JRAAS
Special Issue in Medicine & Surgery
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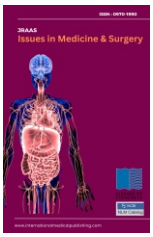

Research Article

Section: Medicine

Comparative Study of Thyroid Profile in Patients of Diabetic & Non-Diabetic Chronic Kidney Disease

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HIGHLIGHTS

- Thyroid dysfunction common in CKD
- Higher prevalence in diabetic patients
- Females show increased thyroid abnormalities
- Dysfunction rises with CKD severity
- Routine screening improves clinical outcomes

Key Words:
Chronic kidney disease
Diabetes
Thyroid dysfunction
Subclinical hypothyroidism
Euthyroid
CKD stages

ABSTRACT

Introduction: Chronic kidney disease (CKD) is a progressive disorder leading to impaired renal function, often complicated by thyroid dysfunction. Diabetes is a major contributor to CKD and may exacerbate thyroid abnormalities, which include subclinical hypothyroidism, overt hypothyroidism, and subclinical hyperthyroidism. Thyroid dysfunction in CKD patients can worsen clinical outcomes, highlighting the need for early detection and management. **Aim & Objective:** To compare thyroid profiles in diabetic and non-diabetic CKD patients and assess the prevalence and distribution of thyroid dysfunction across genders and CKD stages. **Materials & Methods:** An observational, comparative study was conducted at I.G. ESIC Hospital, Delhi, including 90 patients (>18 years) divided equally into diabetic and non-diabetic CKD groups. Blood samples were analyzed for Free T3, Free T4, and TSH using ELISA. Patients with known thyroid disorders, severe trauma, liver disease, nephrotic syndrome, or medications affecting thyroid function were excluded. Data were analyzed using SPSS, with significance set at $p<0.05$. **Results:** Thyroid dysfunction was more prevalent in diabetic CKD patients and females across both groups. Subclinical hypothyroidism was the most common abnormality, followed by overt hypothyroidism and subclinical hyperthyroidism. Euthyroid status was more frequent in males and non-diabetic CKD patients. Thyroid dysfunction increased with CKD severity, peaking in Stage 5, with diabetic patients consistently showing higher prevalence than non-diabetics. **Conclusion:** Thyroid dysfunction is common in CKD, particularly among diabetic patients and females, and correlates with disease severity. Routine thyroid screening and early management are recommended to improve outcomes in CKD patients.

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Article History: Received 22 Februray 2026; Received in Revised form 28 March 2026; Accepted 04 April 2026
How To Cite: Gitam Dattatray Suryavanshi & Abhiram Chandra Gupta. Comparative Study of Thyroid Profile in Patients of Diabetic & Non-Diabetic Chronic Kidney Disease. *JRAAS : Special Issue in Medicine & Surgery.* 2026;41(1):1-10. https://doi.org/10.71393/d8vy6807

INTRODUCTION

Chronic kidney disease (CKD) is a major global health concern, defined as a persistent reduction in kidney function or structural abnormalities lasting for more than three months, leading to the accumulation of metabolic waste products, electrolyte imbalances, and disturbances in endocrine and metabolic homeostasis [1]. The kidneys play a crucial role in maintaining fluid and electrolyte balance, regulating blood pressure via the renin angiotensin aldosterone system, supporting erythropoiesis through erythropoietin production, and controlling calcium phosphate metabolism via vitamin D activation. Progressive decline in renal function results in multisystem involvement, including cardiovascular, hematological, skeletal, and endocrine complications, significantly reducing patient survival and quality of life [1,8].

CKD is classified into five stages based on glomerular filtration rate (GFR), with stage 5 representing end-stage renal disease (ESRD), where renal replacement therapy in the form of dialysis or kidney transplantation becomes necessary for survival [1]. Early stages are often asymptomatic, contributing to delayed diagnosis and missed opportunities for intervention. As the disease progresses, complications such as uremia, metabolic acidosis, anemia, and mineral bone disorders become more prominent, further complicating management [8].

Globally, CKD affects approximately 10–15% of the population and represents a significant contributor to morbidity, mortality, and healthcare expenditure [1]. In India, the prevalence is estimated to be around 17% among adults, with higher incidence observed in urban populations, elderly individuals, and those with comorbid conditions such as hypertension and cardiovascular disease [2]. Rapid urbanization, sedentary lifestyle, dietary transitions, and increasing life expectancy have contributed to this rising burden. Furthermore, limited access to early screening and healthcare infrastructure in certain regions leads to late-stage presentation and poorer outcomes [2,9].

Diabetes mellitus remains the leading cause of CKD worldwide, accounting for nearly 40% of cases. Chronic hyperglycemia induces structural and functional changes in the kidneys, including glomerular basement membrane thickening, mesangial expansion, podocyte injury, and eventual glomerulosclerosis. These changes are mediated through multiple mechanisms such as oxidative stress, advanced glycation end-products formation, activation of inflammatory pathways, and hemodynamic alterations [2,5]. Poor glycemic control, as indicated by elevated glycated hemoglobin (HbA1c), has been strongly associated with accelerated decline in renal function, increased progression to ESRD, and higher risk of cardiovascular and all-cause mortality [3,10].

CKD is frequently associated with thyroid dysfunction due to complex interactions between renal and endocrine systems. Impaired renal clearance of iodine and altered metabolism of thyroid hormones lead to changes in circulating levels of triiodothyronine (T3), thyroxine (T4), and thyroid-stimulating hormone (TSH). Additionally, chronic inflammation, metabolic acidosis, protein-energy malnutrition, and the use of certain medications contribute to thyroid abnormalities in CKD patients [3,11]. Low T3 syndrome (non-thyroidal illness syndrome) is particularly common and has been identified as an independent predictor of mortality in CKD. Subclinical hypothyroidism and altered TSH levels are also frequently observed and are associated with adverse cardiovascular outcomes, dyslipidemia, anemia, and faster progression of renal dysfunction [3,11,12].

