Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0158
Abstract Submission No.：APCN20250027

Nephroprotective Treatment With Dapagliflozin In Patients With Diabetic Kidney Disease

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Abstract

Introduction: Albuminuria in patients with diabetes presents a higher risk for adverse renal and cardiovascular (CV) outcomes. Sodium glucose co-transporter 2 (SGLT2) inhibitors demonstrate improved albuminuria and reduces the risk of end-stage renal disease in patients with chronic kidney disease. The study aim was the impact of the SGLT2 inhibitor dapagliflozin on urine albumin-to-creatinine ratio (UACR) and GFR decline.

Methods: In the single center trial, total 132 participants with CKD and type 2 diabetes (T2D) were randomly assigned to dapagliflozin (n = 78) 10 mg once daily or placebo (n = 54). Kidney inclusion criteria were eGFR 30--60ml/min/1.73 m2 and any UACR. The primary end point was a composite of sustained decline in eGFR >50%, end-stage renal disease, or kidney or cardiovascular death. Percentage treatment difference was estimated by geometric mean ratio for the overall cohort and by eGFR and UACR subgroups. Progression/regression of UACR were assessed. Hazard ratios, 95% confidence intervals (CI), and p-values were estimated by Cox proportional hazards model.

Results: Median baseline eGFR was 42.3ml/min/1.73 m2, with 5% at <30ml/min/1.73 m2. At baseline, median UACR was 103 mg/g, and 1/4 of patients had normoalbuminuria, 2/4 had micro, and 1/4 had macroalbuminuria. Median follow up was 18 months. The UACR difference for dapagliflozin vs placebo was -25.1% (95% CI -27.5, -23.2; p< 0.001). Reductions were similar across eGFRs. In UACR 30-299mg/g and >300mg/g, reductions were significant in dapagliflozin (p< 0.001). Progression risk was lower and regression risk higher in dapagliflozin vs placebo (p<0.001).

Conclusion: Dapagliflozin significantly slowed long-term eGFR decline in patients with CKD with T2D compared with placebo, and significantly reduced UACR and had favorable effects on UACR progression and regression.

Keywords：Diabetic kidney disease, dapagliflozin, chronic kidney disease, SGLT2 inhibitors

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0159
Abstract Submission No.：APCN20250029

Cardiovascular Protection With Dapagliflozin In Patients With Heart Failure

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Abstract

Introduction: In patients with type 2 diabetes, inhibitors of sodium glucose cotransporter 2 (SGLT2) reduce the risk of a first hospitalization for heart failure, possibly through glucose-independent mechanisms. More data are needed regarding the effects of SGLT2 inhibitors in patients with established heart failure and a reduced ejection fraction, regardless of the presence or absence of type 2 diabetes.

Methods: A multicenter prospective cohort study, where 225 patients with heart failure (III and IV by NYHA) and an ejection fraction of 45% or less to receive either dapagliflozin (10 mg once daily) or placebo, in addition to basic therapy. The primary outcome was a composite of worsening heart failure (hospitalization or an urgent visit resulting in intravenous therapy for heart failure) or cardiovascular death.

Results: After 12 months, the primary outcome occurred in 17 of 111 patients (15.31%) in the dapagliflozin group and in 24 of 114 patients (21.05%) in the placebo group {HR 0.74 [95% confidence interval (CI), 0.65-0.85]; $P < 0.001$}. A first worsening heart failure event occurred in 10 patients (9.0%) in the dapagliflozin group and in 16 patients (14.0%) in the placebo group [HR 0.70 (95% CI 0.59-0.85)]. Death from cardiovascular reasons occurred in six patients (5.4%) in the dapagliflozin group and in 11 patients (9.6%) in the placebo group [HR 0.80 (95% CI 0.69-0.95)]; 12 patients (10.8%) and 15 patients (13.1%), respectively, died from other causes [HR 0.83 (95% CI 0.71-0.96)]. Findings in patients with diabetes were not significantly pronounced than in patients without diabetes. The frequency of adverse events related to volume depletion, renal dysfunction and hypo/hyperglycemia did not differ between treatment groups.

Conclusion: Among patients with heart failure and a reduced ejection fraction, the risk of worsening heart failure or death from cardiovascular events was lower among those who received dapagliflozin than among those who received placebo, regardless of the presence or absence of diabetes.

Keywords：type 2 diabetes, SGLT2 inhibitors, heart failure, dapagliflozin

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0160
Abstract Submission No.：APCN20250086

Demonstration of Stabilized Tubular Injury Biomarker Levels in Diabetic Kidney Disease Patients with Azotemia After Titration of Renin–Angiotensin System Inhibitors

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Abstract

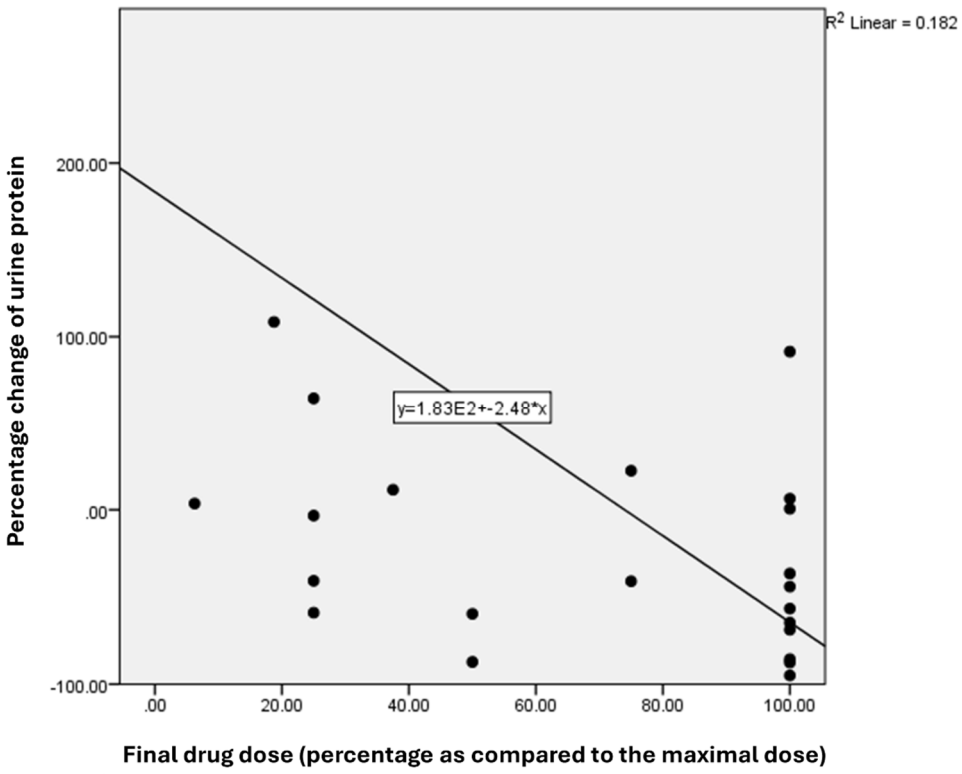
Introduction: To date, angiotensin-converting enzyme inhibitors (ACEi) and angiotensin receptor blockers (ARB) are still essential initial antiproteinuric therapies to delay the progression of diabetic kidney disease (DKD). The decreased glomerular filtration rate (GFR) after drug titration precludes the maximal benefit in many patients despite the demonstration of non-deleterious clinical effects of this phenomenon. Our study explored the evidence of tubular injury from these medications.

Methods: DKD patients with estimated GFR >15 mL/min/1.73m2 and proteinuria in stages A2 and A3 who have not received any antiproteinuric medications were initiated with enalapril or losartan (if adverse effects from enalapril occurred) at the beginning of the study. The dosage was titrated every 4 weeks to reach the maximum, which was 40 mg/day for enalapril and 100 mg/day for losartan if the follow-up creatinine did not exceed a 30% increase from the baseline level. The titration was discontinued upon excess creatinine rising, uncontrolled hyperkalemia, or hypotension. Urine neutrophil gelatinase-associated lipocalin (uNGAL) and urine protein levels were collected at the start and the end of drug titration, and calculated for the percentage change in each patient.

Results: Thirty patients (73% male, age 65±8 years, initial estimated GFR 32±11 mL/min/1.73m2, initial urine albumin to creatinine ratio 1061±1973 mg/g) were included. Sixty-three patients received enalapril, and the remaining received losartan. After the drug titration, 53% and 47% of the patients had creatinine changes of <10% and >10%, respectively. Comparing these 2 categories of creatinine change, there were no statistical differences in the percentage changes of uNGAL (113±351% vs. 20±231%, p-value 0.406) and urine protein (-9±67% vs. 51±309%, p-value 0.514). Upon linear regression analysis, there were no statistically significant correlations between percentage changes of uNGAL and serum creatinine, percentage changes of urine protein and serum creatinine, nor percentage change of uNGAL and percentage of final drug dose as compared to the maximal dose. However, the higher final drug dose correlated significantly with decreased urine protein (standardized coefficients for linear regression -0.375, p-value 0.04) (Figure). There were 8 patients with creatinine rising of >30% (uNGAL change 76±299%), which improved after drug dose reduction.

Conclusion: GFR decline after ACEI or ARB titration for DKD does not correlate with the evidence of renal tubular injury. This, in combination with previous studies on cardiovascular outcomes, emphasizes the possibility of maximizing the ACEI/ARB dose to reduce proteinuria despite the excess increase in serum creatinine according to current practice guidelines.

Keywords：Renin–angiotensin system inhibitors, Diabetic kidney disease, Tubular injury, Neutrophil gelatinase-associated lipocalin



Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0161
Abstract Submission No.：APCN20250123

The ratio of kynurenine/tryptophan and adverse kidney outcomes in type 2 diabetic patients

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Abstract

Background: Diabetic nephropathy (DN) is a major complication of diabetes that significantly impacts kidney function and is the leading cause of chronic kidney disease and end-stage kidney disease (ESKD) worldwide. The clinical impact of tryptophan-kynurenine pathway on kidney progression is not well-known in type 2 diabetes (T2D) patients. The aim of the study is to explore the relationship between the ratio of kynurenine/tryptophan and adverse kidney outcomes in T2D patients.
Methods: Patients with T2D attending the outpatient departments of Kaohsiung Medical University Hospital were invited to participate in this prospective study from October 2016 to December 2023, and they were followed-up till December 2024. The serum levels of kynurenine and tryptophan were measured using Liquid chromatography mass spectrometry. The kidney outcomes defined as either doubling of serum creatinine level or progression to ESKD.
Results: Of a total of 497 T2D patients, the mean age and T2D duration were 60.7 years-old and 9.3 years respectively, and 53.5% were male. The mean eGFR was 81.2 ml/min/1.73 m2, and the median HbA1c and UACR were 7.0 % and 16.6 mg/g respectively. The median serum levels of tryptophan and kynurenine were 55.40 μM and 1.32 μM. Over a mean follow-up period of 5.3 years, 36 patients (7.2 %) reached doubling of serum creatinine levels or progression to ESKD. Kaplan-Meier curves showed a significantly higher cumulative incidence of composite kidney outcomes (ESKD or doubling of serum creatinine levels) among T2D patients across tertile 1 to 3 of serum kynurenine/tryptophan. The patients in highest tertile of serum kynurenine/tryptophan had increased risk for kidney outcomes compared to those in lowest tertile (HR: 2.88, 95% CI: 1.01-8.19, p=0.04).
Conclusion: The study demonstrated the association between serum kynurenine/tryptophan and entering ESKD or doubling of serum creatinine levels in T2D patients, providing the potential of clinical biomarker of kynurenine/tryptophan in kidney outcomes.

Keywords：kynurenine, tryptophan, kidney outcomes, type 2 diabetic patients

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0164
Abstract Submission No.：APCN20250208

Uric Acid-to-Creatinine Ratio as a Metabolic Marker of Cardiorenal Axis Activity in Predicting Coronary Artery Disease Severity

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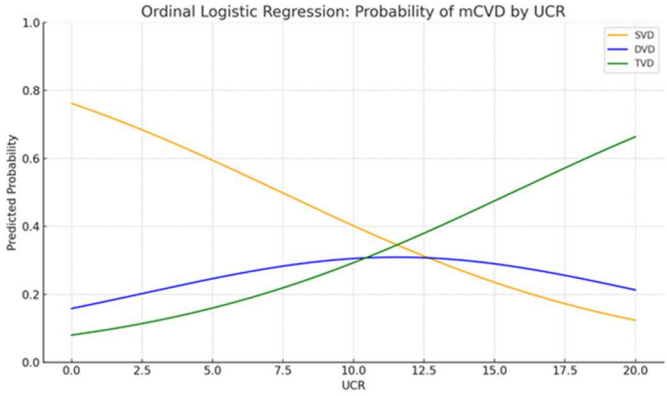
Abstract

Introduction: Acute coronary syndromes (ACS) are a leading cause of global mortality and morbidity, particularly in low and middle-income countries. Serum uric acid (SUA), the final product of purine metabolism, is an independent risk factor for cardiovascular (CV) disease. Since SUA levels are influenced by renal function, the uric acid-to-creatinine ratio (UCR) has emerged as a more specific biomarker of CV risk. This study aims to explore the uric acid-to-creatinine ratio (UCR) as a reliable and simple metabolic marker of the cardiorenal system in predicting the severity of coronary artery disease (CAD).

Methods: A retrospective cohort study was conducted on patients with ACS admitted to Moewardi Hospital, Indonesia, from June 2023 to June 2024. Laboratory evaluations were performed, including the measurement of SUA and creatinine to calculate the uric acid-to-creatinine ratio (UCR). All participants underwent percutaneous coronary intervention (PCI) to evaluate the severity of coronary artery disease (CAD). Based on angiographic findings, patients were categorized into three groups: single-vessel disease (SVD), double-vessel disease (DVD), and triple-vessel disease (TVD). An ordinal regression test was then applied to assess the association between UCR and the severity of CAD.

Results: A total of 612 patients meeting the inclusion criteria were analyzed, with a mean age of 59.12 ± 10.20 years; 78.4% were male and 21.6% were female. The majority were diagnosed with STACS (87.7%, n = 537), while NSTACS accounted for 12.3% (n = 75). The severity of CAD was predominantly SVD (54.9%, n = 336), followed DVD (26.0%, n = 159), and TVD (19.1%, n = 117). The mean levels of serum uric acid, creatinine, and the UCR were 6.95 ± 2.68 mg/dL, 1.29 ± 0.93 mg/dL, and 6.22 ± 2.24, respectively. The ordinal logistic regression analysis demonstrated that UCR is a statistically significant predictor of CAD severity. A one-unit increase in UCR was associated with an 18.8% higher odds of being in a more severe CAD category (Odds Ratio [OR] = 1.188; 95% Confidence Interval [CI]: 1.106 – 1.274; $p < 0.001$).

Conclusions: These findings suggest that elevated UCR levels are significantly associated with greater severity of CAD among patients with acute coronary syndrome, supporting its potential use as a simple, accessible biomarker in clinical risk stratification.



Keywords：Urine to Creatinine Ratio, Coronary Artery Disease, Severity

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0165
Abstract Submission No.：APCN20250226

Echocardiographic Evidence of Left Ventricular Hypertrophy Regression with Sodium-Glucose Cotransporter 2 Inhibitors in Advanced Chronic Kidney Disease

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Abstract

Background: Sodium-glucose cotransporter 2 (SGLT2) inhibitors are well recognized for their cardioprotective and renoprotective properties. Previous studies have shown that SGLT2 inhibitors can reduce cardiac workload, limit myocardial fibrosis, and attenuate cardiomyocyte hypertrophy. However, their impact on cardiac function and structural remodeling in patients with advanced chronic kidney disease (CKD) remains unclear. This study investigates the effects of SGLT2 inhibitors on cardiac structure and function in this high-risk population.

Methods: This single-center retrospective cohort study included patients with a baseline estimated glomerular filtration rate (eGFR) <45 mL/min/1.73 m² over a three-year period. All patients were treated with either dapagliflozin or empagliflozin for a minimum of 8 weeks. Changes in transthoracic echocardiographic parameters before and after initiation of SGLT2 inhibitors were assessed. Echocardiographic measurements were selected based on the recommendation of American Society of Echocardiography and the European Association of Cardiovascular Imaging. Significant parameter changes were identified, and baseline characteristics along with potential confounding variables were adjusted using logistic regression analysis.

Results: A total of 91 patients met the inclusion criteria; 13 patients had complete echocardiographic data available for analysis. Among these 13 patients, 9 were male (69.2%), with a mean age of 65.5 years and a mean eGFR of 38.05 mL/min/1.73 m². Interventricular septal (IVS) thickness decreased significantly after treatment ($p = 0.042$), with 8 patients (61.5%) demonstrating a reduction in IVS thickness, while the remaining 5 patients (38.5%) showed no change or an increase. Logistic regression analysis indicated that gender (odds ratio [OR] = 0.50, $p = 0.683$, 95% CI: 0.17–14.21), age (OR = 0.96, $p = 0.581$, 95% CI: 0.84–1.10), concomitant use of renin–angiotensin–aldosterone system (RAAS) blockers (OR = 0.36, $p = 0.525$, 95% CI: 0.02–8.64), mineralocorticoid receptor antagonists (OR = 0.6.41, $p = 0.399$, 95% CI: 0.09–480.91), and beta-blockers (OR = 0.56, $p = 0.688$, 95% CI: 0.03–9.64) was not associated with a change in IVS thickness.

Conclusions: Following treatment with SGLT2 inhibitors, patients with advanced CKD showed a significant reduction in left ventricular hypertrophy on echocardiography, while other cardiac functional parameters remained unchanged.

Keywords：sodium-glucose cotransporter 2 inhibitors, interventricular septum thickness, chronic kidney disease.

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0166
Abstract Submission No.：APCN20250229

Five-Year Trend Analysis of Diabetes Care Quality in Taiwan Medical Centers

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Abstract
Introduction
As the prevalence of diabetes continues to rise, the quality of care for diabetic patients in medical institutions has become a focal point of public health concern. This study is based on five years (five periods) of diabetes care quality indicator data from medical centers across Taiwan, analyzing the overall performance, improvement extent, and relative weaknesses of each institution, aiming to provide references for policy-making and clinical improvement.
Methods
This study used the national medical center diabetes care quality indicators from 2020 to 2024: glycosylated hemoglobin (HbA1c), fasting blood lipids, urine protein and fundus examination, and divided them into three levels of red, yellow and green lights according to the national ranking, with 1 to 3 points respectively, and the total score is 12 points. The analysis results show that the best overall performance is "Asia Eastern Memorial Hospital", with a five-year average quality score of 11.25 points, indicating that it has maintained a high level of execution in all inspection indicators. Next were the Private Chung Shan Medical University Hospital and the Taichung Veterans General Hospital, with average scores of 10.75 and 10.5 respectively.
Results
In terms of improvement extent, " Hualien Tzu Chi Hospital" showed the most significant progress, with a quality score improvement of 3 points over five years. Conversely, "National Cheng Kung University Hospital" had the worst average performance over five years, with only 5.0 points, indicating significant room for improvement.
Conclusion
The results of this study highlight the differences in diabetes care quality among different medical centers and reflect that some institutions can achieve significant results through continuous improvement. It is recommended to further explore the successful strategies of high-performing and improving hospitals and promote them to other institutions to enhance the overall quality of diabetes care nationwide.

Keywords：diabetes care quality indicators 、medical center

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0167
Abstract Submission No.：APCN20250233

Adipocyte Fatty Acid-Binding Protein as a Predictor of Metabolic Syndrome in Hemodialysis Patients

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Abstract

Introduction:

Metabolic syndrome (MetS) is highly prevalent among patients receiving hemodialysis and is associated with increased risks of cardiovascular morbidity and mortality. Identifying biomarkers that can improve risk stratification is essential. Adipocyte fatty acid–binding protein (AFABP), an adipokine involved in lipid metabolism and inflammation, has emerged as a potential candidate. This study investigates whether serum AFABP levels alone, or in combination with clinical and inflammatory markers, can serve as a biomarker for MetS in patients undergoing hemodialysis.

Methods:

We conducted a cross-sectional study involving 291 adult patients receiving hemodialysis at a single center. MetS was defined according to the National Cholesterol Education Program Adult Treatment Panel III (NCEP ATP III) criteria, incorporating Asian-specific waist circumference thresholds. Logistic regression was used to assess associations between AFABP and MetS. Discrimination was evaluated using receiver operating characteristic (ROC) curve analysis, and multicollinearity was assessed using variance inflation factors (VIFs).

Results:

Among the 291 enrolled patients, the prevalence of MetS was 83.8%. Patients with elevated AFABP levels (>376.5 ng/mL) were more likely to be female and to have higher body fat indices and MetS prevalence. In multivariate analysis, a AFABP level >376.5 ng/mL was independently associated with MetS (odds ratio [OR], 2.709; 95% confidence interval [CI], 1.732–4.237; P<0.0001), along with male sex (OR, 2.124; 95% CI, 1.324–3.407; P=0.0018) and hip circumference (OR, 1.045; 95% CI, 1.012–1.079; P=0.0071). The AUC for the predictive model was 0.8308, indicating good discriminatory performance. Subgroup analyses revealed stronger associations between AFABP and MetS among females and patients with lower lower hip circumference.

Conclusions:

Elevated serum AFABP levels are independently associated with metabolic syndrome in patients undergoing maintenance hemodialysis. This association is particularly evident among females and individuals with lower hip circumference, suggesting that AFABP could serve as a biomarker for identifying high-risk subgroups within this population.

Keywords：Adipocyte fatty acid–binding protein, Metabolic Syndrome, Hemodialysis

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0168
Abstract Submission No.：APCN20250267

Association Between Depression Symptoms and Cardiovascular-Kidney-Metabolic Syndrome Staging

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Abstract
Background: Cardiovascular-kidney-metabolic (CKM) syndrome is a complex condition that encompasses cardiovascular disease, kidney disease, and metabolic disorders, posing a significant global health risk. Depression, a common mental health issue, has been increasingly linked to various systemic diseases, including cardiovascular, renal, and metabolic disorders. However, the correlation between depression and CKM remains unclear.
Methods: By utilizing the National Health and Nutrition Examination Survey (NHANES) 2005-2018, we included 13,694 participants for analysis. Relationships between depressive symptoms and CKM were analyzed using item scores and total scores of the Patient Health Questionnaire-9 (PHQ-9). To examine associations between depressive symptoms and CKM, a multinomial regression analysis was performed using the PHQ-9 total score and item scores.
Results: A total of 13,694 participants were included in this study. Among all patients, 8841 were diagnosed with CKM and 1128 had significant depressive symptoms. Logistic regression and RCS results showed that the relationship between depression severity and CKM was positively correlated ($P < 0.01$). WQS regression showed that among the nine depressive symptoms, suicidal thoughts contributed the most to the association between depression and CKM. The results of mediation effect analysis showed that triglyceride-glucose index was the most important factor between depression and CKM.
Conclusion: There is a significant correlation between the severity of depression and the progression of CKM. Further studies have shown that TYG may be an important mediating factor.

Keywords：Depression, triglyceride-glucose, CKM, Logistic regression, RCS

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0169
Abstract Submission No.：APCN20250268

From Fatty Liver to Cardiovascular-Kidney-Metabolic Syndrome: Fatty Liver Index (FLI), a Possibly Underestimated Metabolic Indicator

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Abstract
Background: Emerging evidence suggests that hepatic steatosis may serve as an early marker of multisystem metabolic dysregulation. However, the diagnostic utility of the fatty liver index (FLI), a simple clinical proxy for liver fat accumulation, within the cardiovascular-kidney-metabolic (CKM) continuum remains inadequately explored. We hypothesize that FLI could extend beyond its traditional focus on hepatic pathology to serve as a predictive biomarker for integrated CKM risk stratification.
Methods: Multivariable logistic regression with restricted cubic splines (3 knots) was employed to assess the associations between FLI and CKM, adjusting for demographic and socioeconomic confounders through stepwise selection. Six machine learning models were trained using FLI and six clinical covariates, with model performance evaluated by means of stratified 10-fold cross-validation. An open-access web calculator was deployed to facilitate real-world clinical application.
Results: FLI was significantly higher in patients with CKM syndrome compared to those without CKM syndrome (66.36 vs. 27.66, $p<0.05$), and the risk of CKM syndrome increased by 45% for every 10-unit increase in FLI (OR=1.045, 95% CI: 1.042–1.048). Among the machine learning models, CatBoost exhibited the best performance (AUC=0.853). The online calculator (https://fast.statsape.com/tool/detail?id=7) demonstrated an AUC ranging from 0.828 to 0.936 across different stages of CKM.
Conclusion: This study demonstrates a significant positive association between the fatty liver index (FLI) and the staging of cardiovascular-kidney-metabolic (CKM) syndrome. Machine learning models using FLI effectively identify high-risk CKM populations, providing valuable tools for early risk stratification and management.

Keywords：cardiovascular-kidney-metabolic syndrome, metabolic dysfunction-associated fatty liver disease, fatty liver index, NHANES, machine learning.

