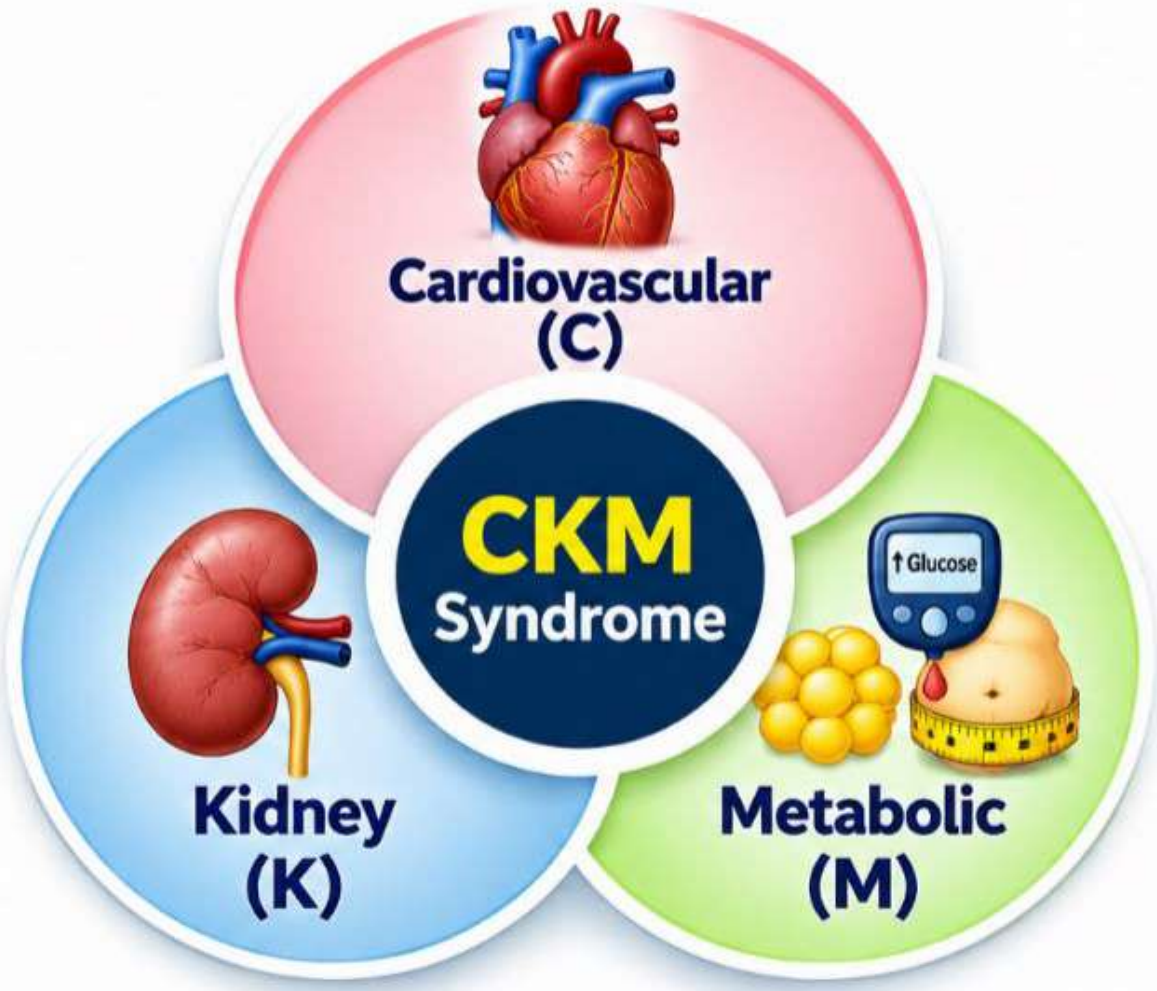
CKM Syndrome

Cardiovascular–Kidney–Metabolic Syndrome



Components

Cardiovascular (C)