The coexistence of diabetes and CKD further increases the likelihood of thyroid dysfunction. Hyperglycemia, insulin resistance, and proteinuria can influence thyroid hormone binding, metabolism, and clearance, thereby exacerbating endocrine disturbances. Studies have shown a higher prevalence of thyroid abnormalities among CKD patients with diabetes compared to non-diabetic CKD patients, highlighting a synergistic interplay between metabolic and renal dysfunction

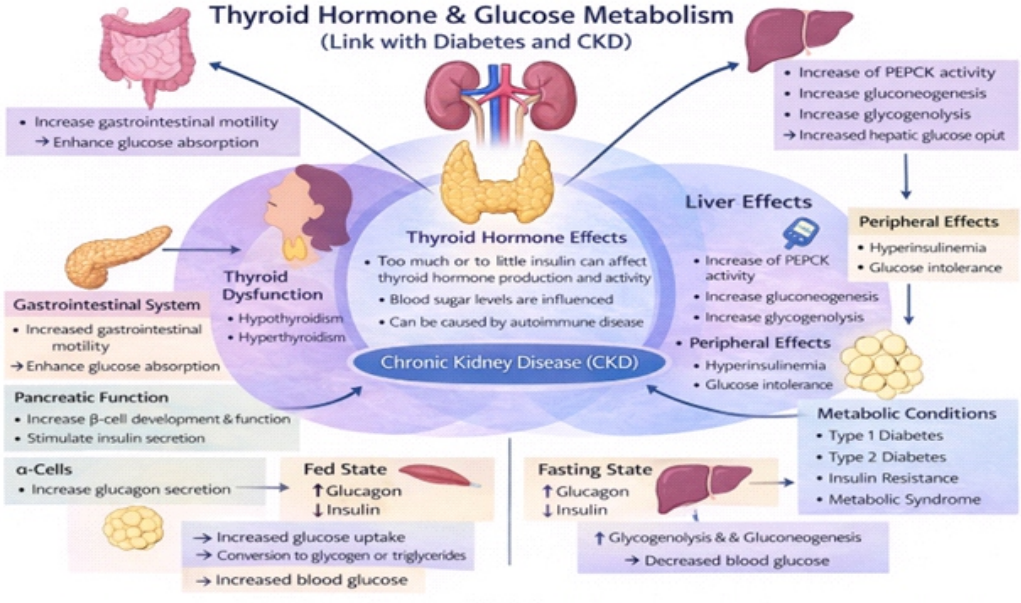

Figure 1: Schematic illustration depicting the complex interplay between thyroid function, diabetes, and chronic kidney disease (CKD). Adopted from [18]

[4,5,12]. **Figure 1** shows the interaction between thyroid hormones, diabetes, and chronic kidney disease (CKD). It highlights effects on glucose metabolism, insulin resistance, and organ functions, along with CKD-related thyroid dysfunction and differences in fed and fasting states [18].

Given the rapidly increasing burden of diabetes-related CKD and the significant yet often underrecognized role of thyroid dysfunction, comprehensive evaluation of thyroid profiles in CKD patients both diabetic and non-diabetic is essential. Early identification and management of thyroid abnormalities may help in slowing disease progression, reducing cardiovascular risk, and improving overall clinical outcomes. Therefore, understanding the interrelationship between renal function, glycemic status, and thyroid hormones is crucial for optimizing patient care and developing integrated therapeutic strategies [6,7].

MATERIALS & METHODS

This 18-month observational comparative study at I.G. ESIC Hospital, Delhi, included 90 CKD patients (>18 years), divided equally into diabetic and non-diabetic groups, selected via purposive sampling. CKD was classified using KDIGO guidelines and diabetes diagnosed per ADA criteria. Patients with thyroid disorders, liver disease, recent thyroid surgery, drugs affecting thyroid function, severe trauma, burns, or nephrotic proteinuria were excluded. Clinical history, examination, and laboratory investigations-including FT3, FT4, TSH, renal function tests, HbA1c, electrolytes, and ultrasound were conducted, with eGFR calculated using CKD-EPI and creatinine clearance by Cockcroft–Gault. Primary outcomes assessed thyroid dysfunction; secondary outcomes examined prevalence and correlation with CKD severity. Data were analyzed using SPSS, with $p<0.05$ as significant. Ethical approval was obtained, and confidentiality maintained.

RESULT

Figure 2 displays the age distribution of the patients, out of 90 patients, 18 (20%) are below 30 years, age 30 to 60 are 40 (44%) and above 60 age patients are 32 (36%). **Figure 3** shows the gender distribution percentage of patients, out of 90 patients 44 (49%) are male patients and 46 (51%) are female patients. **Figure 4** observable that females in both diabetic and non-diabetic CKD exhibits higher prevalence of Subclinical hypothyroidism compared to males. In diabetic CKD group 6 males and 8 females have Subclinical hypothyroidism and in non-diabetic CKD group 5 males and 7 females have Subclinical hypothyroidism.

Figure 5 focuses that females in both diabetic and non-diabetic CKD exhibits higher prevalence of Overt hypothyroidism compared to males. In diabetic CKD group 4 males and 5 females have Overt hypothyroidism and in non-diabetic CKD group 3 males and 5 females have Overt hypothyroidism. **Figure 6** it is observable that females in both diabetic and non-diabetic CKD exhibits higher prevalence of Subclinical hyperthyroidism compared to males. In diabetic CKD group 2 males and 4 females have Subclinical hyperthyroidism and in non-diabetic CKD group 2 males and 3 females have Subclinical hyperthyroidism.