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0170
Abstract Submission No.：APCN20250310

Clinical and Nursing Impacts of Gastric Bypass Surgery Versus Medical Therapy on Renal Outcomes in Obese Patients with Type 2 Diabetes

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Abstract

Introduction:

Obesity and type 2 diabetes mellitus (T2DM) accelerate chronic kidney disease (CKD) progression. Roux-en-Y gastric bypass (RYGB) is gaining attention for its renal-protective effects in early-stage diabetic kidney disease (DKD). This study compares RYGB with best medical therapy (BMT) and provides clinical nursing strategies for long-term management.

Methods:

This review synthesized findings from three randomized controlled trials (RCTs) comparing RYGB with medical treatment in obese adults with T2DM and early CKD (G1–G3, A2–A3). Clinical outcomes included remission of albuminuria, changes in urine albumin-to-creatinine Ratio (UACR) and creatinine clearance (CrCl), and improvements in glycemic control. Clinical nursing implications were derived from supporting literature and adherence meta-analyses involving over 11,000 hemodialysis patients (Vijay & Kang, 2022).

Results:

Cohen et al. (2020) reported CKD remission in 81.9% of RYGB patients compared to 48.2% for BMT ($p=0.002$). Chen et al. (2024) found significant improvements in CrCl and reductions in microalbuminuria post-surgery ($p<0.05$). Martin et al. (2022) demonstrated favorable metabolomic changes and increased urinary excretion of protective metabolites (e.g., GABA, arginine). Clinically, nurses observed reduced use of antihyperglycemics and improved patient-reported outcomes. However, dietary nonadherence remains high (up to 60%), consistent with Vijay & Kang's (2022) findings across CKD populations, underscoring the need for targeted nursing strategies to support long-term adherence and disease management post-RYGB.

Clinical Nursing Applications:

Clinical nurses play a vital role in preoperative risk assessment, including evaluations of health literacy, psychological readiness, and shared decision-making. Postoperative care requires structured monitoring of renal function (eGFR, UACR), glucose control, and nutritional status at 1, 3, 6, and 12 months. Close collaboration with dietitians helps optimize protein, electrolyte, and micronutrient intake. Education on self-monitoring of blood glucose and medication adjustment is essential, while integrated psychosocial support is key to sustaining long-term behavioral adherence.

Conclusion:

Obesity and type 2 diabetes mellitus markedly increase the risk of chronic kidney disease progression. Roux-en-Y gastric bypass has emerged as a promising renal-protective intervention for patients with early-stage diabetic kidney disease. This study compared its renal benefits with best medical therapy and emphasized practical, evidence-based nursing strategies for long-term care. Effective nursing care requires comprehensive preoperative evaluation, vigilant postoperative monitoring, and sustained education on diet and psychosocial adaptation. Beyond surgical support, personalized nursing interventions targeting adherence, nutrition, and behavioral change are essential

to maintain renal and metabolic gains. These nurse-led strategies may delay CKD progression and enhance long-term outcomes in this complex population.

Keywords：Diabetic Kidney Disease; Roux-en-Y Gastric Bypass; Chronic Kidney Disease; Obesity and T2DM; Dietary Adherence; Bariatric Surgery

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0171
Abstract Submission No.：APCN20250339

Unraveling Mortality Risk Factors in Patients with ST-Segment Elevation Myocardial Infarction Complicated by Cardiorenal Syndrome : A Retrospective Cohort Study

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Abstract

Introduction: Cardiorenal syndrome (CRS) is a frequent and serious complication in patients with ST-segment elevation myocardial infarction (STEMI), especially in the presence of heart failure. The coexistence of acute cardiac and renal dysfunction significantly worsens clinical outcomes. Despite its clinical importance, the prognostic impact of CRS and its related risk factors in STEMI patients remains incompletely understood. This study aimed to evaluate the prognostic value of clinical indicators in predicting in-hospital mortality among STEMI patients complicated by CRS.

Methods: An observational study was conducted involving 89 patients consecutively admitted with a diagnosis of STEMI between January 2023 – April 2025. CRS was diagnosed based on Acute Kidney Injury Network criteria: an increase in serum creatinine ≥0.3 mg/dL or ≥150% from baseline within 48 hours of admission and KILLIP class > I. Clinical, laboratory, and echocardiographic data were collected. In-hospital mortality was analyzed using bivariate and multivariate logistic regression models.

Results: A total of 41 patients diagnosed with STEMI complicated by cardiorenal syndrome were included in the study. The mean age was 64.9 ± 10.9 years, with the majority being male (73.2%). The most common infarction site was anterior STEMI (34.1%), followed by inferior STEMI (24.4%) and extensive anterior STEMI (17.1%). Anterior infarctions accounted for the highest number of deaths. The mean serum creatinine level was 2.62 mg/dL, and the mean ejection fraction (EF) was 40.3%, indicating reduced systolic function in most patients. The average troponin I level was 23,086 ng/L. Among the study population, 19 patients (46.3%) were classified as Killip class IV. Bivariate analysis demonstrated a statistically significant association between Killip class and in-hospital mortality ($\chi^2 = 11.208$, $p = 0.004$), while variables such as creatinine, troponin I, ejection fraction, and diabetes mellitus were not significantly associated with mortality. Logistic regression further confirmed that patients with Killip class IV had a significantly increased risk of in-hospital death with an adjusted odds ratio (OR) of 9.375 (95% CI: 2.191–40.109, $p = 0.003$).

Conclusion: This study demonstrated that Killip class IV is an independent predictor of in-hospital mortality in STEMI patients complicated by CRS. These findings emphasize the need for early risk stratification and aggressive management in this high-risk population. Further research with larger sample sizes is warranted to validate these results.

Keywords：Cardiorenal syndrome, ST-segment elevation myocardial infarction, In-hospital mortality, Risk stratification

Variable	Adjusted OR	95% CI	p-value
Killip Class IV vs II	9.375	2.191 - 40.109	0.003

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0172
Abstract Submission No.：APCN20250396

The efficacy and Safety of Finerenone in Patients with Diabetic Kidney Disease: A Retrospective Study

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Abstract

This retrospective study examined the effectiveness and safety of finerenone in patients with diabetic kidney disease (DKD) at Changhua Christian Hospital from November 2023 to April 2025. A total of 283 patients (average age 69.7 ± 12.1 years; 110 females and 173 males) were included, excluding those who had been prescribed the medication for less than 30 days. The main goal was to evaluate the reduction in urine albumin-to-creatinine ratio (UACR), while safety assessments focused on changes in estimated glomerular filtration rate (eGFR) and serum potassium levels. The average daily dose of finerenone prescribed was 7 ± 4.2 mg.

Results showed that UACR decreased from 1123.89 ± 1524.15 mg/g to 951.33 ± 2128.24 mg/g after 6 months. The eGFR decreased slightly by 2.84 ± 16.81 mL/min/1.73 m² ($p = 0.405$), indicating no significant decline. Serum potassium levels increased modestly by 0.14 ± 0.57 mEq/L ($p = 0.003$). Subgroup analysis revealed that patients who used finerenone for more than one year experienced greater reductions in UACR.

Five adverse events related to hyperkalemia (over 5.5 mEq/L) were reported, and treatment was temporarily withheld in those cases. Overall, these findings suggest that finerenone may effectively reduce proteinuria with a generally favorable safety profile. However, close monitoring of serum potassium levels is important to prevent hyperkalemia.

Keywords：DKD, Finernone, hyperkalemia

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0173
Abstract Submission No.：APCN20251154

Older Adults Carry the Weight: Age-Specific Contribution to HFPG-Attributable Diabetic CKD Burden in Indonesia

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Abstract

The burden of chronic kidney disease (CKD) due to type 2 diabetes continues to rise in Indonesia, primarily driven by high fasting plasma glucose (HFPG). However, age-specific contributions to this burden are often underexamined, despite their importance in designing targeted interventions. To quantify the share of HFPG-attributed CKD burden borne by older adults (aged 55+) within the broader adult population (aged 25+) in Indonesia from 2017 to 2021, and assess future trends through 2050.

DALYs for the 25+ and 55+ age groups were extracted from the Global Burden of Disease (GBD) dataset (2017–2021). The proportion of total DALYs contributed by the 55+ group was calculated annually. Projections to 2030 and 2050 were conducted using R, applying compound annual growth rate (CAGR)-based models.

In 2021, individuals aged 55+ contributed 82.6% of all HFPG-attributed CKD DALYs in the adult population. This proportion increased steadily from 82.3% in 2017, with projected contributions of 83.3% in 2030 and 84.6% in 2050. The rising share indicates that not only is the absolute burden growing, but the burden is becoming increasingly concentrated in older adults.

Older adults disproportionately bear the burden of CKD due to high fasting glucose in Indonesia. The increasing age share over time underscores the need for age-specific interventions, including early diabetes screening, glycemic control, and renal monitoring programs targeted toward the elderly population.

Keywords：Chronic kidney disease (CKD), Type 2 diabetes, High fasting plasma glucose (HFPG), Age-specific burden

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0175
Abstract Submission No.：APCN20250427

Spotting Silent Kidney Disease: A Low-Cost Screening Initiative in LMICs

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Abstract
Objectives: Chronic kidney disease (CKD) is an emerging health concern in India, with limited early detection programs in rural and semi-urban areas. Punjab, like many states in India, faces challenges in identifying high-risk individuals due to resource constraints and lack of routine screening at the primary healthcare level. Given the strong association between CKD, hypertension, and diabetes, this pilot study aimed to evaluate the feasibility of a low-cost, targeted screening approach for early kidney disease detection in a primary healthcare setting in Punjab.

Methods: Between 2022 and 2023, a pilot screening program was conducted in two community health centers (CHCs) in Punjab, India where eight trained non-physician healthcare providers (HCPs) assessed 1,250 individuals attending routine hypertension and diabetes clinics. Screening included self-reported medical history, blood pressure measurement, urine dipstick testing for proteinuria, and point-of-care serum creatinine analysis. Individuals with abnormal findings were counseled on risk factors and referred to district hospitals for further nephrology evaluation.

Results: Among the screened participants, 4.6% (n=57) had suspected kidney disease, with 85% being previously undiagnosed. Men were at higher risk (OR: 1.61, 95% CI: 1.19–2.04), and CKD was significantly associated with hypertension (OR: 2.33, 95% CI: 1.74–3.05) and high fasting glucose levels (OR: 2.56, 95% CI: 1.92–3.32). Proteinuria was detected in 3.4% (n=43), while 1.2% (n=15) had elevated serum creatinine levels. A total of 14 individuals required referral for specialist evaluation.

Conclusions: This pilot study demonstrated that a simplified, high-risk screening strategy for kidney disease is feasible within Punjab's existing primary healthcare infrastructure. Task-sharing with trained non-physician healthcare workersenabled cost-effective early detection without straining resources. The findings suggest that scaling up similar programs across LMICs could improve CKD diagnosis and management, particularly among individuals with hypertension and diabetes. Further studies are needed to refine screening protocols and optimize referral pathways for early intervention.

Keywords：kidney disease screening, task sharing, early detection

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0176
Abstract Submission No.：APCN20250433

Finerenone: Real-World Utilization And Outcomes In Chronic Kidney Disease And Type 2 Diabetes Within The Context Of Guideline-Directed Medical Therapy In Malaysia

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Abstract

INTRODUCTION

Finerenone, a novel non-steroidal mineralocorticoid receptor antagonist (ns-MRA) has shown significant renoprotective effects in patients with chronic kidney disease (CKD) and type 2 diabetes (T2D). Together with sodium glucose cotransporter 2 inhibitors (SGLT2i), glucagon-like peptide-1 receptor agonists (GLP1-RA) and Renin-Angiotensin System inhibitors (RASi), Finerenone is now a promising addition to guideline-directed medical therapy (GDMT) in Diabetic Kidney Disease (DKD). We aimed to assess the real-world utilization and outcomes of finerenone in patients with CKD and T2D in Malaysia.

METHODOLOGY

This prospective, real-world multicentre study enrolled patients with CKD and T2D who were prescribed with Finerenone. The patients were followed up for six months (and ongoing) during which data on demographic information, estimated glomerular filtration rate (eGFR), urine albumin-to-creatinine ratio (uACR), and potassium levels were collected at baseline, 4 weeks and 6 months. Statistical analyses were performed to assess the changes in eGFR and uACR between baseline and six months. The incidence of hyperkalemia was documented.

RESULTS

A total of 68 patients were included in this analysis. The mean age of the patients was 60.8 ± 12.8 years. The majority were Chinese (58.8%) and male (67.6%). A high percentage of patients were on GDMT: RASi (93.5%, with 82.3% at optimal dose), SGLT2i (93.7%), and GLP1-RA (26.2%). Median eGFR at baseline was 43.00 mL/min/1.73 m² (interquartile range [IQR] 33.00 – 55.25), and median uACR at baseline was 160.70 mg/mmol (IQR 85.53 – 332.25). After six months of finerenone, the median uACR significantly decreased by 22.7% to 124.30 mg/mmol (IQR 58.95 – 295.75) (p = 0.001). Additionally, 8.6% of the patient group experienced an improvement in

albuminuria stage, moving from A3 to A2. Mean potassium levels increased by 3.8% over six months from 4.48 ± 0.50 mmol/L to 4.65 ± 0.58 mmol/L. Six patients (9.1%) developed hyperkalemia (>5.5 mmol/L) at 16 weeks, necessitating temporary withdrawal of finerenone.
CONCLUSIONS
In this real-world cohort of patients with CKD and T2D in Malaysia, finerenone treatment was associated with a significant reduction in uACR, supporting its role within the broader GDMT framework. While there was a slight increase in potassium levels and some cases of hyperkalemia requiring temporary discontinuation, the majority of patients tolerated finerenone well. Larger studies with a longer follow-up period are warranted to confirm these findings and further evaluate the long-term safety and efficacy of finerenone in this population.

Keywords：Finerenone, Diabetic kidney disease, guideline-directed medical therapy

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0177
Abstract Submission No.：APCN20250438

Renal Conservation Therapy in End Stage Renal Disease Patient who Refused Kidney Replacement Therapy

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Abstract
Case Report
Renal replacement therapy is the standard for end-stage renal disease (ESRD), but some patients decline it. This case illustrates such condition.
A 62-year-old male with ESRD due to diabetic-hypertensive-hyperuricemia was admitted with dyspnea on exertion, generalized weakness and leg swelling. For six months, he received premix insulin, candesartan, bisoprolol, clopidogrel, allopurinol, rosuvastatin, and a ketoanalogue supplement. Upon admission, he was compos mentis with a BMI of 16.8 kg/m2, BP 190/110 mmHg, respiratory rate 24 breaths/minute, and heart rate 102 beats/minute, fine rales on bilateral basal lungs, cardiomegaly, and grade 2 bilateral pedal edema.
Lab work showed urea 102 mg/dL, creatinine 5.6 mg/dL, cystatin C 3.6 mg/L (eGFR 12 mL/min/1.73m2), potassium 5.6 mmol/L, uric acid 10.2 mg/dL, blood glucose 225 mg/dL, NT-proBNP 784 pg/mL, and D-dimer 1128 ng/mL. An ECG indicated sinus tachycardia with left ventricular hypertrophy. Imaging showed pulmonary edema with cardiomegaly, and ultrasound confirmed DVT in both lower extremities. He was treated for uremia, cardio-renal-metabolic syndrome, and DVT.
Treatment included peripheral IV branch-chained amino acid infusion (200 ml/day), IV omeprazole (40 mg/day), and IV furosemide (40 mg every 8 hours). Oral medications were adjusted: candesartan to clonidine (0.5 mg twice daily), allopurinol to febuxostat (40 mg/day), and clopidogrel to apixaban (2.5 mg twice daily). Premix insulin dosage was adjusted, while rosuvastatin and bisoprolol were stopped. The patient and his family continued to refuse hemodialysis.
Despite the refusal, his symptoms gradually improved. Three days later, follow-up showed normokalemia, decreased urea (72 mg/dL) and creatinine (4.6 mg/dL), and mild clearing of pulmonary edema. After seven days, his symptoms significantly improved, and he was discharged with clonidine (0.15 mg twice daily), apixaban (2.5 mg twice daily), spironolactone (25 mg/day), vitamin D3 (1000 IU/day), and ezetimibe (10 mg/day). Due to nocturnal hypoglycemia, insulin was switched to dapagliflozin (5mg/day). Apixaban continued for three months until D-dimer normalized. He was continuously advised on a low protein, sodium, purine, and glucose diet.
Aside from occasional pruritus and anemia (managed with nalfurafine and PRBC transfusions as needed), monthly follow-ups showed no episodes of ischemia, acute heart failure or electrolyte imbalance. Twenty-two months later, labs were stable: creatinine 4.1 mg/dL, cystatin C 3.2 mg/L, urea 48 mg/dL, normal electrolytes, HbA1c 7.4%, uric acid 6.1 mg/dL, and NT-proBNP 401 pg/mL. The combination of an SGLT2 inhibitor, mineralocorticoid-receptor antagonist, alpha-2 receptor-agonist, cholesterol-absorption inhibitor, and febuxostat was well tolerated and may benefits in conserving renal function for ESRD patients who decline hemodialysis.

Keywords：ESRD, cardio renal metabolic syndrome, refuse hemodialysis

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0178
Abstract Submission No.：APCN20250450

Performance of Urinary Neutrophil Gelatinase-Associated Lipocalin as a Diagnostic Biomarker for Diabetic Kidney Disease in Type-2 Diabetes: A Systematic Review and Meta-Analysis

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Abstract

Introduction

Diabetic kidney disease (DKD) is traditionally marked by impaired glomerular filtration and albuminuria, but tubular injury also plays a key role in its pathophysiology due to chronic metabolic and hemodynamic stress. Neutrophil gelatinase-associated lipocalin (NGAL) is a biomarker released when the tubules are injured, and its level in urine is less affected by systemic conditions than in blood. This study aimed to evaluate the significance of urinary NGAL as a potential diagnostic biomarker for DKD.

Methods

This systematic review and meta-analysis were conducted by following the PRISMA 2020 guidelines. Observational studies written in English evaluating urinary NGAL levels in patients with type-2 diabetes (T2DM), with or without albuminuria, were retrieved from MEDLINE, ProQuest, and EBSCO databases without restriction of publication time. The statistical analysis was performed using MetaDTA web-based application. Sensitivity, specificity, negative and positive likelihood ratios (NLR and PLR), as well as diagnostic odds ratio (DOR) data were pooled in random effect model. Hierarchical summary receiver operating characteristic (HSROC) curve was also presented.

Results

Ten studies involving a total of 964 participants were included in this systematic review and meta-analysis. The pooled estimates showed strong diagnostic performance, with a sensitivity of 0.896 (95% CI: 0.744–0.938), specificity of 0.896 (95% CI: 0.641–0.976), PLR of 8.325 (95% CI: 1.950–35.538), NLR of 0.41 (95% CI: 0.066–0.324), and DOR of 56.765 (95% CI: 7.463–431.741). In subgroup analysis, the pooled sensitivity and specificity for detecting kidney disease in normoalbuminuric patients versus healthy controls were 0.896 (95% CI: 0.816–0.896) and 1.00 (95% CI: 0.004–1.00), respectively. For microalbuminuria versus normoalbuminuria, pooled sensitivity and specificity were 0.952 (95% CI: 0.698–0.994) and 0.855 (95% CI: 0.203–0.993), respectively.

Conclusion

The high pooled sensitivity and specificity indicate that urinary NGAL has strong diagnostic performance for detecting DKD even in early stage before albuminuria occurs. However more studies are needed to strengthen the confidence of the result.

Keywords：Urinary neutrophil gelatinase-associated lipocalin, Diabetic kidney disease, Type 2 diabetes

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0179
Abstract Submission No.：APCN20250468

Kidney Function Evolution and Outcomes after Transcatheter Aortic Valve replacement: A prospective Cohort Study in Taiwan

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Abstract

Background

Transcatheter aortic valve replacement (TAVR) is currently the standard treatment for patients with severe aortic stenosis. Chronic kidney disease (CKD) is common among TAVR candidates, with a prevalence of 30–50%, and significantly affects TAVR prognosis. Despite extensive research, the effects of TAVR on the trajectory of estimated glomerular filtration rate (eGFR) and post-TAVR kidney outcomes, remain unclear.

Methods

This was a retrospective cohort study enrolling patients undergoing TAVR in National Taiwan University Hospital from January 2013 to March 2022. Patients with end-stage kidney disease or limited serum creatinine (SCr) data were excluded. The pre- and post-TAVR 2-year eGFR slope, composite kidney outcomes (≥30% eGFR decline or dialysis) and all-cause mortality were assessed.

Results

Overall, a total of 294 patients (48.3% men; 82.7± 6.7 years old) were evaluated, with 39.4% patients having baseline eGFR<60 mL/min/1.73 m². Focusing on this subgroup with reduced kidney function, post-TAVR 2-year eGFR slope had significantly slower decline than pre-TAVR (+3.60, 95% CI: +1.68-+5.95], after adjusting for age, gender and baseline slope). Across the entire cohort, composite renal outcomes occurred in 106 patients (36.1%), and preoperative proteinuria (HR: 1.81, 95% CI: 1.15–2.84), diabetes mellitus (HR: 1.56, 95% CI: 1.02-2.40), post-TAVR acute kidney injury (AKI) (HR: 3.33, 95% CI: 1.81-6.10) were independent risk factors. Post-TAVR non-resolving AKI was associated with a higher risk of all-cause mortality (HR: 3.34, 95% CI: 1.14–9.92), as compared to resolving AKI in the adjusted model.

Conclusions

In patients with baseline eGFR < 60 mL/min/1.73 m², the decline in eGFR post-TAVR was significantly slower than pre-TAVR. Post-TAVR non-resolving AKI was an independent risk factor for all-cause mortality.

Keywords：Transcatheter aortic valve replacement, Kidney

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0180
Abstract Submission No.：APCN20250470

The effects of canagliflozin on kidney resistive index and oxygenation in patients with type 2 diabetes: A study using ultrasonography and functional MRI

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Abstract

Background

The kidney-protective mechanisms of SGLT2 inhibitors remain unclear. A high resistive index (RI), as assessed by Doppler ultrasonography, and a low T2* value, as evaluated by blood oxygenation level-dependent (BOLD) MRI, are risk factors for CKD progression. Previously, we demonstrated that canagliflozin (Cana) improved kidney oxygenation. In this post hoc analysis, we evaluated the effects of Cana on RI and the correlation between Cana-induced changes in RI and T2* values.

Methods

RI was measured at screening and on day 5 (D5) following Cana administration. BOLD MRI was performed on the day before (D0), the day (D1), and on D5. Cortical T2* values were evaluated using the twelve-layer concentric objects (TLCO) and the regions of interest (ROI) method. Changes in RI, and T2* values from D0 to D1 or D5 were expressed as ΔRI, ΔT2* (D1-D0), and ΔT2* (D5-D0), respectively.

Results

Thirteen patients with type 2 diabetes (T2D) were included. Cana significantly decreased RI. Cana increased T2* values using the ROI methods (D0: 54.5 [50.8–55.5] vs D1: 56.2 [52.7–56.4], p = 0.003; D5: 54.5 [53.0–57.2], p = 0.080). A significant negative correlation was observed between ΔRI and ΔT2* (D1-D0) using both the TLCO (p = 0.024) and the ROI (p = 0.048) methods. However, no significant correlation was found between ΔRI and ΔT2* (D5-D0).

Conclusion

Short-term treatment with Cana improves kidney RI and oxygenation in patients with T2D. The inverse correlation between changes in RI and T2* values suggests a mechanistic link between hemodynamic changes and improved oxygenation by SGLT2 inhibitors.

Keywords： canagliflozin,resistive index , blood oxygenation level-dependent MRI

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0181
Abstract Submission No.：APCN20250482

Efficacy and Safety of Combined SGLT2 Inhibitors and Mineralocorticoid Receptor Antagonists in Cardio-Renal-Metabolic Syndrome: A Structured Evidence Review

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Abstract
Background:
Cardio-renal-metabolic syndrome (CRMS) reflects a critical intersection of cardiovascular, renal, and metabolic disorders—contributing to high morbidity, mortality, and healthcare burden globally. The frequent coexistence of heart failure (HF), chronic kidney disease (CKD), and type 2 diabetes (T2DM) underscores the need for integrated therapeutic approaches. Sodium-glucose cotransporter-2 inhibitors (SGLT2i) and mineralocorticoid receptor antagonists (MRAs) have individually demonstrated significant cardiorenal protective effects. However, the clinical implications and safety profile of their combination therapy remain underexplored across diverse patient populations.
Methods:
A structured literature review was conducted using PubMed to identify recent randomized controlled trials (RCTs), systematic reviews, and network meta-analyses published within the last decade. Studies evaluating the efficacy and safety of SGLT2i and MRA, both as monotherapies and in combination, were analyzed. Key outcomes included cardiovascular events, CKD progression, hospitalization for HF, and all-cause mortality in patients with CRMS, T2DM, HF, and CKD.
Results:
Evidence synthesis revealed consistent and additive benefits of SGLT2i and MRAs in improving clinical outcomes. In patients with heart failure with reduced ejection fraction (HFrEF), combination regimens—including SGLT2i and steroidal/nonsteroidal MRAs—demonstrated hazard ratio (HR) reductions for cardiovascular death (HR 0.78) and HF hospitalization (HR 0.74), especially when added to standard care. Finerenone, a nonsteroidal MRA, showed efficacy in patients with T2DM and albuminuria, with or without concurrent SGLT2i, suggesting independent and additive benefits. Combination therapy was also associated with delayed CKD progression and reduced composite renal endpoints. The overall safety profile was acceptable, with hyperkalemia as the most notable adverse effect, particularly in those with impaired renal function.
Conclusion:
Combining SGLT2i and MRA offers synergistic therapeutic benefits in patients with cardio-renal-metabolic syndrome, supporting a shift toward multidrug strategies targeting interconnected organ systems. These agents represent a cornerstone in modern CRMS management, capable of modifying disease trajectory and improving survival. Nevertheless, implementation challenges remain, particularly in resource-limited settings. Further real-world studies and cost-effectiveness analyses in the Asia Pacific region are warranted to optimize uptake and equitable access to these life-saving therapies.

