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Obesity and CKD Risk in Type 2 Diabetes: Independent Association of BMI

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Summary

Diabetes, a global health concern, affects 537 million individuals aged 20–79 years, with projections indicating a sharp rise by 2045. In India, the diabetes prevalence is 11.4%, with over 101 million individuals impacted, as reported by the Indian Council of Medical Research (ICMR-INDIAB). This prevalence is expected to grow due to rising obesity rates, urbanization, and lifestyle changes. Globally, 650 million individuals are obese, and two billion adults are overweight. In India, the obesity prevalence is 40.3%, with the southern region exhibiting the highest rates (46.5%). These trends have significant implications for chronic kidney disease (CKD) progression, particularly among individuals with type 2 diabetes mellitus (T2D), where diabetic kidney disease (DKD) affects 30–40% of patients. DKD, a severe T2D complication, is a major cause of CKD and end-stage renal disease (ESRD). Obesity exacerbates CKD progression, with higher serum urea and creatinine levels, reduced estimated glomerular filtration rate (eGFR), and greater use of antihypertensive drugs among obese patients.

The recently published study **"**Increased Body Mass Index is Independently Associated with Chronic Kidney Disease among People with Type 2 Diabetes" authored by Dr Vijay Viswanathan, Dr Sivashankari Selva Elavarasan and Dr Satyavani Kumpatla reveals significant correlations between obesity, hypertension, dyslipidemia, and CKD risk, highlighting the detrimental impact of obesity on kidney health. Multivariate analyses identified factors such as advanced age, obesity, prolonged diabetes duration, high systolic blood pressure (SBP), and elevated HbA1c as independent predictors of CKD progression. Notably, BMI serves as a key risk factor, with overweight individuals four times and obese individuals five times more likely to advance to higher CKD stages. However, BMI alone may be insufficient for accurate assessment, necessitating complementary metrics like waist circumference or bioimpedance analysis for more precise evaluations of body composition and obesity's role in DKD.

The study underscores the high prevalence of obesity in moderate and high-risk CKD categories, its association with proteinuria, and its impact on increased antihypertensive usage. Comorbidities such as hypertension, dyslipidemia, coronary artery disease, neuropathy, and retinopathy are significantly more common among obese individuals, further complicating CKD management. Additionally, age, smoking, and prolonged diabetes duration exacerbate DKD risk. Despite the advent of effective glucose-lowering drugs like sodium-glucose cotransporter-2 inhibitors (SGLT2i) and glucagon-like peptide-1 receptor agonists (GLP1-RA), their adoption remains limited due to cost constraints. These drugs show promise in reducing obesity, improving glycemic control, and providing cardiorenal protection.

Current findings align with global research, affirming the link between increased BMI and CKD progression. However,

discrepancies exist due to variations in study populations and methodologies. For instance, inverse associations between low BMI and CKD observed in Chinese and Thai populations highlight the complexity of BMI as a predictive marker. Improved methods, such as DEXA scans or bioimpedance, may address BMI's limitations, particularly in advanced CKD stages where fluid retention skews results. The study emphasizes the need for further research to refine obesity metrics and explore novel therapeutic approaches for DKD management.

This comprehensive analysis reinforces the pivotal role of obesity as an independent risk factor for CKD and DKD, urging greater emphasis on early intervention, lifestyle modifications, and increased accessibility to advanced therapeutic options. The study also highlights the critical need to address obesity and its metabolic consequences to curb the escalating burden of CKD, particularly in regions like India, where diabetes and obesity prevalence are surging.

Reference

1. Viswanathan V, SelvaElavarasan S, Kumpatla S. Increased Body Mass Index is Independently Associated with Chronic Kidney Disease among People with Type 2 Diabetes. Indian J Nephrol. doi: 10.25259/IJN_319_2024