From the above figure it is observable that males in both diabetic and non-diabetic CKD exhibits higher prevalence of Euthyroid compared to males. In diabetic CKD group 10 males and 6 females have Euthyroid and in non-diabetic CKD group 12 males and 8 females have Euthyroid (**Figure 6**). **Table 1** shows thyroid abnormalities in diabetic and non-diabetic CKD patients. Subclinical and overt hypothyroidism were more common in females across both groups (diabetic: 8 vs 6 and 5 vs 4; non-diabetic: 7 vs 5 and 5 vs 3). Subclinical hyperthyroidism was low (diabetic: females 4, males 2; non-diabetic: females 3, males 2). Euthyroid status was most common, especially in non-diabetic patients (males 12, females 8; diabetic: males 10, females 6). **Table 2** indicates that as renal failure stages progress, thyroid dysfunction increases in both diabetic and non-diabetic patients. In diabetic patients, thyroid dysfunction is more prevalent across all stages, with the highest number observed in Stage 5 (4 males and 6 females). Non-diabetic patients also show an increasing trend of thyroid dysfunction with renal failure progression, but the numbers are consistently lower compared to their diabetic counterparts. The difference between males and females in each stage remains relatively stable, with females generally showing a slightly higher rate of thyroid dysfunction. Overall, thyroid dysfunction correlates positively with the severity of renal failure, particularly in diabetic individuals. The data shows that among diabetic patients, Subclinical hypothyroidism was more prevalent in diabetics (14) than non-diabetic (12). Overt hypothyroidism was also observed in higher numbers in diabetic (9) than non-diabetic (8). Subclinical hyperthyroidism cases were relatively fewer, with diabetic having the highest count (6) compared to non-diabetic. Euthyroid status, indicating normal thyroid function, was most common in non-diabetic (20) and diabetic (16) (**Table 3**). The **table 4** shows the relationship between thyroid dysfunction and chronic kidney disease (CKD) in diabetic and non-diabetic patients more than 18 years of age. In diabetic CKD patients, 64.4% exhibited thyroid dysfunction, with 14 cases of Subclinical hypothyroidism, 9 of Overt hypothyroidism, and 6 of subclinical hyperthyroidism. Non-diabetic CKD patients had a lower thyroid dysfunction prevalence of 55.5%, with 12 Subclinical hypothyroid, 8 Overt hypothyroidism, and 5 subclinical hyperthyroid cases. Across both groups, most patients (36) maintained normal thyroid function. Overall, there is a higher prevalence of thyroid dysfunction in diabetic CKD patients compared to their non-diabetic counterparts. **Figure 8** the pie chart above displays the prevalence of thyroid dysfunction among CKD patients in diabetic and non-diabetic groups. From the chart, thyroid dysfunction is more prevalent among diabetic CKD patients (64.4%), and non-diabetic CKD patients represent 55.5% prevalence. The distribution of male patients with CKD is presented in the above pie chart 24, showing a total number of 44 male patients. Out of them 22 are non-diabetic CKD patients, and 22 are diabetic CKD patients (**Figure 9**). The distribution of female patients with CKD is presented in the above pie chart 25, showing a total number of 46 female patients.

Out of them 23 are diabetic CKD patients, and 23 are non-diabetic CKD patients (**Figure 10**). Table 5 above shows a comparison of thyroid function and kidney parameters across different thyroid conditions. Thyroid hormone (FT3, FT4 and TSH) levels significantly differ among Thyroid dysfunction groups (Subclinical Hypothyroidism, Overt Hypothyroidism, Subclinical Hyperthyroidism and Euthyroid (Normal) ($p<0.05$). Kidney parameters: serum creatinine is highest in Subclinical Hypothyroidism, and eGFR is lowest in Euthyroid (Normal) patients.

The study examines thyroid and renal function across different kidney disease stages. Kidney parameters (Serum creatinine and eGFR) show significant variations, with eGFR showing low in Stage V ($p < 0.05$). Thyroid functions (FT3, FT4, and TSH) also fluctuate, indicating potential thyroid dysfunction across stages. The findings suggest a strong link between disease progression and thyroid-renal interactions (**Table 6**).