Keywords：SGLT2 inhibitors, mineralocorticoid receptor antagonists, cardio-renal-metabolic syndrome, heart failure, chronic kidney disease, combination therapy, finerenone, type 2 diabetes, cardiovascular outco

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0182
Abstract Submission No.：APCN20250534

Investigation Of The Renal Protective Effects Of SGLT2 Inhibitors In Patients With Diabetic Kidney Disease: A Retrospective Study

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Abstract
Introduction: Recent studies have shown that SGLT2 inhibitors offer renoprotective effects and improve metabolic profiles in diabetic kidney disease (DKD). This study aimed to evaluate whether similar outcomes could be observed in DKD patients treated at our clinic.
Methods: A retrospective analysis was conducted on DKD patients with type 2 diabetes receiving SGLT2 inhibitors for >1 year, with exclusion of major comorbidities; biochemical data and dietary intake from 2023–2024 were evaluated under routine nutrition and diabetes care.
Results: A total of 123 patients were included. Paired t-tests revealed statistically significant differences between baseline and follow-up values in the following parameters: BMI (27.1 ± 5.0 vs. 26.4 ± 4.7), total cholesterol (166 ± 34.7 vs. 154.4 ± 32.7), HDL (51.5 ± 13.5 vs. 50.1 ± 14.3), LDL (82.7 ± 24.6 vs. 73.7 ± 22.6), eGFR (47.8 ± 15.2 vs. 45.2 ± 16.5), UPCR (1826.4 ± 2240.7 vs. 1134.7 ± 1489.2), serum albumin (4.37 ± 0.34 vs. 4.22 ± 0.36), and protein intake per kg BW (0.82 ± 0.26 vs. 0.86 ± 0.25).
Conclusion: With the implementation of regular diabetes education and nutritional counseling, the use of SGLT2 inhibitors was associated with improved metabolic parameters. Although a modest decline in eGFR was observed, a significant reduction in urinary protein-to-creatinine ratio (UPCR) suggested an amelioration of proteinuria. Importantly, no clinical indicators of malnutrition were detected, implying that the integration of pharmacological therapy with structured nutritional care may support the preservation of both renal function and nutritional status in patients with diabetic kidney disease (DKD).

Keywords：Type 2 diabetic kidney disease、SGLT2-inhibitors、proteinuria、nutritional status

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0183
Abstract Submission No.：APCN20250539

Comparative Accuracy of Multiple Machine Learning for Detecting Diabetic Kidney Disease Based on Demographic and Laboratory Features: a Meta-Analysis

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Abstract

Background: Type 2 Diabetes Mellitus (T2DM) is the fifth leading cause of death worldwide. Common complications include peripheral neuropathy, nephropathy, and retinopathy. Diabetic Kidney Disease (DKD), a form of chronic kidney disease (CKD) carries poor prognosis especially in patients who are untreated or inadequately managed. Machine learning algorithms have emerged as a promising tool for predicting disease progression. The aim of this study was to conduct a meta-analysis comparing the accuracy of various machine learning in detecting DKD in T2DM patients based on demographic and laboratory features.

Method: A meta-analysis was conducted in accordance with PRISMA guidelines. Literature searches were performed using three electronic databases, including PubMed, Science Direct, and IEEE Xplore. The inclusion criteria were: (1) diagnostic accuracy studies published in between 2015-2024, (2) written in English, (3) employing one or more of the following machine learning algorithms: random forest, logistic regression, support vector machine, artificial neural network, or gradient boosted machine, (4) using demographic and/or laboratory data. The exclusion criteria were: (1) review article, (2) inaccessible full text, (3) studies lacking relevant performance metrics. Data items that have been extracted include: sensitivity, specificity, accuracy, precision, F1 score, and confusion matrix. Quality assessment was performed using PROBAST. The meta-analysis was performed using DerSimonian-Laird method in R Studio.

Results: Ten studies with 55,145 total number of dataset were included in quantitative synthesis. The demographic variables analysed included age, body mass index, and history of hypertension. The laboratory parameters included lipid profile, urine albumin-to-creatinine ratio, and estimated glomerular filtration rate. Random forest, logistic regression, and support vector machine were each evaluated in five studies, while artificial neural network and gradient boosted machine were each evaluated in two studies. The meta-analysis showed that random forest achieved the highest pooled sensitivity (0.843; 95% CI 0.682-0.930; $p<0.001$, $I2=98.1\%$), followed by artificial neural network and support vector machine with 82.4% and 80.6%, respectively. The highest specificity was recorded for both support vector machine (0.880 (95% CI 0.778-0.939, $p<0.0001$, $I2=92\%$)) and artificial neural network (0.880 (95% CI 0.748-0.948, $p<0.0001$, $I2=92\%$)). Logistic Regression demonstrated the lowest overall accuracy. Based on approximated Area Under Curve (AUC), random forest outperformed other models with AUC of 0.8555.

Conclusion: Random forest, support vector machine, and artificial neural network algorithms demonstrated superior diagnostic performance for detecting DKD using demographic and laboratory features. These models show strong potential for integration in clinical decision-support systems but require further validation in diverse populations and real-world settings.

Keywords：Diabetic kidney disease, machine learning, demographic features, laboratory features

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0184
Abstract Submission No.：APCN20250540

Machine Learning Unveils Protective Dietary Antioxidants and Socioeconomic Disparities in Cardiovascular-Kidney-Metabolic Syndrome

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Abstract

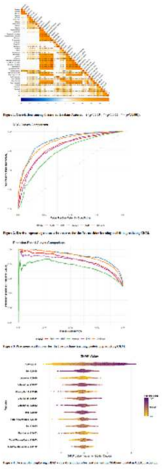
Background: Cardiovascular-kidney-metabolic (CKM) syndrome is characterized by complex pathophysiological interactions among cardiovascular diseases, and chronic kidney disease. Although there is evidence linking dietary antioxidants to the reduction of oxidative stress, comprehensive studies investigating relationships between CKM and antioxidants remain limited.

Methods: This cross-sectional study analyzed data from 5,349 participants (NHANES 2007–2010, 2017–2018) to evaluate the associations between 43 dietary antioxidants and CKM stages. Participants were categorised into subgroups: CKM vs. non-CKM and CKM stage groups (0-4). Sequential ordinal logistic regression was employed while adjusting for demographics, socioeconomic status, and lifestyle variables. Five machine learning models—XGBoost, Balanced Random Forest (BRF), Support Vector Machine (SVM), Glmnet, and Artificial Neural Network (ANN)—were trained after removing multicollinearity features to identify predictors for CKM. Model performance was assessed using AUC-ROC, sensitivity, specificity metrics, and SHAP analysis for interpretability enhancement.

Results: The CKM group (90.8% of participants) exhibited lower intakes of daidzein (0.663 vs. 1.494 mg/day, p=0.004) and genistein (0.976 vs. 2.149 mg/day, p=0.007) compared to non-CKM (Table 1). There were significant statistical differences in age, sex, race-ethnicity, education level, family income-to-poverty ratio, weekly physical activity status, and smoking status among the 4 stages of CKM (all $p<0.05$) (Table 2). Ordinal regression revealed significant inverse associations between CKM progression and antioxidants: vitamin C (OR: 0.999, p=0.041), magnesium (OR: 0.999, $p<0.001$), daidzein (OR: 0.965, p=0.047), genistein (OR: 0.977, p=0.037), delphinidin (OR: 0.983, p=0.024), apigenin (OR: 0.952, $p<0.001$), luteolin (OR: 0.930, p=031), kaempferol(OR:0.986, p=0.026), total flavones(OR: 0.958, p=0.012), and total flavonols(OR: 0.996, p=049) (Table 3). Spearman correlation analysis showed significant positive correlations among various dietary antioxidant features (Figure 1).ML models identified XGBoost as optimal (AUC-ROC: 0.922, specificity: 0.852, Table 4, Figure 2 and Figure 3), with age as the strongest risk predictor (SHAP: 0.535) (Figure 4). Protective antioxidants included selenium (-0.1838), luteolin (-0.2019), total flavonoids (SHAP: -0.1345), vitamin E (SHAP: -0.1511), magnesium (SHAP: -0.1849), vitamin A (SHAP: -0.1987), myricetin (SHAP: -0.1483), vitamin C (SHAP: -0.1862), kaempferol (SHAP: -0.1546), zinc (SHAP: -0.1615), subtotal catechins (SHAP: -0.1172), and total flavan-3-ols (SHAP: -0.2073) (Figure 4).

Conclusion: Dietary antioxidants, particularly flavonoids and vitamins, exhibit protective associations against the progression of CKM. These findings support the implementation of targeted dietary interventions and advocate for early screening in high-risk populations.

Keywords： cardiovascular-kidney-metabolic syndrome, dietary antioxidants, protective factors



Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0185
Abstract Submission No.：APCN20250546

SGLT2 Inhibitors versus GLP-1 receptor agonists for kidney and urothelial cancer risk in T2D: A Target Trial Emulation

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Abstract

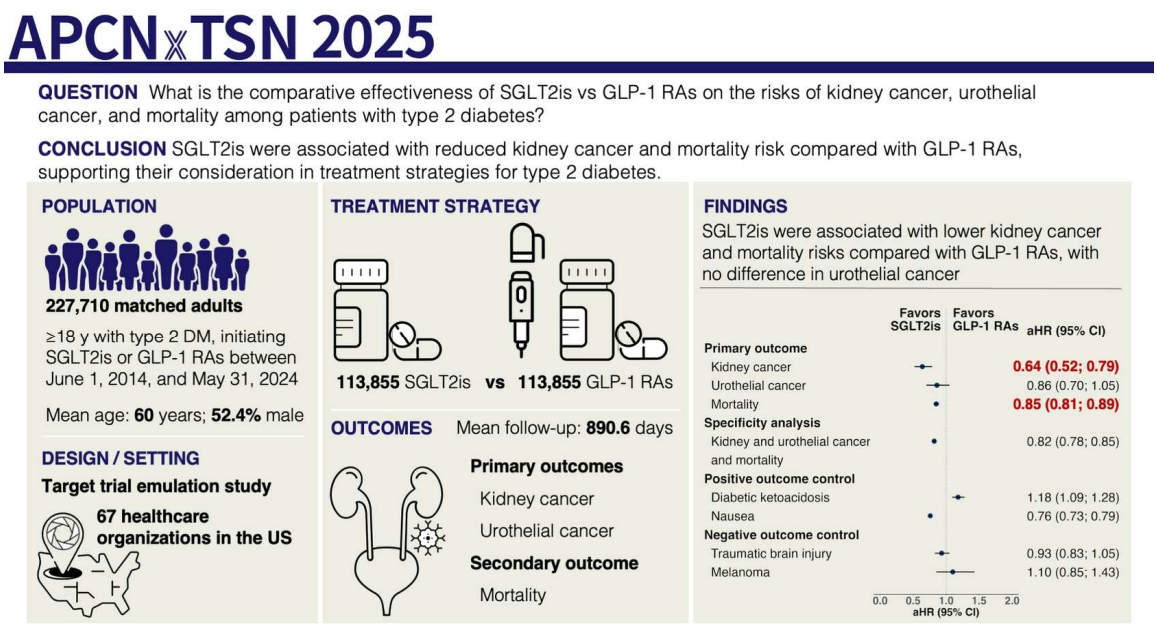
Background and Objective: Sodium-glucose cotransporter-2 inhibitors (SGLT2is) and glucagon-like peptide 1 receptor agonists (GLP-1 RAs) provide comparable cardiovascular and renal benefits in type 2 diabetes (T2D), but their effect on cancer risk remains uncertain.

Methods: We compared the risk of incident renal cell carcinoma (RCC) and urothelial cell carcinoma (UCC), two malignancies with rising incidence and poor prognosis, in patients with T2D initiating SGLT2is or GLP-1 RAs. A new-user comparative cohort study with a target trial emulation framework was conducted using data from the TriNetX platform between June 1, 2014, and May 31, 2024. Adults (aged ≥18 years) with T2D initiating SGLT2is or GLP-1RAs were identified. The main outcomes were RCC and UCC risk, analyzed using Cox proportional hazards models with 1:1 propensity score matching.

Results: The study included 227,710 matched adults with T2D initiating SGLT2i or GLP-RAs (mean [SD] age, 60.3 [12.1] years; 52.4% male). SGLT2i use was associated with a significantly lower incidence of RCC (adjusted hazard ratio [aHR] 0.64; 95% confidence interval [CI] 0.52–0.79), reflecting a 36% lower risk compared with GLP-1 RAs. No significant difference was observed for UCC. Similar results were observed across subgroup analyses stratified by demographics and comorbidities. The analysis of individual SGLT2i agents revealed empagliflozin decreased the risk of RCC (aHR, 0.67; 95% CI, 0.52–0.85).

Conclusions: SGLT2is were associated with a lower risk of RCC compared with GLP-1 RAs in patients with T2D. These findings support further research on SGLT2is and RCC risk reduction in this population.

Keywords：sodium-glucose cotransporter-2 inhibitors, glucagon-like peptide 1 receptor agonists, renal cell carcinoma, urothelial cell carcinoma, type 2 diabetes.



Huang CW, Lai CC, Li CJ, et al. SGLT2 Inhibitors versus GLP-1 receptor agonists for kidney and urothelial cancer risk in T2D: A Target Trial Emulation.

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0186
Abstract Submission No.：APCN20250549

Heart Failure Phenotypes and the Prognostic Utility of NT-proBNP in Patient with Chronic Kidney Disease: A Propensity-score Matched Cohort Study

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Abstract

Background: Chronic kidney disease (CKD) commonly coexists with heart failure (HF), particularly heart failure with reduced ejection fraction (HFrEF) or preserved ejection fraction (HFpEF), each associated with distinct prognostic patterns. N-terminal pro–B-type natriuretic peptide (NT-proBNP) levels are often elevated in CKD due to reduced renal clearance; however, their prognostic relevance across HF phenotypes remains insufficiently established.

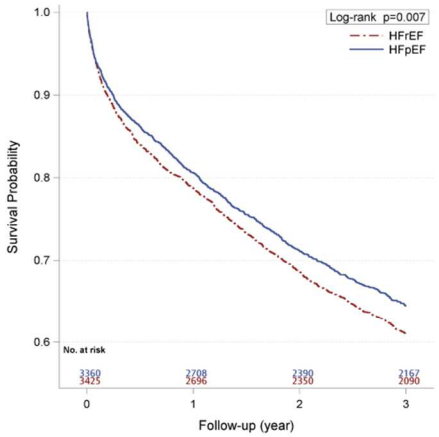
Method: This retrospective cohort study utilized data from the TriNetX Global Research Network to identify adults with non–dialysis-dependent CKD and concurrent HFrEF or HFpEF. Propensity score matching was applied to balance baseline characteristics. NT-proBNP and metabolic markers were analyzed, and outcomes were evaluated over a three-year period, including all-cause mortality, major adverse cardiovascular events (MACE), and major adverse kidney events (MAKE).

Result: Among 14,758 matched patients (7,379 per group), those with HFrEF had significantly higher NT-proBNP levels and an elevated risk of all-cause mortality (HR: 1.09; p=0·020) and MACE (HR: 1.17; p<0.001) compared with patients with HFpEF. MAKE incidence did not differ significantly between groups. Elevated NT-proBNP was strongly associated with adverse cardiovascular outcomes in the HFrEF subgroup. Distinct metabolic and nutritional profiles also influenced outcome trajectories.

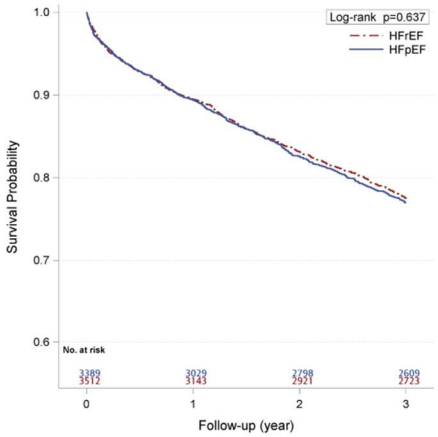
Conclusion: HF phenotype and NT-proBNP concentration are critical determinants of cardiovascular prognosis in patients with CKD. While NT-proBNP aids in stratifying cardiovascular risk, particularly in HFrEF, it provides limited predictive value for renal outcomes. Additional CKD-specific biomarkers may be required for effective renal risk assessment.

Keywords：Chronic kidney disease; Heart failure phenotype; N-terminal prohormone of brain natriuretic peptide (NT-proBNP); Major adverse cardiovascular events (MACE); Major adverse kidney events (MAKE)

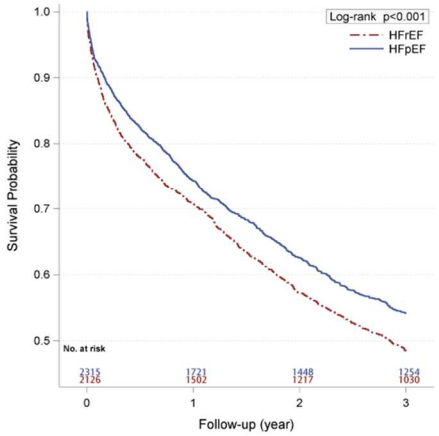
(A) All-cause mortality (high NT-proBNP)



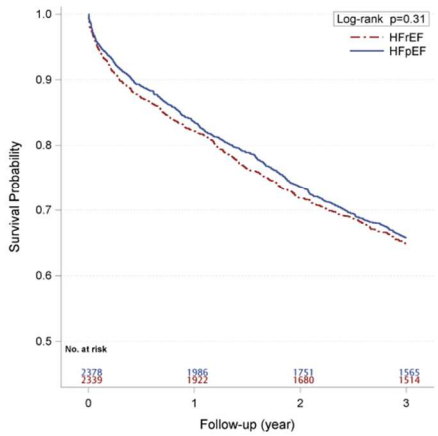
(B) All-cause mortality (low NT-proBNP)



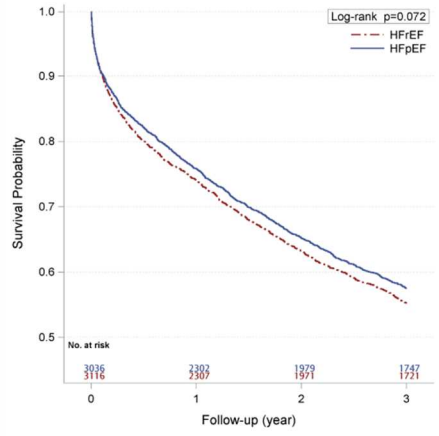
(C) MACE (high NT-proBNP)



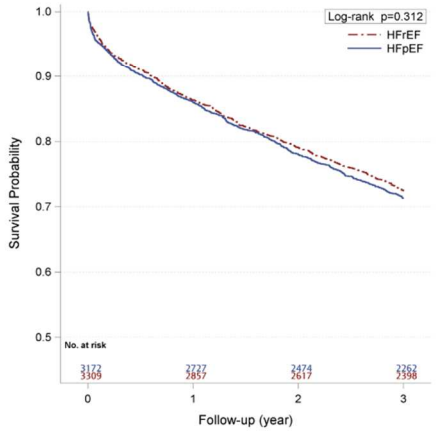
(D) MACE (low NT-proBNP)



(E) MAKE (high NT-proBNP)



(F) MAKE (low NT-proBNP)



Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0187
Abstract Submission No.：E_APCN20251298

The Impact of Renal Impairment on Mortality in Hospitalized Patients with Diabetic Foot Infections: A Study from Dr. Sardjito Central General Hospital, Yogyakarta, Indonesia

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Introduction : Diabetic Foot Infections (DFI) carry a significant mortality risk, especially in the presence of comorbidities. This study aimed to identify renal impairment and other associated risk factors for mortality in DFI patients admitted to Dr. Sardjito Hospital, Yogyakarta, to facilitate more effective preventive measures.
Methods: 200 patients with DFI admitted through the emergency department or outpatient clinic at Dr. Sardjito Central General Hospital, Yogyakarta, Indonesia, between January and December 2023. This research utilized a cross-sectinal observational design. The relationship between various risk factors and mortality was analyzed using both bivariate and multivariate logistic regression analyses. The independent risk factors from the multivariate analysis were then analyzed to develop a mortality prediction model using a scoring system based on the exponential function of negative y. The area under the curve (AUC) was determined through analysis using the receiver operating characteristic (ROC) to assess the performance of the model, displaying both sensitivity and specificity.
Results: A total of 31 patients (15.5%) had deceased, while 169 patients (84.5%) showed improvement by the end of the treatment. Among the 132 patients diagnosed with peripheral arterial disease (PAD), 23 patients (11.5%) underwent percutaneous transluminal angioplasty (PTA) as part of their treatment. The mortality rate among DM patients with PAD is 15.5%, although the p-value is greater than 0.05. Multivariate analysis identified four independent variables significantly associated with mortality in DFI: (1) absence of surgical intervention (p 0.016, OR 5.228, 95% CI 1.357-20.140), (2) IWGDF/IDSA grade 4/severe (p <0.001, OR 28.073, 95% CI 7.627-103.334), (3) eGFR < 60 ml/min/1.73 m^2 (p 0.011, OR 4.386, 95% CI 1.394-13.800), and (4) platelet count < 150 x 10^3 cells/µL (p 0.016, OR 6.552, 95% CI 1.425-30.129). The mortality prediction model achieved a maximum score of 5, indicating a mortality risk of 99.45% with a sensitivity of 64.52%, specificity of 95.86%, LR+ of 15.58, and LR- of 0.37.
Conclusion: The absence of surgical intervention, IWGDF/IDSA grade 4/severe, eGFR < 60 ml/min/1.73 m^2, and platelet count <150 x 10^3 cells/µL are independent risk factors for mortality in patients with DFI. Impaired renal function represents a critical, modifiable target for risk stratification and intervention in this high-risk patient population.

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0188
Abstract Submission No.：APCN20250560

eGFR Variability as an Independent Predictor of Chronic Kidney Disease Progression in Type 2 Diabetes

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Abstract

Background: In individuals with type 2 diabetes mellitus (T2DM) but without overt diabetic nephropathy, a single measurement of eGFR and albuminuria may not reliably predict future kidney function decline. This study investigated whether eGFR variability is associated with the development of chronic kidney disease (CKD) among individuals with preserved kidney function at baseline.

Methods: This retrospective cohort study used anonymized routine healthcare data from the Scottish Care Information – Diabetes national registry. We included individuals diagnosed with T2DM at age ≥35 years with baseline eGFR >75 ml/min/1.73m². Participants who died or developed CKD within five years of diagnosis were excluded. An algorithm based on KDIGO guidelines was developed to identify CKD and CKD stage G3b using eGFR trajectories. eGFR variability during the five years post-diagnosis was quantified using the coefficient of variation—variability independent of the mean (CV-VIM)—and the standard deviation of model residuals (SDRes). The primary outcome was progression to CKD stage G3b after the five-year period from T2DM diagnosis. Cause-specific Cox proportional hazards models were used to evaluate the association between eGFR variability during the first five years after T2DM diagnosis and the risk of outcome beyond year five, accounting for death as a competing risk.

Results: A total of 84,559 participants were included. The cohort was stratified into four groups (Low, Moderate, High, and Very High variability) based on eGFR SDRes quartiles. Table 1 presents baseline characteristics at diagnosis and at five years, stratified by variability level. eGFR variability was linearly associated with CKD stage G3b risk: compared with the Low group, hazard ratios (HRs) for Moderate, High, and Very High groups were 1.36 (95% CI, 1.14–1.63), 1.65 (1.39–1.95), and 2.14 (1.80–2.54), respectively. Similar results were observed using CV-VIM.

Conclusion: Among individuals with T2DM with preserved kidney function, higher eGFR variability is independently associated with an increased risk of progression to CKD stage G3b.

Keywords：eGFR, diabetes, CKD, variability

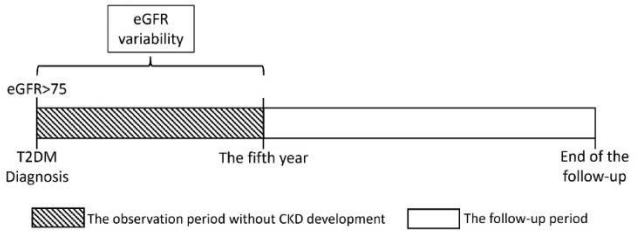

Figure 1. Study Design. In this study, eGFR variability was calculated over the five years following T2DM diagnosis. For the Cox proportional hazards analysis, time zero was defined as the fifth anniversary of each patient's T2DM diagnosis.

