chemi-luminescence assay method. The data analysis was done using SPSS software version 20.

## RESULTS AND DISCUSSION

### Results

There were total 378 patients of type 2 DM included in this study. Out of these, 183(48.3%) were male and 195 (51.7%) female. The mean age of the patients was  $58.65 \pm 7.46$  years. The age and sex distribution of the patients studied is shown in Table 1.

**Table 1: Demographic Characteristics of the Patients**

	Male, n (%)	Female, n (%)	Total, n (%)
<b>Age Range</b>			
25 – 40	18 (4.7)	21 (5.6)	39(10.3)
40 – 55	47 (12.4)	61 (16.2)	108 (28.6)
55 – 60	47 (12.4)	42 (11.1)	89 (23.5)
60 – 75	38 (10.1)	44 (11.6)	82 (21.7)
$\geq 75$	33 (8.7)	27 (7.2)	60 (15.9)
<b>Total</b>	183(48.3)	195 (51.7)	378 (100.0)

The mean duration of type 2 DM was  $64 \pm 13.6$  months. 206 (54.5%) patients were euthyroid, 78 (20.6%) had subclinical hypothyroidism, 52 (13.8%) had clinical hypothyroidism, 27 (7.1%) had subclinical hyperthyroidism and 15 (4.0%) were hyperthyroid. Majority of the patients having thyroid disorders belonged to the 40-55 years age group. Patients with BMI  $> 25$  were at increased risk of having thyroid dysfunction ( $p < 0.006$ ).

**Table 2: Distribution of the Patients According to Thyroid Profile**

Thyroid Status	Male, n (%)	Female, n (%)	Total, n (%)
Euthyroid	108 (28.6)	98 (25.9)	206 (54.5)
Hypothyroid	23 (6.1)	29 (7.7)	52 (13.8)
Subclinical Hypothyroid	33 (8.7)	45 (11.9)	78 (20.6)
Hyperthyroid	7 (1.8)	8 (2.2)	15 (4.0)
Subclinical Hyperthyroid	12 (3.1)	15 (4.0)	27 (7.1)
<b>Total</b>	183(48.3)	195 (51.7)	378 (100.0)

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In view of the above observations, it is recommended that all diabetic patients should be evaluated for thyroid diseases during routine yearly checkups.

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