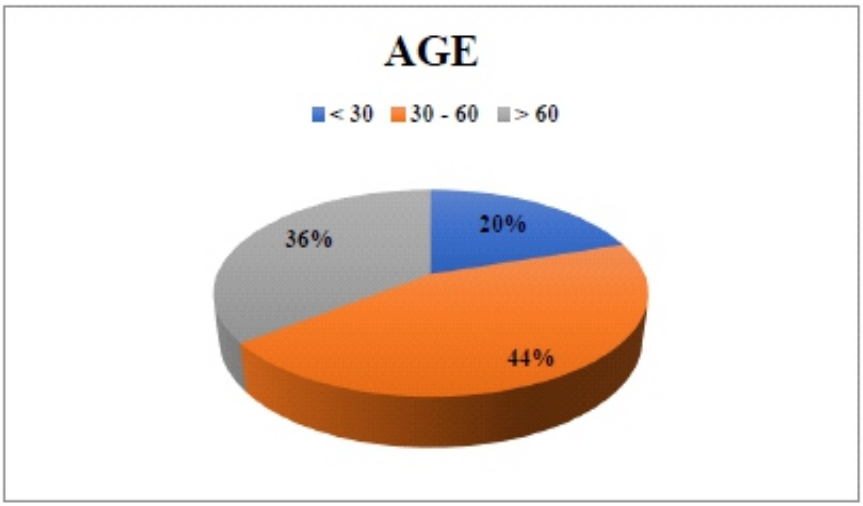

Figure 2: Age distribution of patients

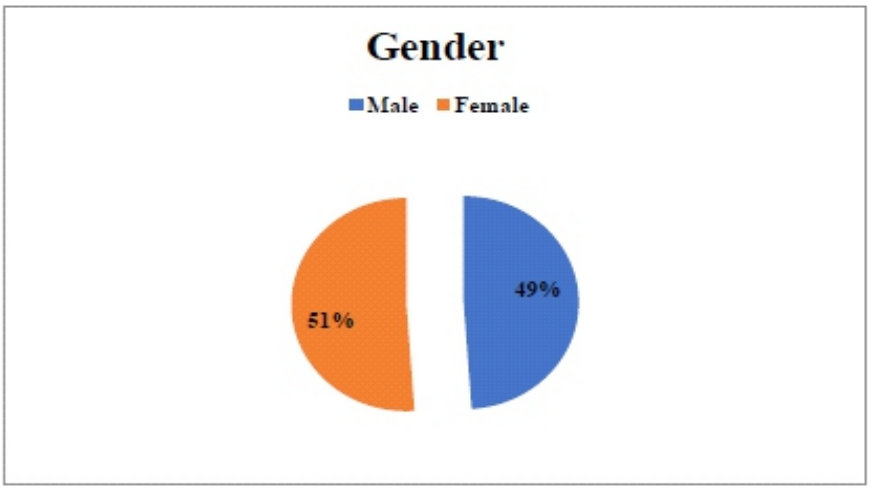

Figure 3: Gender distribution of patients

Table 1: Prevalence of thyroid abnormalities in both patient groups

Thyroid Abnormalities	Diabetic CKD Males	Diabetic CKD Females	Non-Diabetic CKD Males	Non-Diabetic CKD Females
Subclinical Hypothyroidism	6	8	5	7
Overt Hypothyroidism	4	5	3	5
Subclinical Hyperthyroidism	2	4	2	3
Euthyroid (Normal)	10	6	12	8