Table 1 Summary statistics of the cohort characteristics at T2MD diagnosis or at 5 years from T2D diagnosis

Variables	eGFR SDRes Low (N=21076)	eGFR SDRes Moderate (N=21250)	eGFR SDRes High(N=21070)	eGFR SDRes Very High (N=21153)	Overall (N=84549)
Gender Male, N (%)	13743 (65.21%)	13821 (64.04%)	13200 (62.64%)	12264 (57.98%)	53828 (62.7%)
Age at diagnosis (years)	56.17(10.09)	55.35 (9.98)	54.62 (9.51)	52.83 (9.33)	54.74 (9.81)
eGFR at diagnosis	98.04 (9.52)	94.92 (10.63)	91.80 (9.93)	91.04 (9.68)	93.95 (10.33)
eGFR slope from diagnosis to 5 years	- 0.43 (1.94)	- 0.31 (2.31)	-0.20 (5.87)	-0.31 (8.21)	-0.31 (5.26)
AKI status at 5 years (AKI vs non-AKI)	574 (2.72%)	825 (3.88%)	1163 (5.52%)	2270 (10.73%)	4832 (5.71%)
No of SCr measures from diagnosis to 5 years	9.97 (5.67)	12.03 (7.75)	13.38 (9.61)	15.06 (12.47)	12.60 (9.41)
Pulse pressure at 5 years from diagnosis	56.30 (13.10)	55.80 (13.23)	55.09 (13.22)	54.35 (13.25)	55.39 (13.22)
BMI at 5 years from diagnosis, mean (sd)	32.17 (6.63)	32.39 (6.59)	32.67 (6.62)	33.23 (6.95)	32.62 (6.71)
HbA_{1c} at 5 years from diagnosis, mean (sd)	58.29 (16.25)	58.84 (16.71)	59.25 (17.22)	60.55 (18.70)	59.24 (17.27)
ACE/ARB status at 5 years from diagnosis	12111 (57.46%)	12675 (59.65%)	12814 (60.81%)	13235 (62.57%)	50835 (60.12%)
Congestive Heart Failure at 5 years from diagnosis	382 (1.81%)	450 (2.16%)	538 (2.55%)	770 (3.64%	2140 (2.54%)
Peripherial Vascular Disease at 5 years from diagnosis	318 (1.51%)	343 (1.61%)	296 (1.40%)	305 (1.82%)	1342 (1.59%)
Coronary Artery Disease at 5 years from diagnosis	3535 (16.7%)	3817 (17.96%)	4046 (19.20%)	4404 (20.81%)	15882 (18.61%)
Cerebrovascular disease at 5 years from diagnosis	4734 (22.46%)	5287 (24.88%)	5510 (26.15%)	6020 (28.46%)	21.551 (25.49%)
Outcome event:					
CKD stage G3b, N (%)	238 (1.13%)	385 (1.81%)	501 (2.38%)	630 (2.98%)	1745 (2.07%)
Death, N (%)	2511(11.91%)	2613 (12.30%)	2628 (12.47%)	2720 (12.86%)	10472 (12.39%)
Follow-up time in years mean (sd)	4.88 (3.05)	5.05 (3.20)	5.27 (3.28)	5.15 (3.32)	5.09 (3.22)

Table 2. Hazard Ratios of eGFR variability and CKD stage G3b

Characteristic	HR (95% CI) age/gender adjusted model	HR (95% CI) adjusted model[1]	HR (95% CI) adjusted model after multiple imputations[2]
SDRes definition			
Moderate	1.63 (1.38-1.91)	1.36 (1.14-1.63)	1.41 (1.20-1.67)
High	2.18 (1.87-2.55)	1.65 (1.39-1.95)	1.69 (1.43-1.99)
Very high	3.33 (2.86-3.87)	2.14 (1.80-2.54)	2.30 (1.95-2.71)
Low	1 [Reference]	1 [Reference]	1 [Reference]
CV-VIM definition			
Moderate	1.74 (1.47-2.06)	1.41 (1.18-1.70)	1.50 (1.26-1.78)
High	2.59 (2.20-3.04)	1.92 (1.60-2.29)	2.01 (1.69-2.38)
Very high	4.04 (3.449-4.72)	2.43 (2.034-2.912)	2.75 (2.32-3.25)
Low	1 [Reference]	1 [Reference]	1 [Reference]

1 Multivariate-adjusted analysis adjusted for eGFR at T2DM diabetes diagnosis, eGFR slope estimated based on eGFR values in the five years from T2DM diagnosis, AKI status prior to five years from diagnosis (presence/absence of AKI) and number of SCr measures (calculated as number of the different days when a measure of SCr was taken) during the five years from diagnosis, HbA1c, SBP, BMI, and ACE/ARBs medication

2 Additionally adjusted for Congestive Heart Failure (CHF), Coronary Artery Disease (CAD), Peripheral Vascular Disease (PVD) and Cerebrovascular Disease (CD)

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0189
Abstract Submission No.：APCN20250604

The Experience of Insulin Acceptance with the Diabetic Nephropathy patient to use the DAWN Insulin Conversation Tool

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[1] Department of Nursing Kaohsiung Medical University Hospital, Division of Endocrinology & Metabolism

Abstract

Background:

Poor glycemic control in type 2 diabetes is a major contributor to the progression of chronic kidney disease (CKD). Many patients resist insulin therapy due to fear and misconceptions, such as believing “If I take more medicine, I will the faster have dialysis.”This case utilized the DAWN Insulin Conversation Tool – My Thoughts About Insulin, to improve a patient’s acceptance of treatment and self-care capabilities.

Methods:

The patient was a 76-year-old male with type 2 diabetes mellitus and hyperlipidemia. His metabolic control and renal function have deteriorated. His fasting blood glucose was 183 mg/dL, HbA1c was 9.9%, and his urine albumin-to-creatinine ratio (ACR) is markedly elevated at 1109.1 mg/g, and estimated glomerular filtration rate (eGFR) has declined to 42.66 mL/min/1.73 m², indicating stage 3b chronic kidney disease (CKD). The patient refused insulin therapy due to fears of disease progression and misconceptions about insulin use. A multidisciplinary team—comprising a physician, nurse, and diabetes educator—applied the DAWN Insulin Conversation Tool and visual educational materials to support the patient’s understanding of his disease, clarify treatment options, and communicate the renal and glycemic benefits of insulin therapy.

Results:

The patient’s primary concern was a lack of understanding regarding the side effects of insulin therapy. After receiving structured education, he agreed to modify his treatment plan and initiated basal insulin therapy. Subsequently, his fasting blood glucose was consistently maintained below 150 mg/dL, and his HbA1c improved to 8.9%, without any episodes of hypoglycemia. The patient reported reduced anxiety, was able to administer insulin regularly without missing doses, demonstrated improved medication adherence, and developed a clear understanding of the role and importance of insulin in his treatment.

Conclusion:

For patients with diabetic nephropathy, incorporating the DAWN Insulin Conversation Tool and visual education materials can effectively clarify misconceptions, reduce resistance to insulin therapy, and enhance treatment adherence and self-management abilities. This approach supports better glycemic control and helps delay kidney function deterioration, offering a practical educational strategy in chronic disease care.

Keywords：Diabetic Nephropathy、Insulin、DAWN Insulin Conversation Tool

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0190
Abstract Submission No.：APCN20250612

Real-World Evidence of Kidney Protection by GLP-1 Receptor Agonists in Heart Failure With Reduced Ejection Fraction and Type 2 Diabetes

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Abstract

Introduction:

GLP-1 receptor agonists (GLP-1RAs) have demonstrated cardiorenal protective effects. Given the critical interplay between cardiac and renal function, their renal benefits may hold clinical significance. However, the use of GLP-1RAs in patients with heart failure with reduced ejection fraction (HFrEF) is not endorsed in guideline-directed medical therapy (GDMT), largely due to neutral effects on echocardiographic surrogates and limited evidence regarding renal outcomes. This study aimed to assess whether the addition of GLP-1RAs to GDMT improves kidney-related and cardiovascular outcomes in patients with newly diagnosed HFrEF.

Methods:

We performed a multicenter retrospective cohort study using the TriNetX platform, enrolling adults with newly diagnosed HFrEF and type 2 diabetes (August 2016–March 2025). Patients receiving GLP-1RA plus renin-angiotensin system inhibitors (RASi) were compared to those on RASi alone (n = 1,770 vs. 21,687). After 1:1 propensity score matching (n = 1,362 vs. 1,362), groups were balanced across 63 covariates. The primary outcome was 24-month major adverse kidney events (MAKE), composed of chronic dialysis, sustained eGFR 5–15, kidney transplant, or all-cause mortality. Renal-specific MAKE excluded mortality. Secondary outcomes included MACE, heart failure exacerbation, and hospitalization. The index date was defined as the date of GLP-1RA initiation for the treatment group, and the date of HFrEF diagnosis for the RASi-alone group.

Results:

Before matching, the GLP-1RA group was younger (mean age 61 vs. 66 years), had higher baseline LVEF (35.7% vs. 31.4%) and eGFR (69 vs. 67 mL/min/1.73 m²), and more frequent use of SGLT2 inhibitors (44% vs. 6%), beta-blockers (82% vs. 63%), and potassium-sparing diuretics (43% vs. 13%). After matching, there were comparable LVEF (35.6% vs. 31.8%), eGFR (67.6 vs. 69.8), and GDMT use. At 24 months, GLP-1RA use was associated with a lower MAKE incidence (9.8% vs. 13.9%; HR 0.675; 95% CI 0.535–0.853; p = 0.0009) and renal-specific MAKE (HR 0.619; 95% CI 0.43–0.892; p = 0.0093). All-cause mortality was also reduced (HR 0.733; p = 0.013). Secondary outcomes showed reduced MACE (10.8% vs. 16.3%; HR 0.638; p = 0.0044), acute coronary syndrome, cerebrovascular event, heart failure exacerbation, and hospitalizations.

Conclusion:

GLP-1RA add-on therapy to GDMT significantly reduced renal events, mortality, and cardiovascular complications in HFrEF patients with diabetes. These real-world findings support its potential as a cardiorenal protective strategy pending prospective confirmation.

Keywords：GLP-1 receptor agonists; heart failure with reduced ejection fraction; HFrEF; type 2 diabetes mellitus; major adverse kidney events; MAKE

Table. Incidence of clinical outcomes in heart failure reduced ejection fraction patients treated with GLP-1 receptor agonists added to renin-angiotensin system inhibitors (RASi) versus RASi alone after propensity score matching

Outcome	GLP-1 RA + RASi n/N (%)	RASi alone n/N (%)	Hazard Ratio (95% CI)	*p*-value
Primary outcomes				
Major adverse kidney events	119/1218 (9.8%)	173/1244 (13.9%)	0.675 (0.535–0.853)	0.0009***
Renal Specific Event	47/1218 (3.8%)	75/1245 (6.0%)	0.619 (0.43–0.892)	0.0093**
All-cause mortality	111/1361 (8.2%)	148/1361 (10.9%)	0.733 (0.573–0.938)	0.013*
Secondary outcomes				
Major adverse cardiovascular events	392/1362 (28.8%)	521/1362 (38.3%)	0.687 (0.603-0.783)	<0.0001***
Acute coronary syndrome	272/1362(19.9 %)	389/1362 (28.6%)	0.651 (0.558-0.761)	<0.0001***
Cerebrovascular event	132/1362 (9.7%)	175/1362 (12.8%)	0.724 (0.578–0.908)	0.0049**
Incident major adverse cardiovascular events	64/590 (10.8%)	102/627 (16.3%)	0.638 (0.466–0.872)	0.0044**
Incident acute coronary syndrome	48/695 (6.9%)	92/762 (12.1%)	0.55 (0.388–0.780)	0.0007***
Incident cerebrovascular event	41/1159 (3.5%)	58/1134 (5.1%)	0.669 (0.449–0.998)	0.047*
Heart failure exacerbation	859/1362 (63.1%)	1014/1362(74.4%)	0.649 (0.593–0.711)	<0.0001***
All-cause hospitalization	875/1362 (64.2%)	1015/1362 (74.5%)	0.647 (0.591–0.708)	<0.0001***

Note:

Abbreviations: GLP-1 RA, glucagon-like peptide-1 receptor agonist; RASi, renin-angiotensin system inhibitor; MAKE, major adverse kidney events; MACE, major adverse cardiovascular events.

*p<0.05 **p<0.01 ***p<0.001

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0191
Abstract Submission No.：APCN20250629

Comparative Effects of Valsartan and Irbesartan on Renal NF-κB Expression in Diabetic Nephropathy Rats Treated with Rosmarinic Acid

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Abstract

Background: Diabetic nephropathy is one of the leading microvascular complications of diabetes and a major cause of end-stage renal disease. The transcription factor NF-κB plays a central role in mediating inflammatory responses and kidney injury in diabetic nephropathy. Both valsartan and irbesartan—angiotensin II receptor blockers—have demonstrated renoprotective and anti-inflammatory effects. Rosmarinic acid, a polyphenolic compound with antioxidant properties, may further modulate these effects. This study aimed to compare the effects of valsartan and irbesartan on renal NF-κB expression in diabetic nephropathy rat models receiving rosmarinic acid.

Methods: This was a true experimental laboratory study employing a randomized post-test-only control group design. Male Wistar rats with streptozotocin-induced diabetic nephropathy were treated with either valsartan or irbesartan in combination with rosmarinic acid. NF-κB expression in kidney tissue was assessed by immunohistochemistry. Data were analyzed using one-way ANOVA and the LSD post hoc test, with significance set at $p < 0.05$.

Results: NF-κB expression was significantly lower in the valsartan (16.25 ± 4.34%) and irbesartan (18.25 ± 2.98%) groups compared to the positive control group (29.25 ± 10.01%) ($p < 0.05$). However, no statistically significant difference was observed between the valsartan and irbesartan groups ($p > 0.05$).

Conclusion: Both valsartan and irbesartan effectively reduced NF-κB expression in diabetic nephropathy rat models co-treated with rosmarinic acid, suggesting comparable anti-inflammatory and renoprotective potential.

Keywords：diabetic nephropathy, NF-κB, valsartan, irbesartan, rosmarinic acid

Results

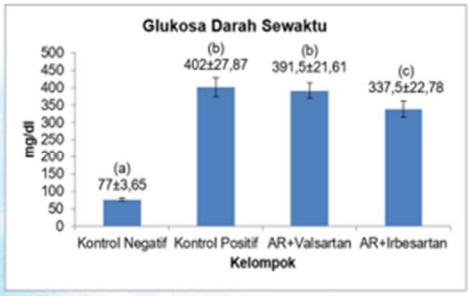

Fig 1. Blood Glucose Differences in Diabetic Nephropathy Rat Models

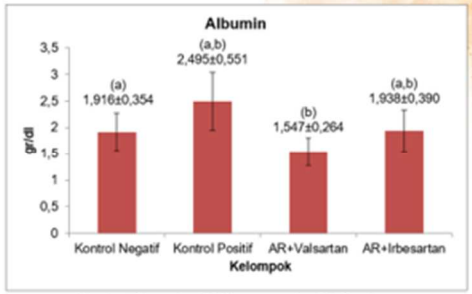

Fig 2. Albumin Differences in Diabetic Nephropathy Rat Models

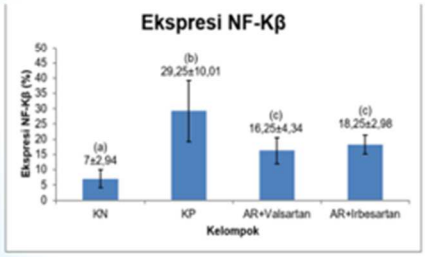

Fig 3. NF-κB Level Differences in Diabetic Nephropathy Rat Models

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0192
Abstract Submission No.：APCN20250636

Renoprotective Effects of Dipeptidyl Peptidase-4 Inhibitors in Diabetic Kidney Disease: A Systematic Review and Meta-analysis

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Abstract

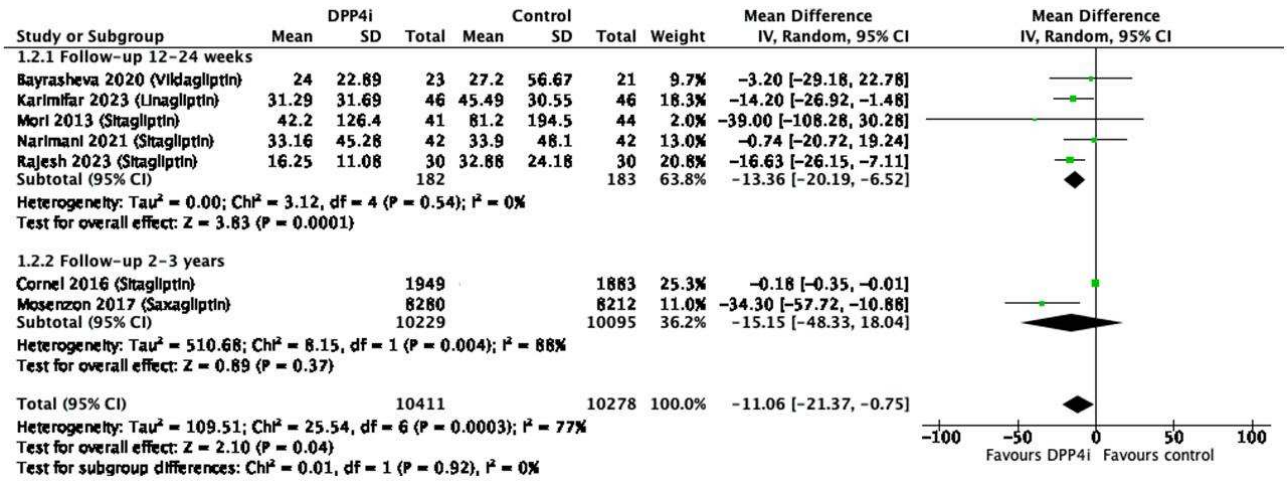
Background and Objectives. Albuminuria is the first clinically evident feature of renal involvement in diabetic kidney disease (DKD). Treatments aimed at reducing albuminuria slow the progression of DKD. The incretin effect, mediated by the glucagon-like peptide-1 (GLP-1), reduces renal inflammation, fibrosis, and albuminuria. Dipeptidyl peptidase-4 inhibitors (DPP4I) prevent degradation of GLP-1 and renal effects include reduction in albuminuria. Given the potential of DPP4I in delaying the DKD progression, there is a need to summarize and review the current evidence to guide management of DKD. This study aims to determine the efficacy of DPP4I in delaying the progression of DKD.

Methods. A computerized literature search of PubMed, CENTRAL, and ClinicalTrials.gov was done from inception to October 2024. Outcomes of interest included change in urine albumin-to-creatinine ratio (UACR) and in estimated glomerular filtration rate (eGFR). The risk of bias of the included studies were independently assessed by two authors and disagreements were resolved by consensus.

Results. 14 randomized controlled trials (RCTs) satisfied the inclusion criteria, 13 of the RCTs enrolling 31,528 participants were included in the quantitative synthesis. The risk of bias of the studies were low to moderate. Meta-analysis showed significant reduction in UACR after treatment with DPP4I compared to control (7 RCTs, 20,689 participants, MD -11.06 mg/g Crea, 95% CI -21.37 to -0.75). There was no significant difference in change in eGFR between DPP4I and control.

Conclusion. DPP4I were found to significantly decrease UACR and may delay the progression of DKD.

Keywords：DPP4 inhibitors, diabetic kidney disease, renoprotection, albuminuria



Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0193
Abstract Submission No.：APCN20250678

Identification of High-Risk SGLT-2 Inhibitors Users with Persistent Renal Function Decline

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[8] Division of Endocrinology and Metabolism, Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan

[9] Graduate Institute of Medical Genomics and Proteomics, National Taiwan University, Taipei, Taiwan

[10] Division of Cardiology, Department of Internal Medicine, E-Da Hospital, I-Shou University, Kaohsiung, Taiwan

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Abstract

Introduction: Large-scale randomized controlled trials provided evidence of renoprotective effects of sodium-glucose cotransporter 2 (SGLT-2) inhibitors. Typically, an initial decline in estimated glomerular filtration rate (eGFR), followed by recovery within months were observed. However, the long-term eGFR change in SGLT-2 inhibitor users remains uncertain.

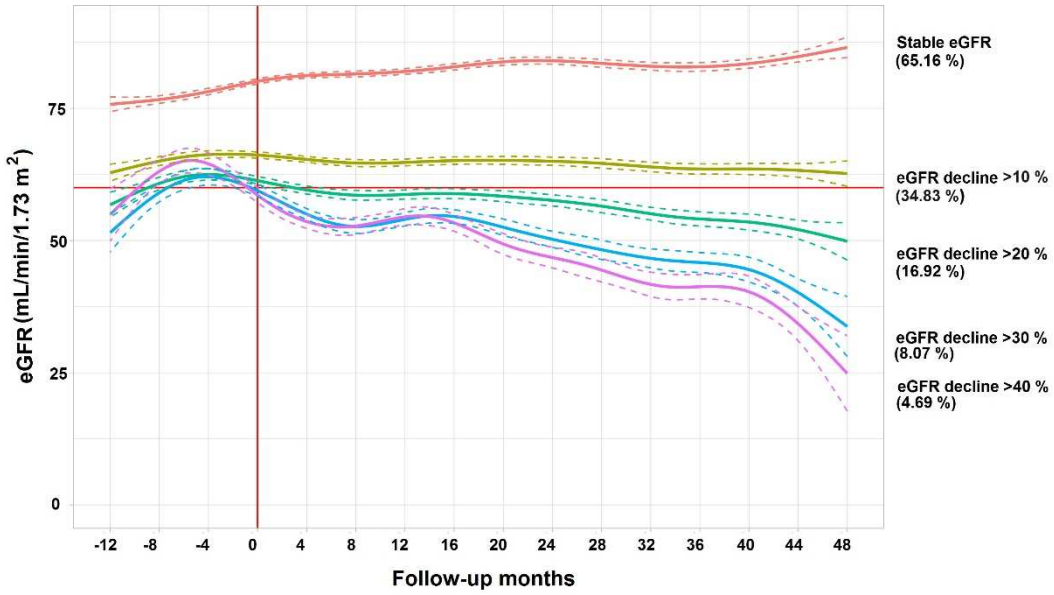
Methods: In this observational study, we analyzed eGFR trajectory patterns and their association with baseline characteristics, comorbidities, medications, and procedures in diabetic users of SGLT-2 inhibitors for four years across all affiliated hospitals within the National Taiwan University Hospital-integrative Medical Database system (NTUH-iMD).

Results: A total of 9,058 users of SGLT-2 inhibitors were identified from the NTUH-iMD. The mean age was 63.14 ± 12.15 years, with 37.65% being male. The mean baseline eGFR was 76.35 ± 24.08 mL/min/1.73 m². The mean urine albumin-creatinine ratio (UACR) was 46.05 mg/g. The mean glycated hemoglobin (HbA1c) was 7.84 ± 1.53%, and the mean body mass index was 26.83 ± 4.43 kg/m².

Among the 9,058 SGLT-2 inhibitors users, 5,903 (65.17%) exhibited stable or steadily increasing

eGFR. However, 34.83% experienced persistent eGFR decline of more than 10%, 16.92% more than 20%, 8.07% more than 30%, and 4.69% more than 40% over the four-year period. Figure 1 illustrated the eGFR change patterns among SGLT-2 inhibitors users.
Baseline characteristics associated with the decline included low eGFR (P-for-trend< 0.0001), high albuminuria, increased HbA1c, elevated triglyceride, high systolic blood pressure, low high-density lipoprotein cholesterol, advanced age, and significant weight loss after using SGLT-2 inhibitors. Comorbidities significantly related to the decline included gouty arthritis, gastrointestinal bleeding, heart failure (P-for-trend < 0.0001), atrial fibrillation, cerebrovascular accidents, liver cirrhosis (P-for-trend= 0.00043), urinary tract infection, pneumonia, and malignancy. Concurrent medications such as spironolactone (P-for-trend < 0.0001), non-steroidal anti-inflammatory drugs, diuretics, uric-acid lowering agents, cisplatin, cyclophosphamide, warfarin, some antihypertensives, and insulins use were risk factors. Performing computed tomography (P-for-trend< 0.0001) and coronary intervention with contrast, and coronary artery bypass grafting were associated with an elevated risk of sustained eGFR decline.
Conclusion: A subgroup of SGLT-2 inhibitor users experienced substantial long-term decline in eGFR. Cautious use with close monitoring of renal function may be necessary for these high-risk patients.