- Atherosclerotic CVD (CAD, stroke, PAD)
- Heart failure
- Cardiovascular risk & mortality

Kidney (K)

- Chronic kidney disease (CKD)
- Albuminuria
- Reduced eGFR

Metabolic (M)

- Type 2 diabetes / insulin resistance
- Obesity (↑ visceral adiposity)
- Metabolic dysfunction (dyslipidemia, MASLD)

Interlinked Components

- Shared risk factors
- Common pathophysiology (inflammation, RAAS, oxidative stress)
- Bidirectional organ crosstalk (heart ↔ kidney ↔ metabolism)
- Higher risk of CKD progression, CVD events and mortality

ECNG
Extracorporeal Nephrology Group

An Academic Forum for Nephrologists, DM Trainees, Physicians, and Healthcare Professionals

Recent Renal Biopsy Studies in CKM Patients – 2026

What do biopsies show in Cardiovascular–Kidney–Metabolic (CKM) Syndrome?

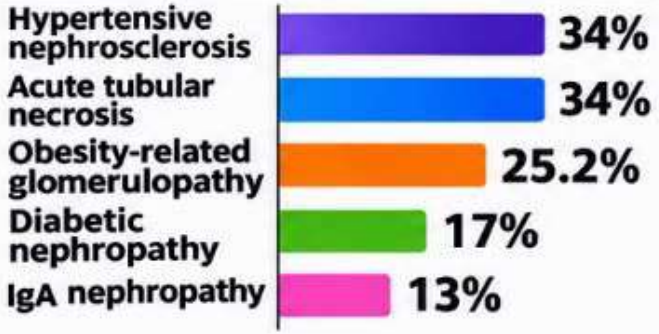
Key Recent Studies (2026)

1. Kidney Biopsy Findings in Obesity

Clinical Kidney Journal
19 March 2026
Martinet et al., Lyon, France

103 obese patients
(BMI 35.1 kg/m²)

Renal Biopsy Findings



✓ **Only 6.8% had isolated obesity-related glomerulopathy. In → one-third, biopsy changed management.**

2. CKM and Renal Biopsy (ASN Kidney Week 2026)

ASN Kidney Week 2026
(Abstract FR-PO0547)
Ito Yu et al., Peking University, China

1,902 renal biopsies
(2011 – 2019)

Key Results

- Advanced CKM (Stages 3–4) became more frequent in later years.
- Membranous nephropathy and diabetic kidney disease increased.
- Later patients had lower eGFR, higher proteinuria, and more metabolic and vascular comorbidities.

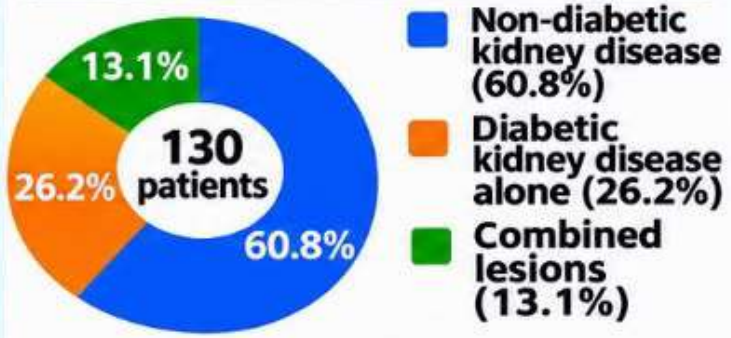
✓ **Advanced CKM burden is increasing among renal biopsy patients.**

3. Renal Biopsy in Diabetes (Indian Study)

Indian Journal of Nephrology
February 2026
Mittal et al., Medanta, Gurugram

130 biopsied patients with diabetes

Histological Diagnosis



✓ **~61% had non-diabetic kidney disease, highlighting the value of biopsy in atypical presentations.**