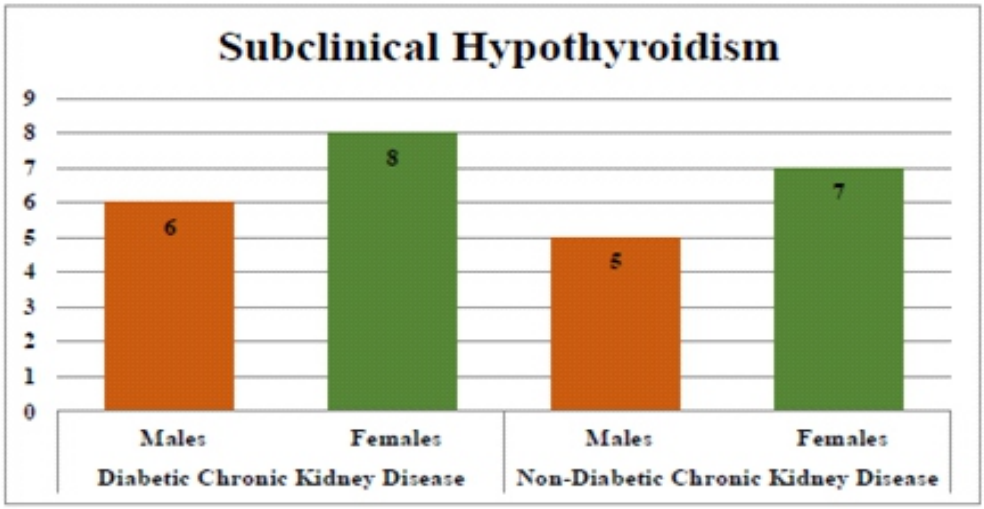

Figure 4: Subclinical Hypothyroidism

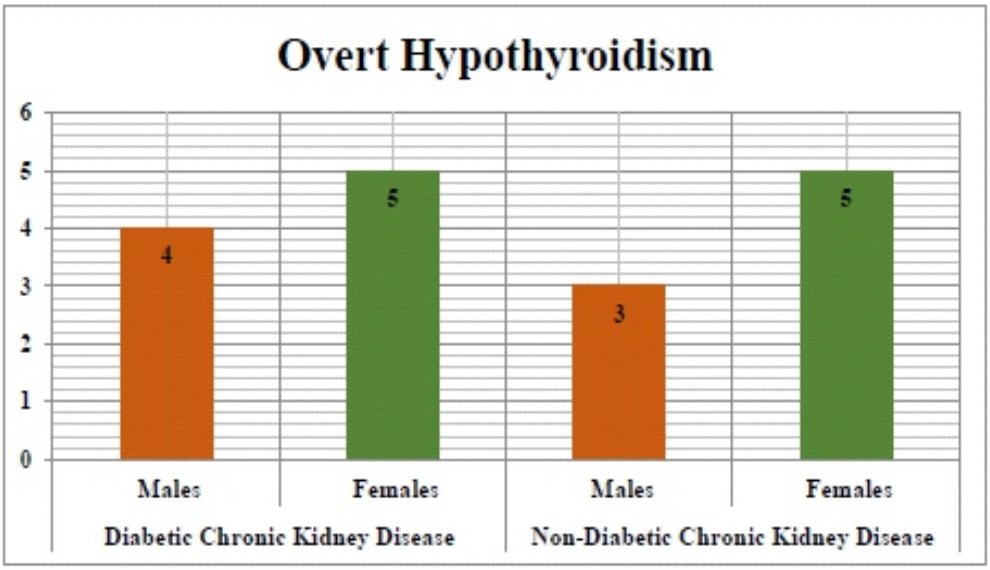

Figure 5: Overt Hypothyroidism

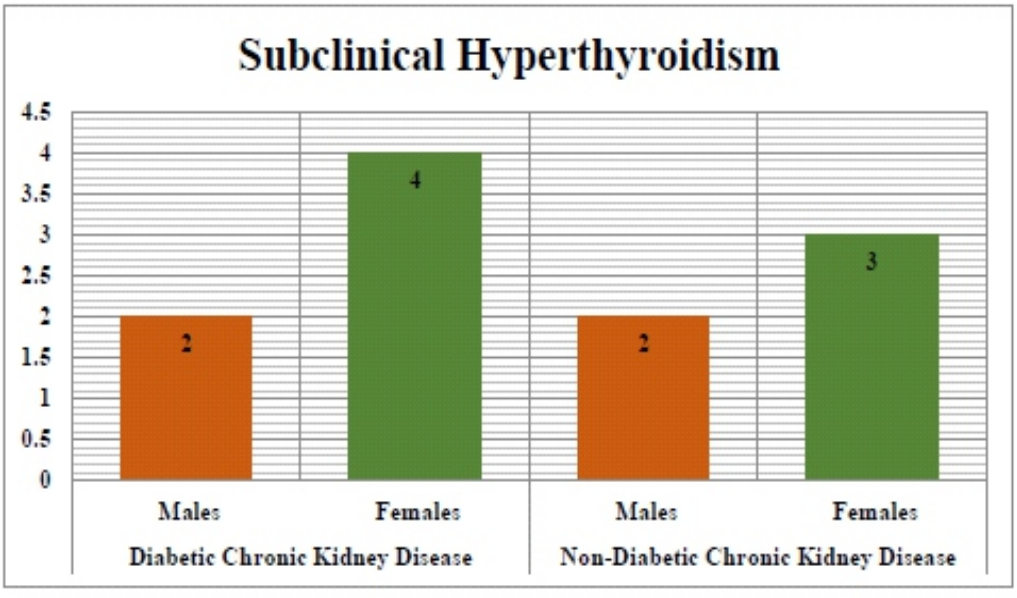

Figure 6: Subclinical Hyperthyroidism

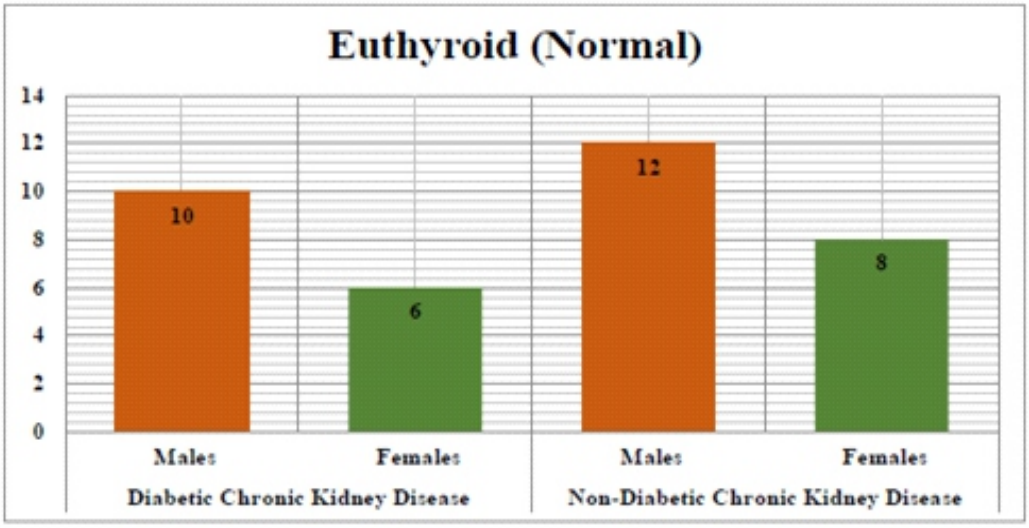

Figure 7: Euthyroid (Normal)

Table 2: Thyroid dysfunction severity with progressive renal failure stages

Renal Failure Stage	Diabetes Status	Male (Thyroid Dysfunction Cases)	Female (Thyroid Dysfunction Cases)
Stage 1	Diabetic	0	0
	Non-Diabetic	0	0
Stage 2	Diabetic	2	3
	Non-Diabetic	2	2
Stage 3	Diabetic	3	4
	Non-Diabetic	2	3
Stage 4	Diabetic	3	4
	Non-Diabetic	3	5
Stage 5	Diabetic	4	6
	Non-Diabetic	3	5

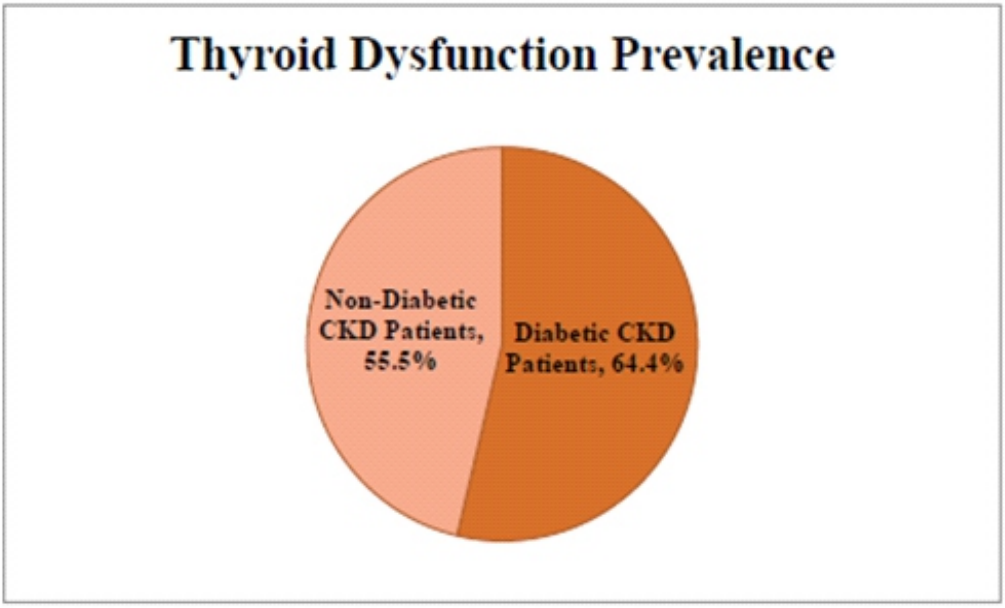

Figure 8: Thyroid dysfunction prevalence

Table 3: Diabetes impact on thyroid profile among kidney disease patients

Parameter	Diabetic	Non-Diabetic
Total Patients	45	45
Subclinical Hypothyroidism	14	12