Keywords：SGLT-2 inhibitor, renal function decline, eGFR, diabetes



Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0194
Abstract Submission No.：APCN20250702

Association between PCDD/Fs with metabolic syndrome and its components in a large Taiwanese population study

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Abstract

Background: Metabolic syndrome (MetS), a cluster of cardiometabolic abnormalities, is a growing public health issue globally and in Taiwan. While lifestyle and genetic factors are well-documented contributors, environmental pollutants such as polychlorinated dibenzo-p-dioxins/dibenzofurans (PCDD/Fs) have been increasingly implicated. However, large-scale population evidence remains **limited.**

Methods: We analyzed data from 120,424 adults in the Taiwan Biobank using a geospatial-artificial intelligence (Geo-AI) framework to estimate long-term PCDD/Fs exposure based on residential addresses. Participants were categorized by PCDD/Fs exposure levels (≥20 vs. <20 fg I-TEQ/m³). MetS was defined by modified NCEP ATP III criteria for Asian populations. Associations between exposure and MetS and its components were examined using multivariable logistic and linear regression models.

Results: Participants with higher PCDD/Fs exposure had significantly greater prevalence of MetS (adjusted odds ratio [OR]: 1.086, 95% confidence interval [CI]: 1.051–1.122; p <0.001) and more MetS components (β = 0.062, 95% CI: 0.047–0.077; p <0.001). PCDD/F exposure was independently associated with abdominal obesity (OR: 1.131, 95% CI: 1.100–1.162; p <0.001), hypertriglyceridemia (OR: 1.075, 95% CI: 1.038–1.113; p <0.001), low HDL-cholesterolemia (OR: 1.166, 95% CI: 1.033–1.100; p <0.001), and hyperglycemia (OR: 1.046, 95% CI: 1.012–1.082; p=0.007), but not significantly with elevated blood pressure (OR: 1.027, 95% CI: 0.997–1.058).

Conclusion: Our findings suggest that higher environmental exposure to PCDD/Fs is independently associated with MetS and multiple of its components in a large Taiwanese cohort. These findings emphasize the need to integrate environmental exposure reduction into public health strategies targeting metabolic disease prevention.

Keywords：metabolic syndrome, PCDD/Fs, dioxin, artificial intelligence, Taiwan Biobank

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0195
Abstract Submission No.：APCN20250715

A Novel Oral Tyrosine Challenge Test to Assess Phenyl Sulfate-Producing Capacity in Healthy Adults

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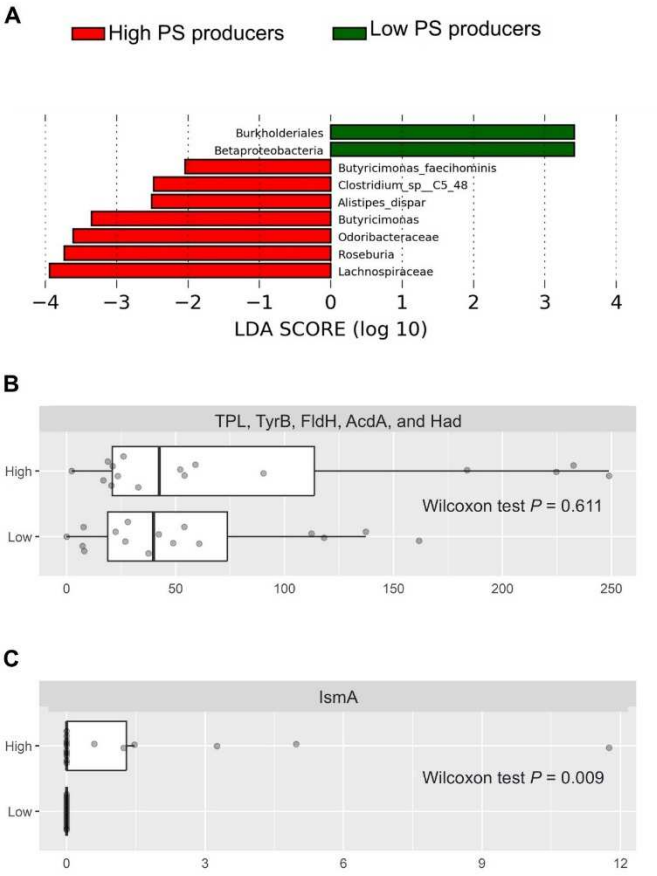
Abstract
Background: Phenyl sulfate (PS), a gut microbiota–derived metabolite implicated in diabetic kidney disease (DKD), is produced through microbial conversion of dietary tyrosine to phenol, followed by hepatic sulfation via SULT1A1. We hypothesized that interindividual variability in PS production following tyrosine intake is driven by differences in gut microbial composition and host sulfation capacity.
Methods: We conducted an oral tyrosine challenge test (OTCT) in 48 healthy adults (mean age 32±8 years; 50% women). Each participant received 100 mg/kg of L-tyrosine, with plasma PS levels measured at 0, 4, 8, 12, 24, 36, and 48 hours using high-performance liquid chromatography. The 24-hour PS increment from baseline was used to define individual PS-producing capacity. Sixteen participants in the highest and lowest tertiles were classified as high- and low-PS producers, respectively. We assessed clinical characteristics, dietary intake, fecal metagenomic profiles, and SULT1A1 single-nucleotide polymorphisms.
Results: High-PS producers exhibited significantly elevated total cholesterol (177±43 vs. 140±35, P = 0.010), triglycerides (81±42 vs. 55±25, P = 0.036), and LDL cholesterol (111±42 vs. 78±29, P = 0.015) despite comparable demographics, kidney function, dietary intake, and baseline PS levels. Fecal metagenomic analysis revealed enrichment of Alistipes dispar, Clostridium sp. C5-48, and Butyricimonas faecihominis in high-PS producers (Figure 1A). SULT1A1 genotypes and the abundance of five key microbial genes involved in tyrosine-to-phenol conversion (TPL, TyrB, FldH, AcdA, Had) did not differ significantly (Figure 1B). Notably, fecal IsmA, a microbial cholesterol-degrading enzyme, was higher in high-PS producers (Figure 1C), suggesting compensatory upregulation.
Conclusion: PS production varies widely among healthy individuals and is not solely predicted by microbial phenol biosynthetic gene abundance or SULT1A1 genotype. These findings indicate that enzyme function, rather than gene abundance alone, plays a more decisive role in determining metabolite levels. OTCT offers insight into host–microbiota–metabolite interactions and may help identify individuals who could benefit from tyrosine-restricted diets to mitigate DKD risk.

Keywords：diabetic kidney disease, gut microbiota, phenyl sulfate, precision nutrition, tyrosine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High PS producers
Low PS producers
Burkholderiales
Betaproteobacteria
Butyricimonas_faecihominis
Clostridium_sp__C5_48
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Lachnospiraceae
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−2
−1
0
1
2
3
4
LDA SCORE (log 10)
B
TPL, TyrB, FldH, AcdA, and Had
High
Low
Wilcoxon test P = 0.611
0
50
100
150
200
250
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IsmA
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Wilcoxon test P = 0.009
0
3
6
9
12

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0196
Abstract Submission No.：APCN20250729

A Triple Threat: Exploring The Interplay Of Metabolic Syndrome, Chronic Kidney Disease And Sociodemographic Disparities In Southeast Region Of Bangladesh

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Abstract
Introduction: In Bangladesh, the rising prevalence of non-communicable diseases, including hypertension and diabetes, has surfaced as a considerable public health concern, significantly impacting chronic kidney disease (CKD).
Methods: This cross-sectional study was conducted in the Nephrology department of Chittagong Medical College Hospital (CMC). The study included chronic kidney disease patients aged 18– 80 years. Socio-demographic data (age, sex, residence, income, education), clinical (obesity, blood pressure) and biochemical (blood glucose, lipids, eGFR), physical (current or past cigarette smoking, alcohol use, physical activity, dietary habits, personal history, family history and medication history) were obtained through structured questionnaires. CKD was defined according to the K/DOQI guidelines. Metabolic syndrome (MetS) was defined on the basis of the National Cholesterol Education Program ATP III criteria.
Result: A total of 130 subjects were enrolled in the study and divided into two groups by nonprobability consecutive sampling. Of them, 50 were diabetic CKD, and 80 were non diabetic CKD. The overall prevalence of metabolic syndrome is 11%. The prevalence was significantly higher in women (18.3%) than in men (7.8%, $p<0.001$). In males, the most common component was high blood pressure(89.6%).In females, the most commonly identified component was elevated TG (male 80.3% vs. female 90.8%). Rural prevalence (90.00%) was more than urban (82.1%) regarding elevated TG. Low HDL cholesterol prevailed among around 70% of urban and 66.7% of rural respondents. : Males exhibit poorer HDL levels, aligning with known gender disparities in metabolic syndrome. There were minimal differences (Urban 59% vs. Rural 57%; Males 60.4% vs. Females 57.6%) regarding impaired fasting glucose. 70% of males and 77.7% of females were obese.
Conclusions: Female gender, the old age group and rural residents were at a significant risk factor for chronic kidney disease with metabolic syndrome. A higher prevalence of MetS but a lower prevalence of obesity was observed among the diabetic and non diabetic CKD groups. The convergence of metabolic syndrome, chronic kidney disease, and sociodemographic inequality constitutes a triple threat to public health in Bangladesh. These findings underscore the need for targeted, gender- and location-sensitive interventions and the integration of metabolic screening into renal health programs to address the intertwined epidemics effectively.

Keywords：Chronic Kidney Disease(CKD), Metabolic Syndrome (MetS)

Table: Prevalence of Metabolic syndrome components by Group, Residence and Sex

Component	Diabetic CKD	Non Diabetic CKD	Urban (U)	Rural (R)	Male	Female
1. TG > 150 mg/dL	85.7%	78.3%	82.1%	90.0%	80.3%	90.8%
2. HDL < 40 (M) / <50 (F)	71.4%	65.2%	70.0%	66.7%	70.8%	63.6%
3. Fasting Glucose >100 mg/dL	62.9%	56.5%	59.0%	57.1%	60.4%	57.6%
4. BP ≥130/85 mmHg	91.4%	84.8%	87.2%	88.1%	89.6%	60.8%
5. Waist Circumference (M≥90cm, F≥80cm)	80.0%	73.9%	76.9%	76.2%	70.2%	77.7%

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0197
Abstract Submission No.：APCN20250789

Cardiovascular–kidney–metabolic syndrome and risk of major cardiovascular events: A large retrospective cohort study

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Abstract

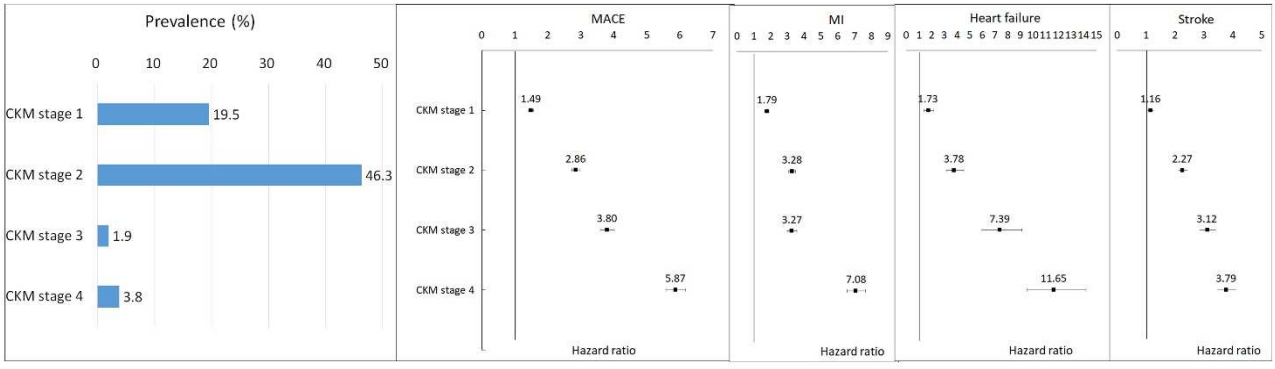
Background: The American Heart Association recently introduced the concept of cardiovascular–kidney–metabolic (CKM) syndrome to highlight the need for a multidisciplinary approach to disease prevention. In this study, we examined the prevalence of CKM syndrome and its association with cardiovascular disease (CVD) risk in a large Asian population cohort.

Methods: We analyzed a retrospective cohort of 502,329 participants aged ≥20 years from a health screening program conducted between 1996 and 2017 in Taiwan. We assessed the associations of major adverse cardiovascular events (MACE) including nonfatal myocardial infarction, heart failure, nonfatal stroke and CVD mortality with CKM stages and its components—hypertension, diabetes mellitus (DM), chronic kidney disease (CKD), metabolic syndrome, and hyperlipidemia. MACE is defined based on the primary diagnosis of hospitalization records in the National Health Insurance Research Database (NHIRD). All participants were followed for a median of 16.5 years (interquartile range: 11.5, 21.2 years). Multivariate Cox proportional hazards models were used to calculate hazard ratios (HRs).

Results: CKM syndrome was associated with higher risks of major adverse cardiovascular events (MACE: HR: 1.49; 95% confidence interval, CI: 1.42, 1.57) for stage 1, HR: 2.86; 95% CI: 2.74, 2.98) for stage 2, HR: 3.80; 95% CI: 3.59, 4.02) for stage 3 and HR: 5.87; 95% CI: 5.58, 6.188) for stage 4. There is a dose-response relation between CKM stages and risk of MI, heart failure, stroke and CVD mortality.

Conclusions: In the large cohort study, the prevalence of CKM syndrome and its components were associated with risks of MACE. These findings highlight the clinical need for integrated CVD care within CKM health.

Keywords：Cardiovascular-kidney-metabolic syndrome, major adverse cardiovascular events, cohort



Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0198
Abstract Submission No.：APCN20250798

Empowering Cardio-Kidney-Metabolic Care through UACR Testing: Real World Evidence from TMUCRD

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Abstract

Background

Cardiovascular-kidney-metabolic (CKM) syndrome has been increasingly recognized as a key factor affecting long-term prognosis. The urine albumin-creatinine ratio (UACR) is a key biomarker for the early detection of kidney injury and prevention of CKM progression. Studies indicate that UACR correlates with cardiovascular-kidney risks, especially in Asian populations, which exhibit higher rates of microalbuminuria and macroalbuminuria than Caucasians. In Taiwan, the government reimburses annual UACR testing for diabetes and chronic kidney disease patients. This research aims to highlight the importance of UACR in assessing CKM patient risks.

Methods

This study was conducted using the Taipei Medical University Clinical Research Database (TMUCRD), which integrated electronic health records (EHRs) from three affiliated hospitals: Taipei Medical University Hospital, Wan-Fang Hospital, and Shuang-Ho Hospital, standardized to the OMOP Common Data Model (CDM). The study population consisted of patients aged ≥18 y/o diagnosed with chronic kidney disease (CKD) (eGFR <60 ml/min/1.73m², UACR ≥30 mg/g, or UPCR ≥150 mg/g, excluding eGFR <15 ml/min/1.73m²), type 2 diabetes (T2D), or heart failure (HF) between January 1, 2008, and December 31, 2016. The observation period extended from January 1, 2017, to December 31, 2022. Clinical outcomes, including the incidence of myocardial infarction (MI), end-stage kidney disease (ESKD, defined as eGFR<15 ml/min/1.73m², dialysis or kidney transplantation), hospitalization for heart failure (HHF), stroke, and mortality, were assessed by UACR levels.

Results

As of December 31, 2016, a total of 92,235 patients with CKM syndrome had been identified in the TMUCRD. This included 71,259 patients with T2D, 8,438 with CKD prior to ESKD, and 24,631 with HF. Notably, 11,211 CKM patients had at least two of these conditions simultaneously. Despite a government mandate for annual UACR testing in T2D patients, only 29,594 CKM patients underwent testing, highlighting a significant gap in clinical practice. The data reveal that patients with UACR levels ≥1000 mg/g have markedly higher incidences of clinical outcomes than those with UACR <10 mg/g: MI (3.3 times higher: 8.6% vs. 2.6%), ESKD (65.1 times higher: 52.1% vs. 0.8%), HHF (9.2 times higher: 17.4% vs. 1.9%), stroke (2.2 times higher: 28.9% vs. 13.1%), and mortality (7 times higher: 35.6% vs. 5.1%) from January 1, 2017, to December 31, 2022.

Conclusions

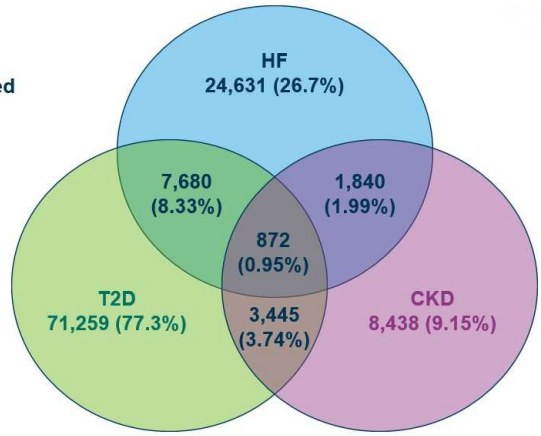
These findings underscore a critical need for improved clinical practices regarding UACR testing among patients with CKM syndrome. The huge disparities in clinical outcomes between patients with elevated UACR levels and those with lower levels highlight the urgency of early detection.

Keywords：CKM, UACR, Real World Evidence, TMUCRD

Figure 1 Disease burden of CKM syndrome

Total #patients: 92,235

(%): portion of disease as compared to total TMUCRD population



Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0199
Abstract Submission No.：APCN20250802

Efficacy and Safety of Lorundrostat in Uncontrolled Hypertension: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

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Abstract

Background: Uncontrolled hypertension is a major contributor to cardiovascular morbidity and mortality, often requiring novel therapies for resistant cases. Lorundrostat, a selective aldosterone synthase inhibitor, targets aldosterone production to lower blood pressure, but its efficacy and safety remain to be fully evaluated.

Objective: This meta-analysis evaluates the efficacy and safety of lorundrostat compared to placebo among adults with uncontrolled hypertension.

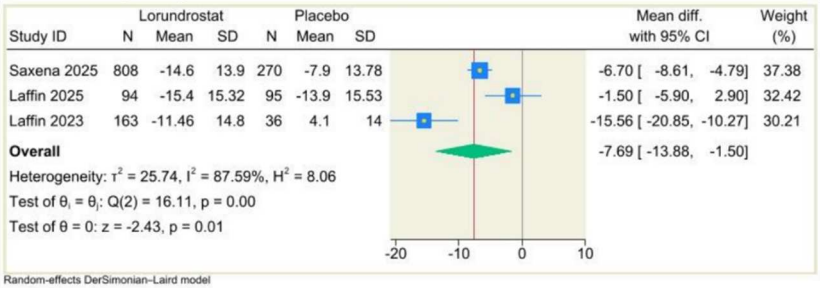
Methods: We searched PubMed, Scopus, WOS, and Cochrane Library from inception to July 2025. Data was extracted from randomized controlled trials that investigated lorundrostat's effects on various clinical endpoints. The primary endpoint was reductions in systolic blood pressure (SBP), while the secondary outcomes were incidence of hyperkalemia, symptomatic hypotension, severely elevated BP episodes, and changes in estimated glomerular filtration rate (eGFR). A random-effects DerSimonian–Laird model was used to calculate pooled mean differences (MD) for continuous outcomes and odds ratios (OR) with corresponding 95% confidence intervals (CI) for dichotomous data.

Results: A total of 3 RCTs (Saxena 2025, Laffin 2025, Laffin 2023) comprising 1,466 patients were included in the analysis. Lorundrostat significantly reduced systolic BP compared to placebo (MD: -10.77 mmHg; 95% CI: -19.43 to -2.12; $p = 0.015$), though a high level of heterogeneity was noted ($I^2 = 87.6\%$). Importantly, the treatment significantly lowered the odds of experiencing severely elevated BP (OR: 0.35; 95% CI: 0.16–0.76; $p = 0.01$), suggesting its potential for preventing hypertensive crises. However, this benefit was accompanied by a marked increase in hyperkalemia risk (OR: 7.85; 95% CI: 1.88–32.82; $p < 0.001$), as well as a higher incidence of symptomatic hypotension (OR: 3.13; 95% CI: 1.09–8.98; $p = 0.03$). There was no statistically significant difference between lorundrostat and placebo regarding eGFR reduction (OR: 2.16; 95% CI: 0.54–8.65; $p = 0.28$), indicating a relatively neutral renal safety profile.

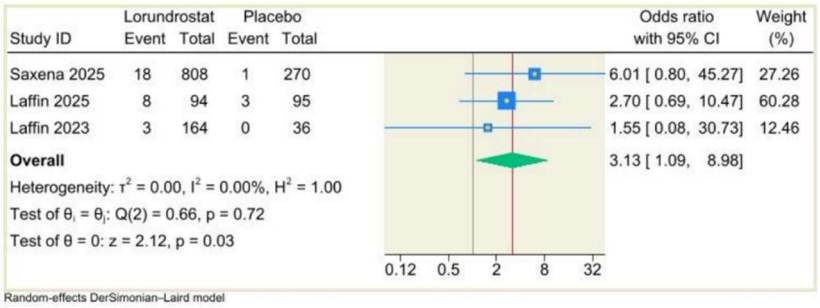
Conclusion: Lorundrostat demonstrates promising antihypertensive efficacy, particularly in reducing both overall systolic blood pressure and the risk of severely elevated BP events. However, its use is associated with increased risks of hyperkalemia and hypotension, underscoring the need for careful patient selection and close monitoring of electrolytes and blood pressure during treatment. These findings support lorundrostat as a potentially valuable addition to the therapeutic arsenal for difficult-to-control hypertension, especially in cases where mineralocorticoid receptor overactivity is suspected.

Keywords：Lorundrostat, Hypertension, Aldosterone synthase inhibitor, Systolic blood pressure, Hyperkalemia, Meta-analysis, Safety, Efficacy.

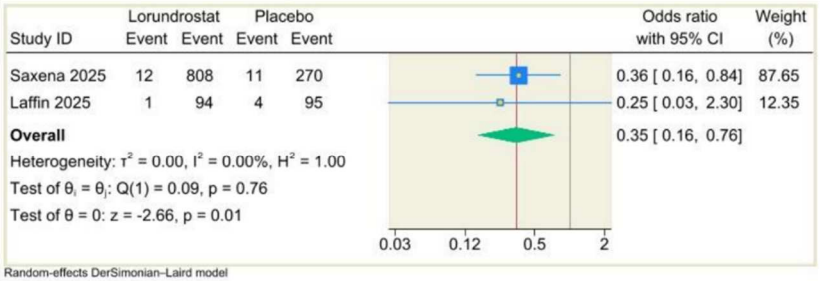
a. Change in Systolic BP



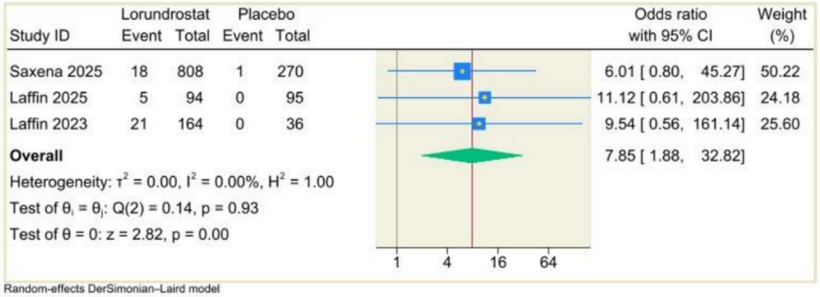
b. Symptomatic Hypotension



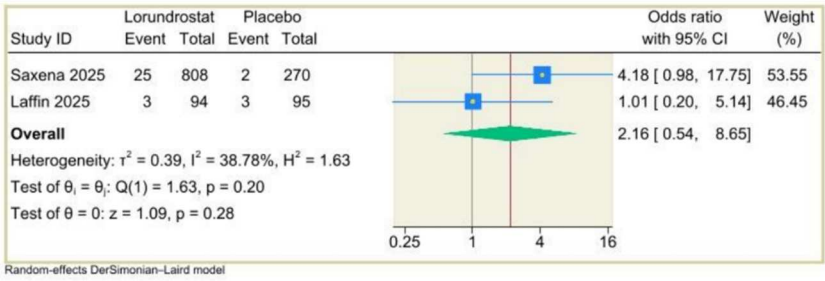
c. Severely elevated blood pressure



d. Hyperkalemia



e. Reduction in eGFR



Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0200
Abstract Submission No.：APCN20250807

Age-Stratified Mortality Trends Attributable to Kidney Dysfunction in Southeast Asia: A Comparative Risk Assessment

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Abstract

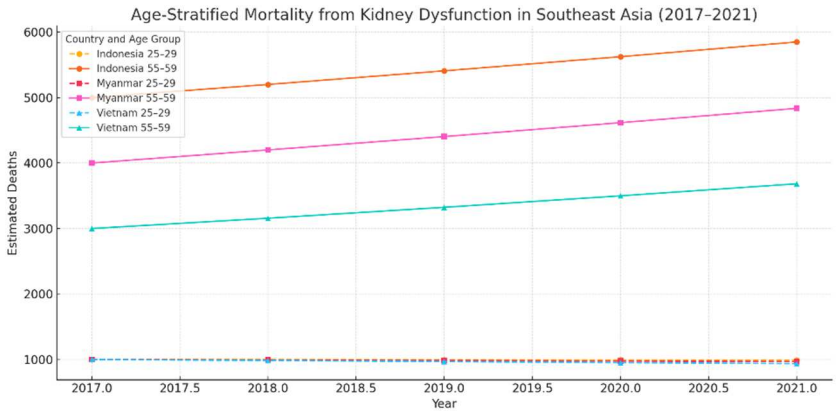
Kidney dysfunction contributes substantially to deaths from diabetes and kidney disease, especially in aging populations. However, age-specific mortality patterns remain underexplored in Southeast Asia. To assess trends in deaths from diabetes and kidney disease attributable to kidney dysfunction in Indonesia, Myanmar, and Vietnam across two adult age groups: 25–29 and 55–59 years.

