

# Study of Thyroid Dysfunction and Dyslipidemia in Chronic Kidney Disease Patients in a Tertiary Care Hospital, Ahmedabad

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**Abstract:** This study evaluates the prevalence and types of thyroid dysfunction and dyslipidemia in patients with chronic kidney disease (CKD) at a tertiary care hospital in Ahmedabad. Among 150 patients enrolled between January 2024-January 2025, 38.7% had thyroid dysfunction, with subclinical hypothyroidism being the most common. Dyslipidemia, particularly hypertriglyceridemia and low HDL, was also frequently observed. The prevalence of these abnormalities increased with the severity of CKD. Routine screening of thyroid function and lipid profile may help in early intervention and prevention of cardiovascular complications in CKD patients.

**Keywords:** Thyroid dysfunction, Chronic kidney disease, Dyslipidemia, Subclinical hypothyroidism, Cardiovascular risk

## 1. Introduction

Thyroid hormones are crucial for metabolic regulation and cardiovascular health. Patients with chronic kidney disease (CKD) are particularly susceptible to endocrine disturbances due to impaired metabolic clearance, altered hormone binding, and systemic inflammation. Both hypothyroidism and dyslipidemia have been implicated as contributors to increased cardiovascular risk in CKD. Understanding the pattern and prevalence of these abnormalities in Indian CKD populations is essential for timely diagnosis and management.

### Purpose of the Study

To assess the prevalence and types of thyroid dysfunction and dyslipidemia in CKD patients and their distribution across CKD stages.

### Significance of the Study

This study emphasizes the importance of screening for thyroid and lipid disorders in CKD patients to prevent complications and tailor management strategies for improved long-term outcomes.

### Aims and Objectives

To determine the prevalence and types of thyroid dysfunction and dyslipidemia in CKD stages 3–5 and evaluate their association with CKD severity.

## 2. Materials and Methods

This prospective observational study was conducted in the Department of General Medicine at a tertiary care hospital in Ahmedabad between January 2024 and January 2025. A total of 150 adult patients with CKD stages 3–5 were enrolled after informed consent. Patients on thyroid medications or lipid-lowering agents, and those with systemic illnesses affecting thyroid/lipid profiles were excluded. TFTs (TSH, T3, T4) and lipid profiles were

performed. Patients were categorized into thyroid function groups and lipid abnormality patterns as per standard laboratory definitions.

## 3. Results

Out of 150 CKD patients enrolled, the mean age was approximately  $55 \pm 12$  years, with a male predominance. The distribution of patients across CKD stages was: Stage 3 – 60 (40%), Stage 4 – 65 (43.3%), and Stage 5 – 25 (16.7%).

Thyroid dysfunction was observed in 58 patients (38.7%), with subclinical hypothyroidism being the most common form (27.3%), followed by overt hypothyroidism (8%) and subclinical hyperthyroidism (3.3%).

Dyslipidemia was prevalent in over one-third of patients: hypertriglyceridemia (36.7%), hypercholesterolemia (34.7%), undesirable LDL (34.7%), and low HDL cholesterol (34%).

**Table 1:** Characteristics of CKD Patients (N = 150)

CKD Stage	Number of Patients (%)
Stage 3	60 (40.0%)
Stage 4	65 (43.3%)
Stage 5	25 (16.7%)

**Table 2:** Thyroid Function Status

Thyroid Status	N (%)
Euthyroid	92 (61.3%)
Subclinical hypothyroidism	41 (27.3%)
Overt hypothyroidism	12 (8.0%)
Subclinical hyperthyroidism	5 (3.3%)

**Table 3:** Dyslipidemia Status

Parameter	N (%)
Hypercholesterolemia	52 (34.7%)
Low HDL cholesterol	51 (34.0%)
Undesirable LDL cholesterol	52 (34.7%)
Hypertriglyceridemia	55 (36.7%)

#### 4. Discussion

Our study demonstrates a high prevalence of thyroid dysfunction and dyslipidemia in CKD patients, especially as the disease progresses to more severe stages. Subclinical hypothyroidism, the most common thyroid disorder observed, has been associated with accelerated atherosclerosis and cardiovascular risk.

Similarly, lipid abnormalities were noted in a large proportion of CKD patients. Elevated triglycerides and LDL levels, and low HDL levels, are well-documented risk factors for cardiovascular morbidity. These findings reinforce the importance of regular screening and early management of these metabolic abnormalities in CKD populations.

The findings are consistent with studies by Lo et al. (2005) and Chonchol et al. (2008), where similar patterns of thyroid dysfunction and dyslipidemia were noted in CKD cohorts.

#### 5. Conclusion

Subclinical hypothyroidism and dyslipidemia are frequently observed in patients with CKD, especially in stages 4 and 5. Routine screening of thyroid function and lipid profile in CKD patients is essential for comprehensive risk management and may contribute to improved cardiovascular and renal outcomes.

#### References

- [1] Lo JC, et al. *Kidney Int.* 2005;67(3):1047–1052.
- [2] Tsimihodimos V, et al. *Open Cardiovasc Med J.* 2011;5:41–48.
- [3] Chonchol M, et al. *Clin J Am Soc Nephrol.* 2008;3(5):1296–1300.
- [4] Basu G, et al. *Indian J Endocrinol Metab.* 2012;16(2):204–213.
- [5] Raju DSSK, et al. *J Clinic Res Bioeth.* 2013;4(1):1000143.
- [6] Song SH, et al. *Nephrol Dial Transplant.* 2009;24(5):1534–1538.