Table 4: Relationship between renal impairment, diabetes, and thyroid hormone changes

Group	Total Patients	Subclinical Hypothyroidism	Overt Hypothyroidism	Subclinical Hyperthyroidism	Normal Thyroid Function	Thyroid Dysfunction Prevalence	Male Patients	Female Patients
Diabetic CKD Patients	45	14	9	6	16	64.4%	22	23
Non-Diabetic CKD Patients	45	12	8	5	20	55.5%	22	23
Total Patients (All)	90	26	17	11	36	60.0%	44	46

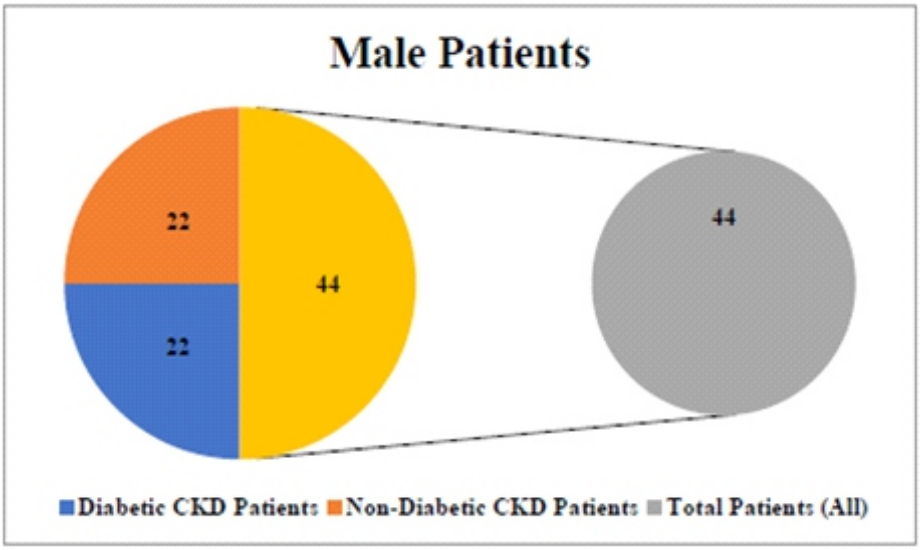

Figure 9: Diabetic and non-diabetic in Male patients

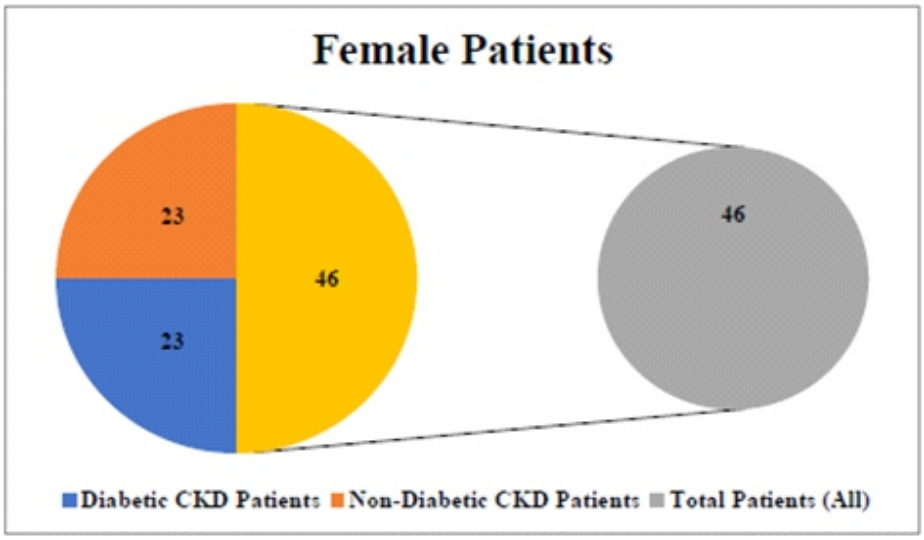

Figure 10: Diabetic and non-diabetic in female patients

Table 5: Thyroid function and kidney parameters

Parameter	Subclinical Hypothyroidism (28.9%) Mean ±S.D	Overt Hypothyroidism (18.9%) Mean ±S.D	Subclinical Hyperthyroidism (12.2%) Mean ±S.D	Euthyroid (Normal) (40.0%) Mean ±S.D	P value (ANOVA)
Serum FT3 (ng/dL)	2.9242±1.48517	1.4761±0.50018	5.2666±0.48886	4.3673±0.56746	0.029
Serum FT4 (µg/dL)	13.045±2.92135	7.3884±1.94198	16.3653±2.06573	13.1759±2.30934	0.032
TSH (µIU/mL)	6.9192±2.46909	16.8129±2.62680	0.2649±0.09149	3.0953±1.71146	0.022
Serum Creatinine (mg/dL)	2.7567±2.41934	4.4603±2.01250	3.4869±1.22439	4.1005±1.88512	0.014
eGFR (mL/min/1.73m²)	31.2107±17.18695	18.9567±20.59273	32.8686±22.74521	18.7351±12.86824	0.044