Analyzed GBD 2017–2021 data on deaths attributable to kidney dysfunction as a risk factor for diabetes and kidney disease. Compound annual growth rates (CAGR) were calculated to assess mortality trends by age and country.

Among adults aged 25–29 years, mortality was stable or declined slightly. Vietnam experienced the steepest decline (CAGR: –1.63%), followed by Myanmar (–0.85%) and Indonesia (–0.26%). In contrast, mortality rose significantly among those aged 55–59. Indonesia had the highest increase (CAGR: +3.71%), followed by Myanmar (+2.46%) and Vietnam (+1.89%). These findings highlight a shifting burden from younger to older age groups, with Indonesia showing the largest absolute and relative increase.

The rising mortality in older adults attributable to kidney dysfunction reflects a critical need for earlier detection and intervention to prevent CKD progression, particularly in Indonesia. Integrating kidney health into national cardio-metabolic strategies is essential to mitigate this growing burden.

Keywords：Kidney dysfunction, Chronic kidney disease (CKD), Diabetic kidney disease, Age-specific mortality



Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0201
Abstract Submission No.：APCN20250829

Association Of Microalbuminaria And Estimated Glomerular Filtration Rate Among Patents With Chronic Hypertension

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Abstract

Introduction: In Indonesia, 40% of the population are diagnosed with hypertension, yet only 4% are under control. In Yogyakarta, 57.3% of the population are affected by hypertension. One of most common complications of hypertension is kidney damage, which can lead to kidney failure. Therefore, assessing kidney function is crucial, particularly by evaluating estimated Glomerular Filtration Rate (eGFR) and the presence of microalbuminuria. This study aimed to examine the relationship between microalbuminuria and eGFR in hypertensive patients enrolled in the chronic disesase monitoring program (PROLANIS).

Methods : This study was a cross-sectional study, using secondary data from PROLANIS database from January 2023 until July 2024. Clinical characteristics and laboratory examinations were collected. eGFR was calculated using CKD-EPI formula. Microalbuminuria was categorized as negative and positive, while eGFR was grouped as normal and decreased. Patients aged > 60 years old and with incomplete data were excluded. Data were analyzed using the Chi-Square test in SPSS 27.0. Ethical clearance was obtained from Ethical Committee in Faculty of Medicine UKDW Yogyakarta.

Results : From 366 data from the PROLANIS database, 234 were analyzed as subjects. Female and group of age 46-55 were dominant (75.2% and 51.3%). Median of age was 53 years old. Among the participants, 47.9% tested positive for microalbuminuria, and 20.1% of hypertensive patients experienced a decline in eGFR. A significant relationship between microalbuminuria and eGFR was observed (p = 0.034).

Conclusion: Microalbuminuria is significantly associated with eGFR in hypertensive patients

Keywords：Keywords : Hypertension, Glomerular Filtration Rate, Microalbuminuria.

Variables	Normal eGFR (%)	Reduced eGFR (%)	*p*
With Microalbuminuria (%)	83 (44.3%)	29 (61.7%)	0,034
Without Microalbuminuria (%)	104 (55.7%)	18 (38.3%)	

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0202
Abstract Submission No.：APCN20250833

Relationship Of High-Density Lipoprotein And Estimated Glomerular Filtration Rate In Hypertensive Patients

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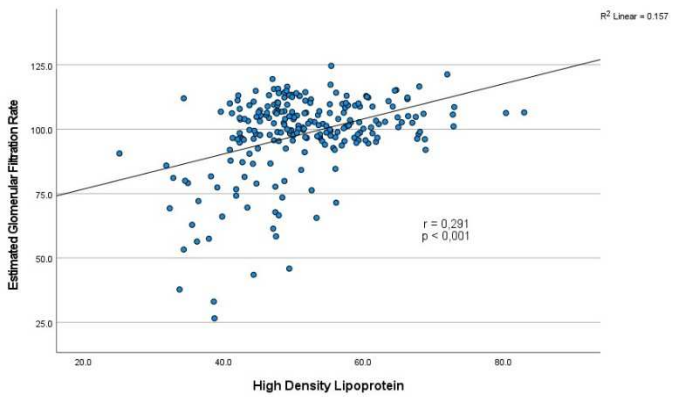
Background: Hypertension is a major risk factor for cardiovascular and kidney diseases in Indonesia. High-Density Lipoprotein (HDL) plays a role in preventing atherosclerosis and maintaining endothelial function, while the Estimated Glomerular Filtration Rate (eGFR) is an indicator for assessing kidney function. However, direct evidence of the relationship between HDL and eGFR in hypertensive patients is still limited. This study aimed to determine the relationship between HDL levels and eGFR in hypertensive patients enrolled in the Chronic Disease Management Program (PROLANIS).
Methods: This study was an analytical observational using a cross-sectional approach. Secondary data from medical records of PROLANIS patients in Sleman, Special Region Yogyakarta Province was obtained. A total of 230 patients were included as samples. Clinical and laboratory data were obtained from medical records, this data was taken between December 2024 until February 2025. eGFR was calculated using CKD-EPI formula. Data was presented as numeric variables. Patients are excluded if patients were also diagnosed with diabetes mellitus or data was incomplete. Data analysis was performed using Spearman's correlation test in SPSS 27.0.
Results: From 230 subjects, female and elderly were the most prevalent (76.1% and 46.5%). Most subjects had normal BMI (40.4%). Median of creatinine was 0.66 mg/dL (0.43 – 2.15) and eGFR was 101.4 mL/min/1.73 m2 (26.6 – 124.6). A significant positive correlation was found between HDL levels and eGFR ($r = 0.291$; $p < 0.001$), indicating that lower HDL levels are associated with decreased eGFR in hypertensive patients. The r^2 value of 0.157 shows that HDL explains 15.7% of the variation in eGFR.
Conclusion: There was a significant correlation between HDL levels and eGFR in hypertensive patients.
Keywords：Hypertension, High-Density Lipoprotein, Estimated Glomerular Filtration Rate



Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0203
Abstract Submission No.：APCN20250880

Exploring the Effect of Sodium-Glucose Cotransporter 2 Inhibitors in Primary Aldosteronism Patients with Type 2 Diabetes

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Abstract

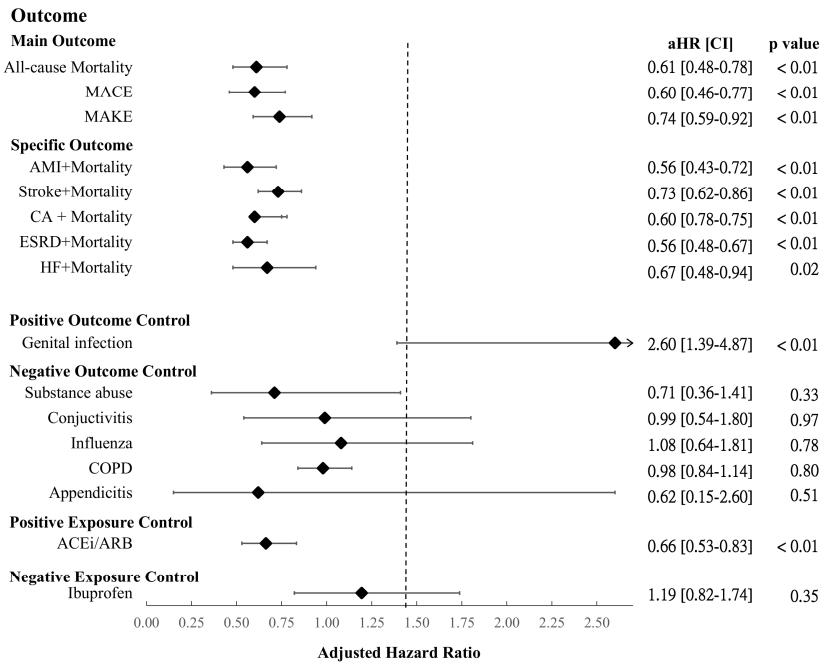
Introduction: Patients diagnosed with primary aldosteronism (PA) have an increased risk of mortality and are more prone to developing cardiovascular and renal complications. Sodium-glucose cotransporter-2 (SGLT2) inhibitors have been shown to offer substantial advantages in lowering the risk of cardiovascular death, heart failure, and kidney impairment, which could make them advantageous for patients with PA. Integrating SGLT2 inhibitors in PA management may have a synergistic effect with Mineral Receptor Antagonists (MRA) by targeting both the renin-angiotensin-aldosterone system and metabolic pathways, offering more comprehensive cardio-renal protection and lowering mortality.

Methods: We utilized the TriNetX online database to extract patient data from Feb. 01, 2014 to Feb. 01, 2024. Type 2 diabetes mellitus (T2DM) patients treated with MRAs but without undergoing adrenalectomy within 3 months before and after PA diagnosis are selected. Comparison was done between patients who had used SGLT2 inhibitors and those who didn't. The primary clinical outcome is all-cause mortality, and secondary outcomes include major adverse cardiovascular events (MACE) and major adverse kidney events (MAKE). Hazard ratios (HRs) and 95% confidence intervals (CI) were calculated with 1:1 ratio propensity score matching.

Results: Among 9,624 PA patients identified, 1,774 were SGLT2 inhibitor users, and 7,850 were non-users. The SGLT2 inhibitor users exhibited a lower hazard ratio of all-cause mortality (0.61, 95%CI [0.48-0.78]), MACE (0.60, 95%CI [0.46-0.77]), and MAKE (0.74, 95%CI [0.59-0.92]) compared to non-users.

Conclusion: SGLT2 inhibitors demonstrated a risk reduction effect in all-cause mortality, MACE, and MAKE in PA patients treated with MRA. These findings suggest a potential benefit of using SGLT2 inhibitors to maintain complications in PA management strategies.

Keywords：SGLT2 inhibitor, MRA, all-cause mortality, MACE, MAKE


Outcome
Main Outcome
All-cause Mortality
MACE
MAKE
Specific Outcome
AMI+Mortality
Stroke+Mortality
CA + Mortality
ESRD+Mortality
HF+Mortality
Positive Outcome Control
Genital infection
Negative Outcome Control
Substance abuse
Conjuctivitis
Influenza
COPD
Appendicitis
Positive Exposure Control
ACEi/ARB
Negative Exposure Control
Ibuprofen
aHR [CI]
p value
0.61 [0.48-0.78]
< 0.01
0.60 [0.46-0.77]
< 0.01
0.74 [0.59-0.92]
< 0.01
0.56 [0.43-0.72]
< 0.01
0.73 [0.62-0.86]
< 0.01
0.60 [0.78-0.75]
< 0.01
0.56 [0.48-0.67]
< 0.01
0.67 [0.48-0.94]
0.02
2.60 [1.39-4.87]
< 0.01
0.71 [0.36-1.41]
0.33
0.99 [0.54-1.80]
0.97
1.08 [0.64-1.81]
0.78
0.98 [0.84-1.14]
0.80
0.62 [0.15-2.60]
0.51
0.66 [0.53-0.83]
< 0.01
1.19 [0.82-1.74]
0.35
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
2.25
2.50
Adjusted Hazard Ratio

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0204
Abstract Submission No.：APCN20250964

Association of Non-High-Density Lipoprotein Cholesterol to High-Density Lipoprotein Cholesterol Ratio (NHHR) with Cardiovascular-Kidney-Metabolic (CKM) Syndrome Stages

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[2] Department of Cardiology, The First Affiliated Hospital of Guangxi Medical University, Nanning, Guangxi, China.

Abstract

Background: As an emerging lipid marker, the non-high-density lipoprotein cholesterol to high-density lipoprotein cholesterol ratio (NHHR) has attracted much attention in studying cardiovascular disease, kidney disease, and metabolic disorders. However, its role in cardiovascular-renal-metabolic (CKM) syndrome remains unclear. This research investigates the relationship between NHHR and CKM syndrome stages in a nationally representative U.S. cohort.

Methods: A total of 14638 participants were included out of 51,199 from the NHANES 2005-2018 survey. Analyzed using a survey weighting approach to ensure a nationally representative sample. The connection of NHHR with CKM syndrome was assessed via multivariate logistic regression, restricted cubic splines (RCS), and subgroup analyses. The predictive performance of NHHR across **different CKM stages was assessed via the Receiver operating characteristic (ROC) curve.**

Results: The NHHR level in patients with CKM syndrome was higher than in patients without (2.87±1.14 vs 2.35±0.93 mg/dL, P<0.001). The multivariate logistic regression analysis suggested a positive connection between NHHR and CKM syndrome. The RCS analysis revealed a nonlinear association between the NHHR and CKM syndrome (nonlinear $p < 0.001$). ROC curve analysis demonstrated that NHHR had the best discriminatory ability for CKM stage 2 (area under the curve 0.673). Subgroup analyses revealed that age, race, and education significantly influenced the connection between NHHR and CKM syndrome.

Conclusion: This research confirmed that NHHR was positively correlated with CKM syndrome and had the best predictive ability for CKM stage 2, suggesting that NHHR may assist in the early diagnosis and intervention of CKM syndrome.

Keywords：Non-high-density lipoprotein cholesterol to high-density lipoprotein cholesterol ratio (NHHR); Cardiovascular kidney metabolic (CKM) syndrome; NHANES; Lipid metabolism; Metabolic syndrome.

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0205
Abstract Submission No.：APCN20250983

Urate-Lowering Therapy and Risk of Cardiorenal-Related Mortality in Patients with Type 2 Diabetes and Hyperuricemia: A Retrospective Cohort Study

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[2] School of Pharmacy, Kaohsiung Medical University, Taiwan

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Abstract

Introduction

Patients with type 2 diabetes mellitus (T2DM) are at increased risk of cardiovascular death, making the prevention of long-term complications a clinical priority. Hyperuricemia (HUA) frequently co-exists with T2DM and may contribute to cardiovascular and renal damage through mechanisms involving monosodium urate crystal deposition and crystal-independent pathways, including oxidative stress, endothelial dysfunction, and systemic inflammation. Although observational studies have linked HUA to increased mortality in diabetic populations, definitive evidence supporting the clinical benefits of urate-lowering therapy (ULT) remains limited. Therefore, this study aimed to evaluate the association between ULT initiation and cardiorenal-related mortality and all-cause mortality among patients with T2DM and HUA in a real-world setting.

Methods

We conducted a retrospective cohort study within a target-trial emulation framework using a multicenter electronic health-record database in southern Taiwan. Eligible adults included patients with previously diagnosed T2DM and newly identified HUA who either initiated ULT or did not initiate therapy between January 1, 2016, and December 31, 2021. Clinical effectiveness was assessed by comparing matched cohorts of ULT users and non-users for cardiorenal-related mortality and all-cause mortality. Propensity-score matching was employed to minimize selection bias and ensure well-balanced comparison groups. Sub-distribution hazard ratios (HRs) with 95% confidence intervals (CIs) were estimated using Fine–Gray competing risk models.

Results

From 9,164 eligible individuals, 1,461 matched pairs of ULT users and non-users were analyzed. Over a median follow-up of 4.1 years, ULT initiation was significantly associated with lower risks of cardiorenal-related mortality (HR, 0.68; 95% CI, 0.55–0.85; $p < 0.001$) and all-cause mortality (HR, 0.74; 95% CI, 0.65–0.83; $p < 0.001$) compared with no initiation. These associations remained consistent across several sensitivity analyses, including an on-treatment (analogous to per-protocol) analysis.

Conclusion

Among adults with T2DM and HUA, initiation of ULT was associated with significantly reduced risks of cardiorenal-related and overall mortality. These findings provide real-world evidence supporting timely ULT initiation in high-risk diabetic patients, highlighting a potential therapeutic opportunity that could be confirmed by further clinical studies.

Keywords：Type 2 diabetes mellitus; Hyperuricemia; Cardiorenal outcome; Urate-lowering therapy

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0206
Abstract Submission No.：APCN20250999

Integrated Analysis of Urinary Microbiota And Metabolomics In Patients With Diabetic Kidney Disease And Their Clinical Correlations

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Abstract

Introduction: Diabetes has emerged as a major global public health challenge. Approximately 537 million patients worldwide face risks of long-term complications, with 20%-40% progressing to diabetic kidney disease (DKD), one of the leading causes of end-stage renal disease. Recent studies highlight the critical role of systemic inflammation and microbiome dysbiosis in diabetic complications. The role of urinary microbiota structural characteristics and their interaction mechanisms with metabolites in the progression from diabetes to DKD has not yet been revealed. This study aims to investigate the metabolic profiles and urinary microbiota features in DKD patients through urinary metabolomic and microbiome analyses. It will identify differential microbiota and metabolites in DKD patients, analyze their correlations with clinical indicators, and provide novel insights into DKD pathogenesis.

Methods: Using liquid chromatography-mass spectrometry (LC-MS), we characterized the metabolomic profiles of three groups: DKD patients (N=56), diabetes patients without kidney injury (Non-DKD, N=43), and healthy controls (HC, N=20). Potential DKD-related biomarkers were screened through comparative analysis. Concurrently, 16S rRNA microbiome analysis was employed to delineate the overall urinary microbiota structure and identify differential microbial taxa. Integrated analyses were conducted to explore correlations among clinical data, urinary microbiota features, and metabolite characteristics across all groups.

Results:

1.Metabolomics: LC-MS metabolomic analysis of urine samples from DKD, Non-DKD, and HC groups revealed predominant dysregulation of steroid hormone biosynthesis, diterpenoid biosynthesis, and phenylalanine metabolism pathways in DKD patients. The study further identified nine potentially valuable significantly differential metabolites, revealing multiple pathophysiological alterations in DKD patients, including: (1) oxidative stress and homeostatic imbalance caused by abnormal lipid metabolism; (2) disordered energy metabolism; (3) hyperactive coagulation state.

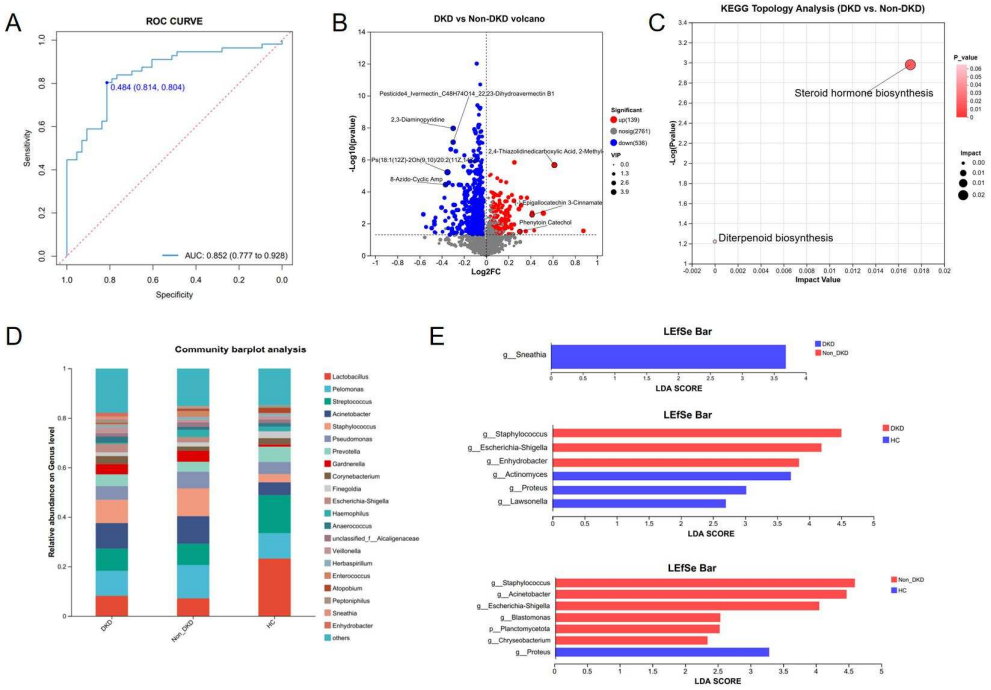
2.Microbiome: 16S rRNA analysis showed that dominant urinary microbiota in DKD included five phylum and eight genus. While α- and β-diversity indices showed no intergroup differences, DKD patients exhibited elevated Sneathia, Staphylococcus, Escherichia-Shigella, and Enhydrobacter abundances, alongside reduced Proteus, Actinomyces, and Lawsonella, suggesting their diagnostic relevance.

3.Clinical Correlations: Multivariate logistic regression identified hypertension, elevated fasting C-peptide, triglycerides, and plasma fibrinogen as independent risk factors for DKD (AUC=0.852, 95% CI: 0.777–0.928). Integrated analysis demonstrated positive correlations between oryzalexin A and eGFR, and negative associations between 5α-dihydroprogesterone and Actinomyces/Lawsonella.

Conclusion: Multi-omics integration highlights the critical roles of microbiota-metabolite crosstalk in DKD pathogenesis. The identified differential metabolites, pathways, and microbiota offer

promising biomarkers for early diagnosis and unveil novel therapeutic targets, advancing our understanding of DKD mechanisms and intervention strategies.

Keywords：Type 2 diabetes mellitus, Diabetic kidney disease, urinary microbiota, Metabolomics, Diagnosis



Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0207
Abstract Submission No.：APCN20251037

Chronic Kidney Disease Stage 5 With CAPD, Metabolic Bone Disease, Osteoporosis, Hypocalcemia, Vitamin D Deficiency, Secondary Hyperparathyroidism, HHD, Vascular Calcification, Short Stature, Resting Puberty, Subclinical Hypothyroidism, Renal Anemia,HepatitisC

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Abstract

Introduction

CKD-MBD is a systemic disorder caused by CKD that manifests as one or a combination of:metabolic abnormalities in laboratory parameters such as calcium and phosphorus levels, PTH hormone ,or vitamin D;abnormalities in bone turnover,mineralization,volume,linear growth, or strength (osteodystrophy);vascular calcification in the form of cardiovascular disease (such as arteriosclerosis and left ventricular hypertrophy [LVH]) and/or in other soft tissues, with manifestations including skin lesions and abnormalities.

The prevalence of CKD-MBD among the 86 patients with Peritoneal Dialysis in Singaporean study was 86.0% (KDOQI) and 54.7% (KDIGO). Exposure to uremic toxins, bone mineral disorders, metabolic acidosis, and anemia according to the duration and severity of chronic kidney disease are the main factors contributing to growth disorders, delayed sexual maturation, and impaired thyroid hormonal function. Maintaining optimal pubertal growth and normal sexual maturation is challenging problems; approximately, 50% of children requiring renal replacement therapy (RRT) before their 13th birthday show delayed puberty and have a final height below the normal range.

Case Illustration

Male, 19 yo. CKD on CAPD , since 4,5y.o treated with steroid for Nephrotic Syndrome, admitted in Mohammad Husein Hospital, Palembang with weakness, short stature and not yet having nocturnal emission, small voice. morning erectile+.No history IUGR, normal milestones development before 4 y.o. Tibia fracture 3 years ago: falling down from bicycle (healed by gipsfixation). Routinely CAPD for 6 year (dianeal 1,5% 3x/d, dianeal 2,5% 1x/d, dwell 800 ml/x,profit 100-200ml/x effluent clear).Compos Mentis, BP:160/110mmHg,HR84bpm,RR:20xbpm,T:36,6C. Paleconjunctival,proportional short stature.Height: 140,5 cm, lower segmen 70,5 cm, Weight 28 kg, IMT 14,18 kg/m2 , Height potency: Tanner formula 158cm(149-166,5cm),pubic/axillar hair-, orchidometer:12(dex),15(sin), Penis length nonerection/erection: 7 cm/9cm

Laboratory:

Hb:7,8G/dL,MCH/MCV/MCHC:30/82,6/36,SI:146mcg/dL,TIBC:212mcg/dL,Ferritin:1448ng/mL,Ureum/creatinin:121/12,82mg/dL,Fosfor:6,8mg/dL,Albumin:3,1mg/dL,Calsium:8,1mg/dL,VitaminD25OH:15,1nmol/L,ALP:249IU/L,PTH:604pg/mL,Testosterone:32,8ng/mL(1,74-8,43ng/mL),Cortisol:79nmol/L,LH:6,42mIU/mL(0,57-12,07mIU/mL),FSH:10,56mIU/mL(0,95-11,95mIU/mL),IGF1:118ng/mL(105-346ng/mL),Prolactin:18,07ng/mL(<25ng/mL),GH:2,15ng/mL(0,05-≤3ng/mL),FT4/TSH:0,92ng/mL/6,710mIU/L,antiTPO:0(<5,61IU/mL),HCVRNA:2,38 x 10 mil/mL, SGOT/ SGPT:41/38U/L.pH7,389, HCO3 24mEq/L,pCO2 39,4mmHg
Other exams : Fibroscan:6,6 kPa (F2),Bone age: matched with 12yo boneage(retardedboy),BMDZscore:-3,9(spine),-5,2(femur).ECG:LVH, Echocardiografi:Diastolic dysfunction,EF62%,aorta calcification+, IMTcarotisdext1,14mm.RoThorax:LVH,scoliosis,USG: contracted kidney,Fundus:papieldema-, PET:Kt/V 2,41, average membrane PD
Treatment:Nifedipin3x10mg,Valsartan1x160mg,Clonidin3x0,15mgpo,Carvedilol 2x6,25mgpo, Calos3x50 mgpo,Ca gluconas 1 flz IV, transfusion WE400 ml. Epoetinalpha1x2000IU SC2x/w, Daclatasvir sofosbuvir1x60/400mgpo .Nutrition optimization,Correcting hypocalcemia, VitD to the target in Planning for Denosumab,and testosterone theraphy, Heparin 2x5000IU SC.

Result

Hb:11 g/dL,Ca:8,6 mEq/L, BP 130-145/100 mmHg

Discussion

The major predictive factors influencing body growth in children with CKD are baseline glomerular function less than 45 mL/min/1.73 m², proteinuria (urine protein to creatinine ratio [Up:Uc]>0.2), hypertension,anemia,hyperparathyroidism, vitamin D insufficiency or deficiency, hypocalcemia, hyperphosphatemia,metabolic acidosis. Uremic toxin also disturbing signal for hormonal HPA axis,causing inhibition sexual maturity,growth&thyroid hormone.

Conclusion

Early awareness of complications in patients with Chronic Kidney Disease (CKD) is crucial for appropriate and comprehensive management.

Keywords：CKD-MBD, CAPD, short stature, osteoporosis ,hypocalcemia, vitamin D deficiency, hyper PTH, HHD, kalsifikasi vaskuler, resting puberty,subclinical hypothyroidism, renal anemia, hyperkoagulasi, Hepatiti

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0208
Abstract Submission No.：APCN20251045

Geriatric Nutritional Risk Index predicts mortality risk in Cardiovascular-Kidney-Metabolic Disease: a NHANES cohort study

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Abstract

Introduction: The Geriatric Nutritional Risk Index (GNRI) is an objective nutritional assessment tool that has demonstrated prognostic value in various clinical settings. Nevertheless, its predictive performance across the Cardiovascular-Kidney-Metabolic (CKM) disease stage and its interaction with CKM staging remains unclear. Therefore, additional research specifically focusing on the relationship between GNRI and mortality risk across the entire CKM spectrum is necessary to determine its widespread applicability. The objective was to investigate GNRI's ability to predict mortality risk and its interaction with CKM staging in a large population-based cohort.

Methods: We analyzed 19,208 participants from the National Health and Nutrition Examination Survey (NHANES) 1999-2018 cycles with complete GNRI and mortality data, and statistical analyses were performed after weighting. GNRI categories were defined as: no risk (>98), low risk (92-98), moderate risk (82-92), and severe risk (<82). Participants were categorized into CKM stages (0-4) based on metabolic risk factors, chronic kidney disease, and cardiovascular disease presence. Propensity score matching (PSM) minimized sociobehavioral confounders. We used weighted logistic regression and Cox proportional hazards models to assess the relationship between GNRI and mortality risk. Restricted cubic spline analysis examined non-linear GNRI-mortality associations. Kaplan-Meier survival curves were generated, and adjusted hazard ratios were calculated using Cox regression across different GNRI categories.

Results: Our investigation examined 19,208 participants' data and revealed a significant inverse association between GNRI and mortality risk across all CKM stages. During median follow-up of 8.2 years, 2,979 deaths occurred (15.5%). GNRI demonstrated strong categorical risk stratification: compared to the no-risk group (GNRI >98), adjusted hazard ratios were 1.94 (95% CI: 1.74-2.17) for low risk, 2.78 (95% CI: 2.23-3.47) for moderate risk, and 5.90 (95% CI: 3.16-11.01) for severe risk (all $p<0.001$). The continuous GNRI analysis showed each unit increase associated with 5.6% mortality reduction [HR (95%CI), 0.944 (0.937-0.951), $p<0.001$]. Significant interactions emerged between GNRI categories and CKM stages (p-interaction<0.01), with GNRI's predictive value varying across the CKM spectrum. In early CKM stages (0-2), moderate-risk GNRI conferred 2.4-fold increased mortality, while in advanced stages (3-4), the risk increased to 3.8-fold.

Conclusion: The findings of this study suggested that GNRI serves as a robust prognostic indicator across all CKM stages, with up to six-fold increased mortality risk in severe malnutrition. Its integration with CKM staging enhances risk stratification, positioning GNRI as a valuable clinical tool for identifying high-risk patients who may benefit from targeted nutritional interventions.

Keywords：CKM, GNRI, CKD

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0209
Abstract Submission No.：APCN20251048

Title Naples Prognostic Score Effectively Predicts Mortality Risk Across All Cardiovascular Kidney Metabolic Stages In United States Adults

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Abstract
Introduction: Previous studies have demonstrated that the Naples Prognostic Score (NPS) provides strategic direction in the prognosis of malignant illness. Nevertheless, its predictive performance across different Cardiovascular-Kidney-Metabolic (CKM) health stages remains underexplored. Therefore, additional research specifically focusing on the relationship between NPS and mortality risk across the entire CKM spectrum is necessary to determine its widespread applicability. The objective was to explore the relationship between the NPS and mortality risk across all CKM stages in a large population-based cohort.
Methods: A total of 19,114 participants from the National Health and Nutrition Examination Survey (1999-2018) were included in our research, and statistical analyses were performed after weighting. NPS was calculated incorporating serum albumin, total cholesterol, neutrophil-to-lymphocyte ratio, and lymphocyte-to-monocyte ratio. Participants were categorized into CKM stages (0-4) based on metabolic risk factors, chronic kidney disease, and cardiovascular disease presence. We used weighted logistic regression and Cox proportional hazards models to assess the relationship between NPS and mortality risk. Restricted cubic spline (RCS) analysis examined dose-response relationships. Kaplan-Meier survival curves were generated, and adjusted hazard ratios were calculated using Cox regression after dividing participants into group 0, group 1, and group 2 with NPS values of 0, 1-2, and 3-4, respectively.
Results: Our investigation examined 19,114 participants' data and revealed a significant positive association between NPS and mortality risk across all CKM stages. During follow-up, 2,961 deaths occurred. RCS analysis demonstrated strong non-linear dose-response relationships (P-non-linear=0.003) with steep mortality risk increases at higher NPS scores. Each unit increase in NPS was associated with 29.5% mortality risk elevation [HR (95%CI), 1.295 (1.247-1.345), p<0.001]. After assigning participants to groups 0, 1, and 2, with NPS values of 0, 1-2, and 3-4, respectively, survival curves were created and Cox regression analysis was carried out. All-cause mortality of group 1 [HR (95%CI), 1.250 (1.106-1.412), p<0.001] and group 2 [HR (95%CI), 2.075 (1.803-2.387), p<0.001] were significantly elevated compared to group 0. Importantly, NPS maintained significant predictive value from early CKM stages through advanced stages, with consistent prognostic performance throughout the cardiovascular-metabolic disease continuum.
Conclusion: The findings of this study suggested that NPS serves as a robust prognostic indicator across all CKM stages, with over two-fold risk increase in high-risk individuals regardless of underlying cardiovascular-metabolic health status. This universal applicability positions NPS as a valuable clinical tool for comprehensive risk assessment and targeted intervention strategies across the entire disease spectrum.

Keywords：CKM, NPS

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0210
Abstract Submission No.：APCN20251062

Impact of Diabetes Mellitus on the Long-Term Risk of Kidney Function Deterioration After Heart Transplantation: A 20-Year Multi-Institutional Cohort Analysis

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Abstract

Introduction: Renal dysfunction is a common long-term complication after heart transplantation (HT). This study evaluated the impact of diabetes mellitus (DM) on the incidence of advanced chronic kidney disease (CKD stage 4/5) and end-stage renal disease (ESRD) over 20 years of follow-up.

Methods: Using the TriNetX Global Collaborative Network, we identified 13,797 adult HT recipients (5,018 with DM, 8,779 without DM) from 147 healthcare organizations (2000–2020). Patients with prior CKD4/5 or ESRD were excluded. Cox proportional hazards models estimated adjusted hazard ratios (HRs) for new-onset CKD4/5 and ESRD at 5, 10, 15, and 20 years post-transplantation, adjusting for age, sex, comorbidities, lab values, and medication use.

Results: DM significantly increased the risk of CKD4/5 and ESRD at all timepoints. HRs for CKD4/5 were 2.33 at 5 years, 2.05 at 10 years, 2.04 at 15 years, and 2.03 at 20 years. For ESRD, HRs were 2.55, 2.19, 2.18, and 2.16, respectively. Other independent predictors included eGFR 30–59 (HR ~1.6–1.9), proteinuria (HR ~1.4), acute kidney injury (HR ~1.2–1.5), hypertension (HR ~1.3–1.6), and absence of ACE inhibitor use (HR ~0.8, protective). Hemoglobin A1c and serum urea nitrogen also correlated with increased ESRD risk.

Conclusions: Diabetes mellitus is a robust and persistent predictor of long-term renal deterioration in HT recipients. Early identification and intervention in high-risk patients—particularly those with DM, impaired baseline renal function, and proteinuria—may improve post-transplant renal outcomes.

Keywords： heart transplantation; chronic kidney disease; end-stage kidney disease; diabetes mellitus

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0211
Abstract Submission No.：APCN20251073

Disparities in CKD Mortality from High BMI: A Global Burden of Disease Study by SDI Regions

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Abstract

Chronic kidney disease (CKD) significantly contributes to global mortality, with approximately 850,000 deaths annually according to the WHO. High body mass index (BMI) is a key risk factor driving CKD progression. This study aims to examine the mortality burden of CKD attributed to high BMI across different Socio-Demographic Index (SDI) regions.

This study utilizes secondary data obtained from the Global Burden of Disease (GBD) 2021 database. The inclusion criteria focused on individuals aged 20-54 years living in countries classified under the SDI framework. According to GBD, SDI is a composite measure of a region's development based on income per capita, average educational attainment, and fertility rates among those under 25 years old. The mortality data analyzed in this study reflect deaths attributed to CKD caused by high BMI, disaggregated by SDI region and sex for the years 2020 and 2021.

In 2020, mortality from chronic kidney disease (CKD) attributed to high body mass index (BMI) was highest in middle SDI countries, totalling 17,575 deaths, with 18.15% occurring in males and 21.21% in females. High SDI countries followed with 5,799 deaths (35.80% males, 34.33% females), and low SDI countries reported 4,054 deaths (11.05% males, 14.44% females). In 2021, an increase in mortality was observed across all SDI groups. Middle SDI countries continued to carry the highest burden with 18,063 deaths (18.39% male, 21.55% female), followed by high SDI countries with 5,888 deaths (36.08% males, 34.71% females) and low SDI countries with 4,281 deaths (11.28% males, 14.67% females).

The findings reveal that middle SDI countries consistently bear the highest mortality burden of CKD attributed to high BMI with a consistent upward trend over the two-year period. This highlights the urgent need for targeted public health strategies to address obesity and its renal complications, particularly in middle-income countries.

Keywords：Chronic Kidney Disease, Body Mass Index, Global Burden

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0212
Abstract Submission No.：APCN20251091

Analysis of The Effectiveness of HbA1C and UACR in Shared Decision Making Intervention for Hyperglycemia

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Abstract
Objective: Hyperglycemia can easily lead to small arterial vascular disease. To understand the shared decision-making of patients. For this purpose, the hyperglycemic cases were cared for 3 months and 6 months before and after the shared intervention, and the differences in glycosylated hemoglobin (HbA1C) and urine albumin (UACR) were analyzed.
Methods: An experimental study was conducted in our hospital. (I) Patients with type 2 diabetes who had HbA1C ≥ 9% twice within 1 year and did not receive insulin treatment were selected. (II) From March 2013 to February 2014. (III) Patient decision aid (PDA) - "What are the treatment options if type 2 diabetes is not well controlled?" (IV) Confirmatory test: HbA1C and UACR, differences before intervention, 3 months and 6 months after intervention. (V) Descriptive statistics, paired t test, Pearson product-moment correlation analysis, Mann-Whitney U test.
Results: 38 data sets, including 20 males (52.6%) and 18 females (47.4%). Paired t-tests were used to compare the difference in anxiety levels before and after decision-making, and the average anxiety level decreased from 3.97 to 2.37 ($p<0.001$). Pearson product difference comparisons of decision-making questions were associated with HbA1C and UACR values at 3 and 6 months. It was found that the UACR value at 6 months was negatively correlated with the 6th question ($r=-0.402$, $p<0.05$). "Did SDM help you organize your thoughts about these decisions?" This means that the more SDM can help provide ideas, the lower the UACR value at 6 months. The UACR values at 3 and 6 months were negatively correlated ($r=-0.347$, $p<0.05$; $r=-0.332$, $p<0.05$). "Did it help you think about whether you can participate in this decision?" This means that the higher the degree of patient participation in thinking, the greater the decrease in UACR. The UACR value at 3 months was negatively correlated with the 11th question ($r=-0.342$, $p<0.05$). "Before making a joint decision, how anxious were you when facing the current medical problem?" means that the higher the anxiety level before SDM, the greater the decrease in UACR in the third month.
Conclusion: More than 60% of patients are willing to accept active treatment after establishing a good doctor-patient relationship. The HbA1C value gradually improved, significantly reducing the anxiety level of patients. The UACR project increased significantly, indicating that patients are concerned about the complications of kidney damage, and it is advisable to strengthen kidney protection awareness during diabetes health education.

Keywords：Hyperglycemia

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0213
Abstract Submission No.：APCN20251108

Continuous Loop Diuretic Infusion in Hypotensive Cardiorenal Syndrome Type-1: Cinical Challenges in A Tertiary Hospital

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Abstract

Abrupt changes in cardiac output, such as in an acute myocardial infarction, cause deterioration in kidney function. This changes due to the kidneys receiving approximately 25% of the cardiac output. A sudden decrease in afferent blood flow activates the RAAS and neurohormonal system, leading to kidney injury. The interaction of these organs is called cardio-renal syndrome (CRS). Diuretics are often used in CRS to reduce fluid overload. But in some cases, diuretics can cause hypotension, which can worsen hypotensive patients. Acute renal failure due to cardiac causes can sometimes progress until the patient needs to undergo hemodialysis.

An 89-year-old male presented to the emergency room with the complaint of chest pain, sweating, and nausea. The ECG showed inferior ST-elevation with blood pressure 58/30 mmHg and cold extremities. Laboratory findings for Troponin-I were>15ng/mL, creatinine 2,8 ng/mL, and urea 64ng/mL. The patient was admitted to the intensive care unit and received a fibrinolytic drug. Six hours after admission, the patient undergoes oliguria and altered mental status. To prevent fluid overload, the patient receives IV-bolus diuretics; however, after 6 hours, the urine output remains 40cc/6 hours. Therefore, continuous diuretics are administered via the syringe pump. An intravenous syringe pump vasopressor was given to the patient because of the hypotensive status. Three days of care in the ICU, the renal function test showed urea 178 mg/dL and creatinine 3,4 mg/dL. Hemodialysis was needed for the patient, but the patient could not undergo hemodialysis because they were a ventilated patient. The patient is improving and has been discharged after 8 days of treatment

Keywords：cardio renal syndrome, diuretics, hemodialysis

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0214
Abstract Submission No.：APCN20251117

Lipopolysaccharide-Binding Protein, Inflammatory Synergy, and Fluid Dysregulation in Hemodialysis: Evidence for a Gut–Immune–Fluid Axis

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Abstract

Background

Fluid overload and inflammation are common in hemodialysis (HD), yet the role of gut-derived mediators like lipopolysaccharide-binding protein (LBP) remains unclear.

Methods

In 352 HD patients, we examined the relationships between LBP, CD14, TNF-α, and body fluid compartments (ECW, ICW, TBW) using bioimpedance spectroscopy. Multivariable regression and interaction models were used to assess associations, stratified by diabetes (DM) and inflammation (hs-CRP).

Results

LBP was positively associated with ECW and TBW, especially in mid-range quartiles. A significant interaction between CD14 and TNF-α ($p = 0.033$) suggested synergistic inflammatory effects on ECW. In patients with DM and elevated hs-CRP, higher LBP was paradoxically linked to lower ICW and TBW, consistent with immune-mediated cellular fluid loss. LBP was not significantly associated with body cell mass (BCM), suggesting its role is limited to fluid redistribution rather than nutritional status.

Conclusions

LBP and its downstream inflammatory mediators contribute to abnormal extracellular fluid retention in HD patients, particularly when compounded by diabetes and systemic inflammation. These findings support a gut–immune–fluid axis and may inform targeted fluid and inflammation management strategies.

Keywords：Lipopolysaccharide-Binding Protein,Hemodialysis

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0216
Abstract Submission No.：APCN20251134

Indonesian Natural Compounds as DPP-IV Inhibitors : Virtual Discovery of Therapeutic Agents for Diabetic Kidney Disease

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Abstract
Objectives: Dipeptidyl peptidase IV (DPP-IV) is an enzyme that degrades incretins, affecting visceral adipose tissue metabolism and insulin secretion. DPP-IV plays an important role in the pathophysiology of chronic kidney disease (CKD), primarily through metabolic, immunological, and fibrotic mechanisms. DPP-IV inhibitors not only improve glucose control but also have potential renoprotective effects, making them an attractive therapeutic target in the management of diabetic kidney disease. Some evidence has shown natural compounds have therapeutic effects for human diseases. This study aimed to evaluate Indonesian phytochemicals as potential DPP-IV inhibitors for diabetic kidney disease therapy.
Methods: In silico study using molecular docking between DPP-IV (PDB : 5J3J), Sitagliptin, and Indonesian phytochemi¬cals. The phytochemicals were obtained from HerbalDB and met the criteria for Lipinski's rule for drug availability. Mac¬romolecule preparation was done using AutoDock, while the molecular docking process used PyRx. Protein-ligand inter¬action was visualized using Pymol. The indicators for data analysis were binding energy score must lower than Sitagliptin (-8.6 kcal/mol), root-mean-square deviation (RMSD) score ≤2 Å, and bound with DPP-1V residues where Sitagliptin bind, such as Glu`205, Glu206, Tyr662, and Arg358.
Results: The docking results showed that 1.10-Phenanthroline Monohydrate, Roxburghine B, and Lanuginosine had better potential activity to inhibit DPP-IV than Sitagliptin. 1.10-Phenanthroline Monohydrate, Roxburghine B, and La¬nuginosine had lower binding scores (-8.7±0.1, -8.7±0.1, and -8.7±0.1 kcal/mol, respectively) than the standard ligand. In addition, they bound to DPP-IV at Glu`205, Glu206, Tyr662, and Arg358 residues. 1.10-Phenanthroline Monohydrate, Roxburghine B, and Lanuginosine are originally isolated from the seed of the plant Zea mays, the leaves and stems of the plant Uncaria gambir, and the leaves of the plant Annona mucirata, respectively.
Conclusions: 1.10-Phenanthroline Monohydrate, Roxburghine B, and Lanuginosine, new DPP-IV inhibitors derived from Indonesian phytochemicals, have been recognized as promising potential treatments for diabetic kidney disease therapy.

Keywords：DPP-IV inhibitors, Indonesian phytochemicals, Diabetic kidney disease

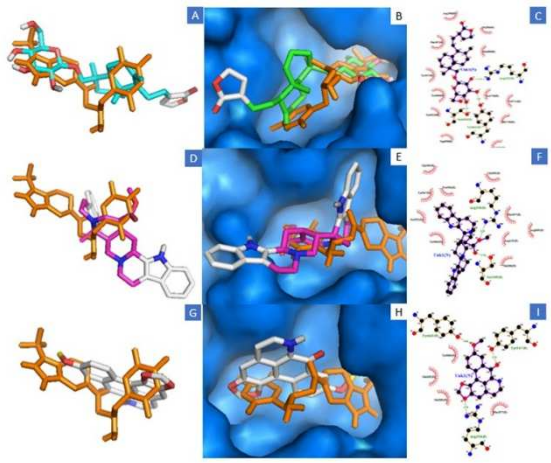

Figure 1. Visualization of Sitagliptin and ligand standards/phytochemicals with DPP-IV using the Pymol (A, B, D, E, G, H) and LigPlot (C, F, I). (A-C) Conformational of Sitagliptin, 1.10-Phenanthroline Monohydrate and DPP-IV. (D-F) Conformational of Sitagliptin, Roxburghine B and DPP-IV. (G-I) Conformational of Sitagliptin, Lanuginosine and DPP-IV.

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0218
Abstract Submission No.：APCN20251155

Clinical Efficacy of Balanced Electrolyte Solutions Versus Normal Saline in Managing Diabetic Ketoacidosis: A Meta-Analysis of Multiple Meta-Analyses

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Abstract

Introduction:
Diabetic ketoacidosis (DKA) is a serious and potentially life-threatening complication of diabetes mellitus, where fluid replacement serves as a fundamental component of treatment. While normal saline has been widely used for resuscitation, balanced electrolyte solutions (BESs), including lactated Ringer's, Hartmann's, Plasma-Lyte, and Sterofundin, have emerged as promising alternatives due to their more physiologic composition. However, conclusions from existing meta-analyses vary. This study synthesizes data from multiple meta-analyses to evaluate the comparative effectiveness of BESs versus normal saline in managing DKA.

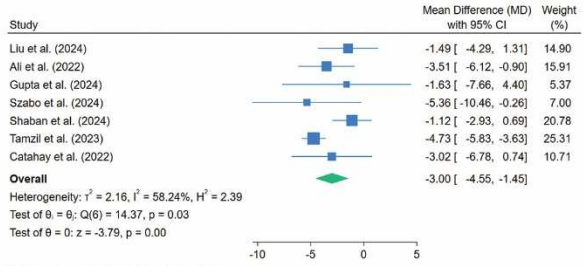
Methods:
Following PRISMA guidelines, we conducted a comprehensive literature search in PubMed, Embase, Scopus, Cochrane Library, and Google Scholar up to May 2025. Eight meta-analyses involving a total of 54,845 participants were included. We extracted pooled mean differences (MDs) with corresponding 95% confidence intervals (CIs) for three major outcomes: time to resolution of DKA, post-resuscitation serum chloride levels, and bicarbonate levels. Heterogeneity was assessed using the I^2 statistic, and publication bias was evaluated using Egger's regression test and funnel plot symmetry.

Results:
BESs were significantly associated with a faster resolution of DKA compared to normal saline (MD = -3.00 hours; 95% CI: -4.55 to -1.45; $I^2 = 58.24\%$; $p < 0.01$), indicating an average 3-hour reduction in treatment duration. However, no statistically significant differences were found in post-resuscitation chloride levels (MD = -2.10 mmol/L; 95% CI: -5.33 to 1.12; $I^2 = 97.38\%$; $p = 0.20$) or bicarbonate levels (MD = 0.69 mmol/L; 95% CI: -0.22 to 1.59; $I^2 = 58.24\%$; $p = 0.14$). Egger's test showed no evidence of publication bias ($p = 0.2801$), and the symmetrical funnel plots further supported the reliability of the pooled findings.

Conclusion:
This meta-analysis of meta-analyses provides consolidated evidence suggesting that balanced electrolyte solutions may offer a clinically meaningful benefit in accelerating DKA resolution compared to normal saline, without significantly altering chloride or bicarbonate levels post-resuscitation. Given the growing focus on optimizing fluid therapy, BESs may be considered as a preferred alternative in the acute management of DKA.

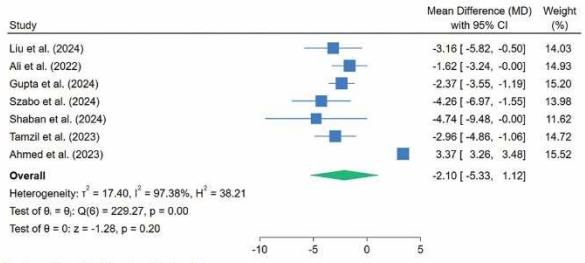
Keywords：Diabetic ketoacidosis, Balanced electrolyte solutions, Normal saline, Fluid resuscitation

Forest plot showing the effect of balanced electrolyte solution versus normal saline on the time of resolution to DKA.



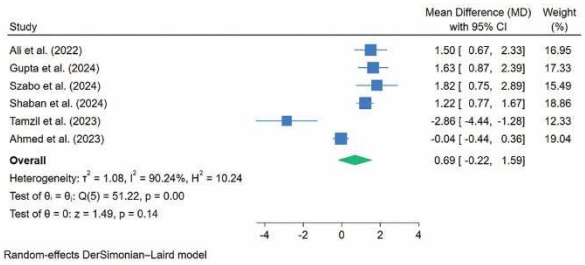
Random-effects DerSimonian–Laird model

Forest plot showing the effect of balanced electrolyte solution versus normal saline on the post-resuscitation chloride.



Random-effects DerSimonian–Laird model

Forest plot showing the effect of balanced crystalloids versus normal saline on the post-resuscitation bicarbonate.