Table 6: Thyroid functions and kidney parameters across different disease stages

	Stage I	Stage II	Stage III	Stage IV	Stage V	P value (ANOVA)
	Mean ±S.D	Mean ±S.D	Mean ±S.D	Mean ±S.D	Mean ±S.D	
Serum Creatinine	0	3.7138±1.9018	5.7968±2.3533	4.3862±1.6268	4.6338±2.3628	0.039
eGFR	0	62.4911±1.5854	40.1467±7.5092	22.0268±6.1951	11.1905±2.1445	0.000
FT3	0	4.5340±0.6412	3.7170±0.8695	2.4591±0.3966	2.8265±0.4488	0.000
FT4	0	15.2246±2.4454	14.0058±1.9400	13.8600±1.7412	13.2363±2.0135	0.029
TSH	0	5.2454±2.8012	5.4866±2.3895	5.2115±2.2346	6.7399±3.1652	0.042

DISCUSSION

The findings of this study provide a comprehensive understanding of the prevalence, distribution, and clinical implications of thyroid dysfunction among patients with chronic kidney disease (CKD), highlighting the differences between diabetic and non-diabetic populations. Thyroid abnormalities-including subclinical hypothyroidism, overt hypothyroidism, and subclinical hyperthyroidism were found to be more common in female patients across both diabetic and non-diabetic CKD groups, suggesting that gender may play a significant role in vulnerability to endocrine disturbances in renal disease. This gender disparity aligns with prior research, which has consistently reported higher rates of thyroid dysfunction in women, possibly due to hormonal influences and autoimmune susceptibility [6,7].

Diabetic CKD patients exhibited a notably higher prevalence of thyroid dysfunction compared to their non-diabetic counterparts. Subclinical hypothyroidism emerged as the most frequently observed disorder, followed by overt hypothyroidism and subclinical hyperthyroidism, while euthyroid status was more common among males and non-diabetic CKD patients. This pattern indicates that diabetes contributes significantly to alter-ations in thyroid function, likely through mechanisms such as chronic hyperglycemia, insulin resistance, and dysregulation of the hypothalamic pituitary-thyroid axis [10-12]. Elevated serum TSH and altered T3 levels, particularly in diabetic CKD patients with poor glycemic control or prolonged disease duration, underscore the metabolic interplay between diabetes and thyroid regulation, which may exacerbate renal and systemic complications [6,7].

The study further demonstrated a clear relationship between CKD severity and the prevalence of thyroid dysfunction. As the disease progressed through stages 2 to 5, the incidence of thyroid abnormalities increased, with stage 5 patients exhibiting the highest rates. This trend highlights the impact of declining renal function on endocrine homeostasis, as impaired kidneys are less effective at metabolizing and clearing thyroid hormones, which may lead to the accumulation of abnormal hormone levels and subsequent thyroid dysregulation. These findings corroborate previous studies indicating that advanced CKD is associated with a higher risk of thyroid disorders, particularly subclinical hypothyroidism, and is frequently accompanied by lipid abnormalities and elevated cardiovascular risk [13,14].

The interplay between diabetes and CKD appears to further amplify the risk of thyroid dysfunction. Diabetic CKD patients not only demonstrated higher rates of subclinical and overt hypothyroidism but also exhibited hormonal patterns associated with adverse renal outcomes, such as higher FT4 and lower FT3 levels. The presence of low-FT3 syndrome and hypothyroidism in these patients has been linked to increased risk of mortality and progression to end-stage renal disease, emphasizing the clinical significance of monitoring thyroid

function in this vulnerable group [15-17].

When compared with existing literature, the current findings reinforce several established patterns: thyroid dysfunction is more prevalent among females, older patients, diabetics, and those with advanced CKD, with subclinical hypothyroidism being the most common abnormality. The data collectively underscore the necessity for routine thyroid function assessment in CKD patients, particularly those with diabetes, as timely identification and management of thyroid disorders can prevent progression of renal disease, reduce cardiovascular risk, and improve overall clinical outcomes. Early intervention and targeted therapeutic strategies may include optimizing glycemic control, regular thyroid hormone monitoring, and appropriate hormone replacement therapy when indicated. Integrating thyroid assessment into the standard care of CKD patients can therefore enhance quality of life, mitigate complications, and support better long-term management of both renal and endocrine health [6-17].

CONCLUSION

This study demonstrates a high prevalence of thyroid dysfunction in CKD patients, particularly among those with diabetes, with females more affected than males and higher rates observed in advanced CKD stages. These findings emphasize the importance of routine thyroid screening and early management in CKD and diabetic patients to improve clinical outcomes, slow disease progression, and reduce complications. Incorporating thyroid function tests into standard care and considering targeted interventions, including hormone therapy and lifestyle modifications, can enhance patient management. Future research should focus on large scale, longitudinal studies to clarify causal relationships and optimize treatment strategies for thyroid dysfunction in CKD.

LIMITATIONS & FUTURE PERSPECTIVES

The study's limitations include a single-centre setting, a relatively small sample size, and a short study duration, which may limit the broader applicability of the results. Future studies should incorporate multicentre designs with larger populations to enhance validity, assess long-term outcomes, and investigate advanced diagnostic and management approaches. Such efforts will improve overall patient care and help minimize complications.

CLINICAL SIGNIFICANCE

The clinical significance of this study lies in its potential to bridge the gap between research findings and practical healthcare applications. It emphasizes the importance of trans-lating scientific observations into meaningful improve-ments in patient care, diagnosis, and treatment outcomes. By highlighting real-world relevance, the study contributes to evidence-based medical practice and supports informed clinical decision-making. Ultimately, the findings aim to enhance patient quality of life, optimize therapeutic strategies, and promote better disease management in clinical settings.

ABBREVIATIONS

CKD: Chronic kidney disease
DM: Diabetes mellitus
TSH: Thyroid-stimulating hormone
FT3: Free triiodothyronine
FT4: Free thyroxine

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AUTHOR CONTRIBUTIONS

All authors significantly contributed to the study conception and design, data acquisition, or data analysis and interpretation. They participated in drafting the manuscript or critically revising it for important intellectual content, consented to its submission to the current journal, provided final approval for the version to be published, and accepted responsibility for all aspects of the work. Additionally, all authors meet the authorship criteria outlined by the International Committee of Medical Journal Editors (ICMJE) guidelines.

ACKNOWLEDGEMENT

The authors sincerely acknowledge the seniors of the Department of General Medicine, Indira Gandhi Employees State Insurance Corporation Hospital, Jhilmil, Delhi, India. We are grateful to our hospital for providing the necessary resources to carry out this work. We also extend our heartfelt thanks to our colleagues and technical staff for their valuable assistance during the study.

CONFLICT OF INTEREST

Authors declared that there is no conflict of interest.

FUNDING

None

ETHICAL APPROVAL & CONSENT TO PARTICIPATE

All necessary consent & approval was obtained by authors.

CONSENT FOR PUBLICATION

All necessary consent for publication was obtained by authors.

DATA AVAILABILITY

All data generated and analyzed are included within this research article. The datasets utilized and/or analyzed in this study can be obtained from the corresponding author upon a reasonable request.

USE OF ARTIFICIAL INTELLIGENCE (AI) & LARGE LANGUAGE MODEL (LLM)

The authors confirm that no AI & LLM tools were used in thewriting or editing of the manuscript, and no images were altered or manipulated using AI & LLM.

AUTHOR'S NOTE

This article serves as an important educational tool for the scientific community, offering insights that may inspire future research directions. However, they should not be relied upon independently when making treatment decisions or developing public health policies.

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REFERENCE

1. Mallamaci F, Tripepi G. Risk factors of chronic kidney disease progression: Between old and new concepts. J Clin Med. 2024;13(3):1–12. doi:10.3390/jcm13030634
2. Chen SJ, Chiang HY, Chen PS, Chang SN, Chen SH, Wu MY. Association of poorly controlled HbA1c with increased risk of progression to end-stage kidney disease and all-cause mortality in patients with diabetes and chronic kidney disease. PLoS One. 2022;17(9):1-18. doi:10.1371/journal.pone.0273434
3. Khatiwada S, KC R, Gautam S, Lamsal M, Baral N. Thyroid dysfunction and dyslipidemia in chronic kidney disease patients. BMC Endocr Disord. 2015;15:1-7. doi:10.1186/s12902-015-0063-0
4. Mogahed MM, Nageb El-Sayed EM, Saleh AM, Marei YM. Relationship between thyroid dysfunction and proteinuria in patients with type 2 diabetes with and without diabetic kidney disease. Ain Shams Med J. 2024;75(2):469–478.
5. Zhang Y, Wang Y, Tao XJ, Li Q, Li FF, Lee KO, et al. Relationship between thyroid function and kidney function in patients with type 2 diabetes. Int J Endocrinol. 2018;2018:1–7. doi:10.1155/2018/5037683
6. Elgazar EH, Esheba NE, Shalaby SA, Mohamed WF. Thyroid dysfunction prevalence and relation to glycemic control in patients with type 2 diabetes mellitus. Diabetes Metab Syndr. 2019;13(4):2513–2517. doi:10.1016/j.dsx.2019.07.020
7. Jali MV, Kambar S, Jali SM, Pawar N, Nalawade P. Prevalence of thyroid dysfunction among type 2 diabetes mellitus patients. Diabetes Metab Syndr. 2017;11(Suppl 1):105–108. doi:10.1016/j.dsx.2016.12.017
8. Webster AC, Nagler EV, Morton RL, Masson P. Chronic kidney disease. Lancet. 2017;389(10075):1238–1252. doi:10.1016/S0140-6736(16)32064-5
9. Singh AK, Farag YM, Mittal BV, Subramanian KK, Reddy SR, Acharya VN, et al. Epidemiology and risk factors of chronic kidney disease in India. BMC Nephrol. 2013;14:1-10. doi:10.1186/1471-2369-14-114
10. Alicic RZ, Rooney MT, Tuttle KR. Diabetic kidney disease: challenges, progress, and possibilities. Clin J Am Soc Nephrol. 2017;12(12):2032–2045. doi:10.2215/CJN.11491116
11. Iglesias P, Díez JJ. Thyroid dysfunction and kidney disease. Eur J Endocrinol. 2009;160(4):503–515. doi:10.1530/EJE-08-0837
12. Lo JC, Chertow GM, Go AS, Hsu CY. Increased prevalence of subclinical and clinical hypothyroidism in persons with chronic kidney disease. Kidney Int. 2005;67(3):1047-1052 doi:10.1111/j.1523-1755.2005.00169.x
13. Gopinath B, Harris DC, Wall JR, Kifley A, Mitchell P. Relationship between thyroid dysfunction and chronic kidney disease in community-dwelling older adults. Maturitas. 2013;75(2):159–164. doi:10.1016/j.maturitas.2013.03.012
14. Khatiwada S, KC R, Gautam S, Lamsal M, Baral N. Thyroid dysfunction and dyslipidemia in chronic kidney disease patients. BMC Endocr Disord. 2015;15(1):1-7. doi:10.1186/s12902-015-0063-0
15. Schultheiss UT, Steinbrenner I, Nauck M, Schneider MP, Kotsis F, Baid-Agrawal S, et al. Thyroid function, renal events and mortality in chronic kidney disease patients: the German Chronic Kidney Disease study. Clin Kidney J. 2020;14(3):959–968. doi:10.1093/ckj/sfaa050
16. Sinjari H, Ibrahim J. Thyroid function disorders in patients with chronic kidney disease. Med J Babylon. 2022;19(1):1-5.
17. Kashif M, Hussain MS, Anis M, Shah PK, et al. Thyroid dysfunction and chronic kidney disease: A study among the northeastern population of India. Cureus. 2023;15(5):1-8. doi:10.7759/cureus.38972
18. Eom YS, Wilson JR, Bernet VJ. Links between thyroid disorders and glucose homeostasis. Diabetes Metab J. 2022;46(2):239–256. doi:10.4093/dmj.2021.0331