Random-effects DerSimonian–Laird model

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0219
Abstract Submission No.：APCN20251160

Risk of renal dysfunction in patients with HIV infection and diabetes: Indicators of infection years and UPCR

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Abstract
Objective: This study investigates the association between HIV infection years and renal dysfunction (proteinuria). With the increase in HIV long-term survival rates, renal complications have become an important chronic care issue, especially for patients with diabetes.
Methods: The subjects were outpatients with HIV and type 2 diabetes in our hospital. The data sources included basic information, self-care and efficacy scales, and blood and urine test data (including glucose, HbA1c, LDL, UPCR, etc.). Descriptive statistics and Pearson correlation analysis were used for variable exploration.
Results: A total of 100 cases were included, with an average age of 52.4 years and an infection year of 13.6 years. The infection year was significantly positively correlated with urine protein ($r=0.340$) and UPCR ($r=0.356$) ($p<0.01$), indicating that the longer the infection time, the higher the risk of renal dysfunction. The average UPCR value reached 450.6 mg/g, which was also higher than the clinical reference value, indicating that some cases had obvious proteinuria.
Conclusion: The results show that HIV infection years can be used as an important indicator to predict the deterioration of renal function, especially the increase of UPCR, which requires early intervention management. It is recommended to integrate regular renal function assessment, drug nephrotoxicity monitoring and nutritional intervention into the integrated care model to delay the progression of renal disease. In the future, the tracking of high-risk cases and individualized care plans should be strengthened.

Keywords：HIV infection, diabetes, renal dysfunction

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0220
Abstract Submission No.：APCN20251164

Impact of Aggressive Intervention on Cardio-Kidney-Metabolic Syndrome to Reduce Risk of Adverse Clinical Outcomes in Patients with Chronic Kidney Disease

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Abstract
Introduction : The Cardiovascular-Kidney-Metabolic (CKM) represents a complex and interdependent interplay between cardiovascular, renal, and metabolic systems, primarily encompassing heart failure, chronic kidney disease (CKD), and type 2 diabetes (T2D). Dysfunction in one system triggers or worsens dysfunction in others, perpetuating a self-reinforcing cycle that elevates morbidity and mortality globally. The American Heart Association (AHA) recently proposed a CKM classification system to stratify patients and facilitate early interventions. Previous study show high-risk CKM related with adverse clinical outcomes in CKD patients, including all-cause mortality and progression to ESRD.
Aim : The aim of this study is to evaluate the impact of aggressive intervention on Cardio-Kidney-Metabolic Syndrome to reduce risk of adverse clinical outcomes in patients with chronic kidney disease
Method : A retrospective cohort study was performed by collecting baseline data of CKD patients from January 2015 to Juni 2025 in Sumber Waras Hospital, West Jakarta Indonesia. All participants were followed throughout the course of the study. The stage and recommended treatment of CKM syndrome was defined into 5 groups based on the standards recommended by the AHA. The aggressive intervention defined by at least 80% recommended treatment delivered to the patient. The intervention consist of comprehensive management for hypertriglyceridemia/hyperlipidemia, hypertension, kidney disease, glucose control, atherosclerotic and heart failure. Cox proportional hazards analysis and Fine-Gray subdistribution model was performed to analyze the prognostic value of different CKM stages on the risk of adverse clinical outcomes (all-cause mortality or progression to End Stage Renal Disease/ESRD) of these patients based on intervention status.
Result : A total 5,349 patients finally completed the follow-up. Among them, 2568 patient (48%) receive aggressive intervention. Compare to the non-aggressive group, the ESRD (OR=0.405, 95% CI 0.113-0.712,p<0.001) and all-cause mortality lower significantly (OR=0.513, 95% CI 0.218-0.791,p<0.001) in aggressive intervention groups. Baseline advance CKM stage (more than 2b) become major risk factors for progression to ESRD (OR=2.713, 95% CI=1.142-5.556, p=0.018) after adjusting confounding factors. We found The aggressive intervention may decline the ESRD progression significantly in advance CKM stage (8.7 ± 2.1 vs 3.5 ± 1.4 years, p<0.001).
Conclusion : High CKM stage has an independent predictive role for adverse clinical outcomes in CKD patients. We found that the aggressive intervention based on baseline CKM stage could decline the ESRD progression and reduce the all-cause mortality, especially in advanced CKM stage.

Keywords：Cardio-Kidney-Metabolic Syndrome, Chronic Kidney Disease, End Stage Renal Disease

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0221
Abstract Submission No.：APCN20251183

Comparative Analysis of the Prevalence and Mortality Rates of Chronic Kidney Disease Caused by Type 1 and Type 2 Diabetes Mellitus in Southeast Asia

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Abstract

Diabetes mellitus is a chronic condition caused by a metabolic, systemic, multifactorial disease, where the body becomes unable to utilize or produce a sufficient amount of insulin to meet its needs. Chronic kidney disease is one of the complications of diabetes mellitus. This study aims to identify the differences in the prevalence and mortality rates of chronic kidney disease caused by type 1 and type 2 diabetes mellitus.

This paper uses data extracted from the Global Burden of Disease, 2021. The inclusion criteria were individuals aged 55 years and above, diagnosed with chronic kidney disease caused by type 1 or type 2 diabetes mellitus. The data analyzed in this study include the prevalence and mortality rates in Southeast Asia. Prevalence is defined as the total number of individuals in a population with type 1 or type 2 diabetes mellitus in 2021. Meanwhile, the mortality rate is defined as the ratio of deaths in a given year to the average total population.

The prevalence of chronic kidney disease was higher in individuals with type 2 diabetes mellitus (6,121,321 cases) than type 1 (107,001 cases), with an overall increase since 1990 despite fluctuations. In 2021, females had a higher prevalence than males for both types, with 3,217,541 cases for type 2 and 65,194 cases for type 1. The mortality rate was also higher in females with type 2 diabetes, reaching 1.46% (26,731 deaths), surpassing that of type 1 diabetes.

The prevalence and mortality rates of chronic kidney disease caused by diabetes mellitus were higher in type 2 than in type 1, with 6,121,321 cases out of a total of 6,228,322 and 52,560 deaths out of 59,752. These rates were also higher in females than in males.

Keywords：Chronic Kidney Disease, Diabetic Kidney Disease, Mortality, Southeast Asia Burden

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0222
Abstract Submission No.：APCN20251196

Gender-Specific Trends in Cardiovascular, Renal and Metabolic (CKM) Risk Factors Among Young Adults: A Cross-Sectional Screening Approach

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Abstract

Introduction: Young adults traditionally considered low risk, are now exhibiting rising rates of hypertension, obesity, dyslipidaemias, and early signs of kidney dysfunction. Gender plays a critical role in the manifestation and progression of these risk factors, influenced by biological, behavioural, and socio-cultural determinants. This study aims to assess the prevalence of CKM risk factors among young adults aged 18–35, with a specific focus on gender-based differences to aid targeted prevention strategies.

Methodology: Study Design- Cross-sectional screening study. Population- 325 randomly selected young adults (out of 1500 students) aged 18-35 years (47% male, 53% female) recruited from university students. Data Collection: Cardiovascular- blood pressure, Renal- serum creatinine, urine albumin-to-creatinine ratio, eGFR (CKD-EPI), Metabolic- BMI, waist circumference, haemoglobin, fasting glucose, HbA1c, lipid profile, uric acid, etc. Lifestyle: Physical activity, diet, smoking, etc. Statistical Analysis: Descriptive statistics for prevalence, Chi-square and t-tests for gender comparisons and regression to identify predictors of CKM risk

Result: Mean age was 22.8±2.3 (19-35) years where 83% ranged from 19-24, 15% 25-29 and 2% in >29 years. BMI in 80% was within range (18.5-24.9 kg/m2) and in 18% higher (≥ 25 kg/m2). The waist circumference was higher in 34% (>40/ 50 cm in M/F). Prevalence of hypertension was 9.3%, nephropathy 8%, diabetes 6.5% and dyslipidaemias 18.5%. Comparing male versus female for CKM risk factors showed high BMI 10 vs. 20%, ($p<0.042$); diabetes in 9.2 vs. 4.1%, ($p=0.05$); dyslipidaemias 65% vs. 96%, ($P<0.001$); hypertriglyceridemia 43 vs. 27%, ($p<0.002$); low HDL 30 vs 92%, ($p<0.001$); systolic hypertension 5.2 vs. 0.6%, ($p<0.012$); eGFR 60 - 90ml/min in 0.7% vs 5% and < 60ml/min in 0 vs. 1.2%,($p=0.053$) . Binary logistic regression analyses were performed to evaluate the association of risk factors with the likelihood of developing the target condition, stratified by sex. It showed males had likelihood of higher HbA1c and triglyceride whereas females a low eGFR and HDL.

Conclusion: The study revealed a concerning prevalence of CKM risk factors among young adults, with notable gender disparities. As a whole central obesity is quite high in young which is identified by waist measurement. Males exhibited higher rates of diabetes, hypertension and dyslipidaemia, while females showed increased markers of metabolic risk, particularly higher body mass index, very low high-density lipoprotein and lower renal function. These findings underscore the need for

gender-sensitive screening and early intervention programs tailored to the unique risk profiles of young men and women.

Keywords：CKM syndrome, young student, risk factors, central obesity

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0223
Abstract Submission No.：APCN20251223

Cardiovascular-Kidney-Metabolic Staging Predicts Long-Term Outcomes in Patients with Acute Kidney Disease

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Abstract
Background:
The Cardiovascular-Kidney-Metabolic (CKM) Syndrome, recently defined by the American Heart Association, provides an integrated framework for staging the continuum of cardiovascular, renal, and metabolic dysfunction. Although the CKM staging system is intended to refine risk stratification and guide clinical management, its prevalence and prognostic significance among patients with acute kidney disease (AKD) recovering from dialysis-requiring acute kidney injury (AKI-D) remain poorly characterized. We aimed to examine the association between CKM stage and the risk of major cardiorenal events in a nationwide cohort of individuals who survived AKI-D.

Methods:
We conducted a retrospective cohort study using Taiwan's National Health Insurance Database from January 2015 to December 2022. Adults aged ≥18 years hospitalized with AKI-D were included. Patients who remained dialysis-free for at least 90 days post-discharge were stratified into three groups according to baseline CKM stage: early-stage CKM (Stages 0–2), intermediate-stage CKM (Stage 3), and advanced-stage CKM (Stage 4). Primary outcomes were long-term all-cause mortality and major adverse kidney events (MAKE). Secondary outcome was progression to CKM Stage 4. Multivariable Cox models estimated adjusted hazard ratios (aHRs) with 95% CIs, controlling for age, sex, comorbidities, and baseline kidney function.

Results:
A total of 22,566 patients with AKI-D (mean age 68.2 years; 58.9% male) who remained dialysis-independent for at least 90 days post-discharge were included. Based on baseline CKM staging, 33.8% were classified as early stage, 35.6% as intermediate, and 30.6% as advanced. Over a median follow-up of 2.8 years (maximum 9 years), the cumulative all-cause mortality rates were 40.3%, 52.9%, and 57.3% in the early, intermediate, and advanced-stage groups, respectively ($p < 0.0001$). Long-term MAKE occurred in 73.7%, 87.4%, and 86.1% ($p<0.001$). Compared to the early-stage group, risk for all-cause mortality and MAKE was higher in both intermediate and advanced stages. The risk of progression to advanced-stage CKM (Stage 4) was also higher in patients with intermediate-stage, compared to the early-stage group.

Conclusion:
In this nationwide cohort recovering from dialysis-requiring AKI, CKM staging demonstrated robust prognostic value for long-term cardio-renal and mortality outcomes. Higher CKM stages were consistently associated with increased risks of all-cause mortality, major kidney and cardiovascular events. These findings support integrating CKM staging into post-discharge risk stratification and its potential utility in guiding surveillance and targeted interventions for this vulnerable population.

Keywords：Acute kidney disease, Cardiovascular-Kidney-Metabolic (CKM) Syndrome

Sample characteristic of AKI-D patients who had no dialysis for 90 days from discharge 2015-2022													
	All		CKM stage0		CKM stage1		CKM stage2		CKM stage3		CKM stage4		P
	n	%	n	%	n	%	n	%	n	%	n	%	
總樣本數	**N=22566**		**N=598**	**2.65**	**N=144**	**0.64**	**N=6895**	**30.55**	**N=8033**	**35.6**	**N=6896**	**30.56**	
年齡(mean/SD)	68.2	14.5											<.0001
性別													
男	13298	58.9	194	32.4	43	29.9	2511	36.4	3632	45.2	2888	41.9	<.0001
總住院天數	27.8	33.7											
baseline eGFR	52.2	35.1											<.0001
CCI score(mean/SD)	4.0	2.6											<.0001
Comobility													
住院前有DM	7720	34.2	14	2.3	20	13.9	2162	31.4	2948	36.7	2576	37.4	<.0001
住院前有HTN	14333	63.5	118	19.7	40	27.8	3811	55.3	5568	69.3	4796	69.5	<.0001
住院前有CHF	6633	29.4	47	7.9	9	6.3	922	13.4	1882	23.4	3773	54.7	<.0001
住院前有CKD	11610	51.4	73	12.2	17	11.8	1856	26.9	5880	73.2	3784	54.9	<.0001
入院前180天有用gout	7489	33.2	72	12.0	30	20.8	1528	22.2	3296	41.0	2563	37.2	<.0001
入院前180天有用antiplate	2912	12.9	47	7.9	10	6.9	611	8.9	880	11.0	1364	19.8	<.0001
入院前180天有用statin	8969	39.7	34	5.7	31	21.5	2283	33.1	3380	42.1	3241	47.0	<.0001
當次住院有:													
sepsis	9361	41.5	311	52.0	82	56.9	3618	52.5	2774	34.5	2576	37.4	<.0001
Prolonged mechanical ventilation>=4 days	8485	37.6	322	53.8	87	60.4	3445	50.0	1931	24.0	2700	39.2	<.0001
Re-intubation of MV	898	4.0	33	5.5	7	4.9	363	5.3	219	2.7	276	4.0	<.0001
Chest tube insertion	1286	5.7	69	11.5	17	11.8	503	7.3	271	3.4	426	6.2	<.0001
ICU	16549	73.3	487	81.4	122	84.7	5610	81.4	4910	61.1	5420	78.6	<.0001
cardiac surgery	2454	10.9	58	9.7	15	10.4	808	11.7	511	6.4	1062	15.4	<.0001
intestine surgery	480	2.1	23	3.8	6	4.2	242	3.5	118	1.5	91	1.3	<.0001
MV	10156	45.0	356	59.5	99	68.8	3957	57.4	2426	30.2	3318	48.1	<.0001
CT	6750	29.9	221	37.0	63	43.8	2409	34.9	1769	22.0	2288	33.2	<.0001
Hypovolemic shock	483	2.1	14	2.3	6	4.2	212	3.1	127	1.6	124	1.8	<.0001
following time (days)	1032.4	800.9											<.0001
Longterm outcome (從出院起**90**天後開始看到**2023**年)													
all-cause mortality	11285	50.0	247	41.3	61	42.4	2771	40.2	4253	52.9	3953	57.3	<.0001
MAKE (re-dialysis, ESRD, persistent renal dysfunction, all-cause morta	18592	82.4	424	70.9	115	79.9	5092	73.9	7021	87.4	5940	86.1	<.0001
MACE (non-fatal MI, stroke, CV death)	5648	25.0	47	7.9	17	11.8	1051	15.2	1909	23.8	2624	38.1	<.0001
CKM stage 4 (CHD, HF, stroke, PAOD, Afib)	5392	34.4	88	14.7	22	15.3	1853	26.9	3429	42.7	-	-	<.0001
1YR outcome (從出院起**90**天後開始看**1**年)													
all-cause mortality	4970	22.0	115	19.2	31	21.5	1276	18.5	1791	22.3	1757	25.5	<.0001
MAKE (re-dialysis, ESRD, persistent renal dysfunction, all-cause morta	14347	63.6	293	49.0	79	54.9	3598	52.2	5700	71.0	4677	67.8	<.0001
MACE (non-fatal MI, stroke, CV death)	3513	15.6	19	3.2	10	6.9	532	7.7	1028	12.8	1924	27.9	<.0001
CKM stage 4 (CHD, HF, stroke, PAOD, Afib)	3156	20.1	37	6.2	12	8.3	1044	15.1	2063	25.7	-	-	<.0001

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0224
Abstract Submission No.：APCN20251234

Epicardial Fat Thickness as a Non-Invasive Biomarker for Vascular Dysfunction and Renal Injury in Diabetic Kidney Disease: A Cross-Sectional Study on the Cardiorenal Axis

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Abstract

Introduction:

Epicardial adipose tissue (EAT) has been increasingly recognized as a metabolically active fat depot closely associated with cardiovascular and renal dysfunction, particularly in the context of type 2 diabetes mellitus. Among individuals with diabetic kidney disease (DKD), the concurrent presence of elevated EAT, increased arterial stiffness, and albuminuria may reflect converging pathways involving chronic inflammation, endothelial dysfunction, and metabolic derangement. However, the underlying interdependence of these factors is yet to be fully delineated.

Methods:

In this cross-sectional study, we evaluated 196 patients diagnosed with type 2 diabetes and varying stages of DKD (mean age 61.5 ± 9.2 years; 57 % male). Epicardial fat thickness (EFT) was assessed using transthoracic echocardiography in the parasternal long-axis view. Arterial stiffness was measured by carotid-femoral pulse wave velocity (cfPWV), while albuminuria was determined via spot urine albumin-to-creatinine ratio (uACR). We performed correlation analyses, multivariable linear regression, and mediation modeling to explore the associations between EFT, cfPWV, and uACR, controlling for confounders such as body mass index (BMI), glycemic control (HbA1c), and estimated glomerular filtration rate (eGFR).

Results:

The mean EFT was 7.2 ± 2.1 mm, with cfPWV averaging 10.8 ± 2.2 m/s. The median uACR was 125.4 mg/g (IQR 71.2–196.5). Significant positive correlations were observed between EFT and cfPWV ($r = 0.46$, $p < 0.001$), as well as between EFT and log-transformed uACR ($r = 0.42$, $p < 0.001$). Multivariate analysis revealed that EFT was an independent predictor of both cfPWV ($\beta = 0.31$, $p = 0.003$) and albuminuria ($\beta = 0.25$, $p = 0.007$). Mediation analysis further demonstrated that arterial stiffness accounted for 38% of the effect of EFT on albuminuria ($p < 0.01$), indicating a partial mediating role.

Conclusion:

Our findings suggest that in patients with DKD, increased epicardial fat is intricately linked with vascular rigidity and renal microvascular injury, as evidenced by albuminuria. The mediating effect of arterial stiffness implies a potential pathophysiological conduit connecting metabolic fat depots to cardiorenal outcomes. These results underscore the value of EFT as a clinically accessible, non-invasive marker to enhance risk stratification and identify therapeutic targets in this high-risk population.

Keywords：Epicardial fat thickness, diabetic kidney disease, arterial stiffness, albuminuria.

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0225
Abstract Submission No.：E_APCN20251270

Type 2 Diabetes Mellitus with Chronic Kidney Disease Benefits from Long-term Intensive Urate-Lowering Therapy: A 10-Year Multicenter Retrospective Cohort Study

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Objective: To explore the relationship between the intensive urate-lowering strategy and long-term outcomes in type 2 diabetes mellitus (DM) with chronic kidney disease (CKD).
Methods: We conducted a retrospective study in a cohort of 1,651 patients of type 2 DM with CKD from eight centers, with follow-up period spanning from January 2013 to October 2023. The primary outcomes included serum creatinine doubling, initiation of dialysis, progression to end-stage renal disease, and all-cause mortality.
Results: 1,072 patients with a median age of 56.5±10.4 years-old, and 700 males (65.3%) were enrolled. The median of follow-up was 60.4±5.6 months. The overall prevalence of hyperuricemia (HUA) in current cohort was 46.1%, of which in men (50.4%) was significantly higher than in women (37.9%). After adjusting for confounding factors, HUA was identified as an independent risk factor for composite endpoints. Patients with baseline serum uric acid (SUA) and time-averaged SUA (TA-SUA) ≥ 420 μmol/L had 1.9-fold and 2.6-fold higher risk to composite endpoint compared to those with baseline SUA or TA-SUA < 360 μmol/L, respectively (hazard ratio 1.92, 95% confidence interval 1.40-2.62, $P < 0.001$; 2.60, 95% confidence interval 1.82-3.70, $P < 0.001$). Patients with TA-SUA< 360 μmol/L exhibited much improved composite endpoint after adjusted for age, sex, hemoglobin, glycosylated hemoglobin and lipid-lowering, glucose-lowering, blood-pressure lowering, and urate-lowering drugs use.

Conclusions: Our data demonstrates that long-term control of TA-SUA less than 360 μmol/L independently associated with improved composite endpoints in patients of type 2 DM with CKD.

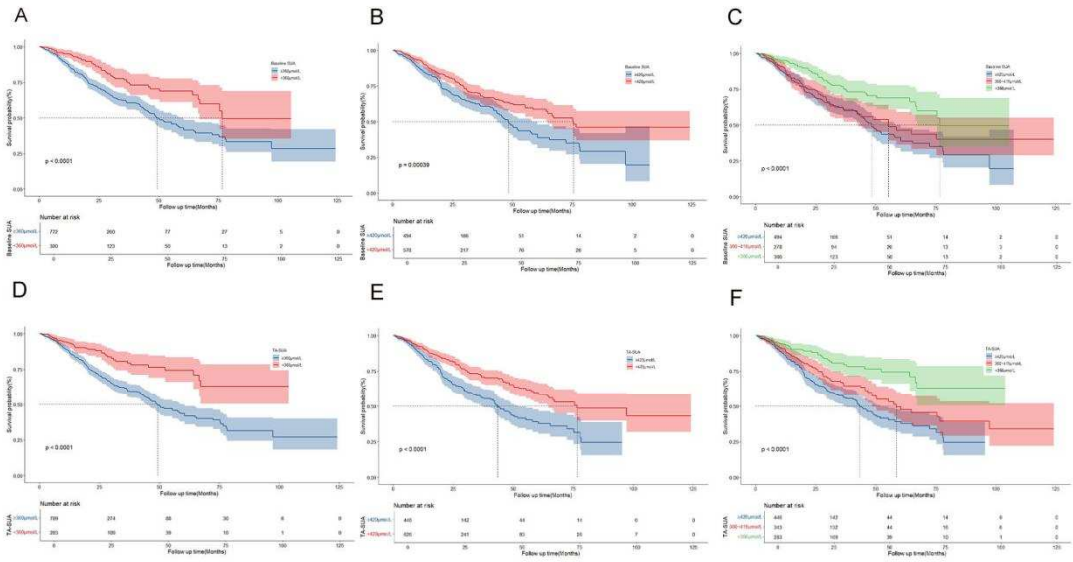

Figure 1-Kaplan-Meier survival curves for the Composite Endpoint, stratified by serum uric acid levels.
A. Kaplan-Meier curve for the Composite Endpoint at baseline serum uric acid levels of 360 μmol/L.B. Kaplan-Meier curve for the Composite Endpoint at baseline serum uric acid levels of 420 μmol/L.C. Kaplan-Meier curves for the Composite Endpoint across different baseline serum uric acid levels.D. Kaplan-Meier curve for the Composite Endpoint based on time-averaged serum uric acid levels of 360 μmol/L.E. Kaplan-Meier curve for the Composite Endpoint based on time-averaged serum uric acid levels of 420 μmol/L.F. Kaplan-Meier curves for the Composite Endpoint across different time-averaged serum uric acid levels.

Poster Presentation：Cardio-Renal Metabolic Syndrome, Diabetic Kidney Disease, and Hypertensive Kidney Disease
Poster No.：C0226
Abstract Submission No.：E_APCN20251293

Association Between WNK1 Gene Polymorphisms and Essential Hypertension: A Systematic Review and Meta-Analysis

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Introduction
Essential hypertension (EH) remains a leading global risk factor for cardiovascular morbidity and mortality. While multifactorial in etiology, genetic predisposition plays a crucial role in its pathogenesis. The WNK1 (With-No-Lysine [K] Kinase 1) gene encodes a serine-threonine kinase integral to renal sodium handling and blood pressure (BP) regulation through modulation of the WNK-SPAK/OSR1-NCC pathway. Previous studies have suggested associations between WNK1 polymorphisms and BP elevation; however, findings have been inconsistent, fragmented across populations, and limited in statistical power. To our knowledge, no prior meta-analysis has systematically evaluated the pooled effect of WNK1 polymorphisms on EH susceptibility. This study aims to quantitatively synthesize current human evidence to determine whether WNK1 variants significantly associate with EH risk.
Methods
A systematic review and meta-analysis were conducted in accordance with PRISMA 2020 guidelines. We searched PubMed, EMBASE, Scopus, Web of Science, and Cochrane Library from inception to July 2025. Eligible studies were case-control or cohort designs assessing the association between any WNK1 single nucleotide polymorphism (SNP) and essential hypertension in adult human populations. Data extraction and risk of bias appraisal were independently performed by two reviewers using the Newcastle–Ottawa Scale. Pooled odds ratios (ORs) with 95% confidence intervals (CIs) were calculated under dominant, recessive, and allelic models using random-effects meta-analysis. Heterogeneity was assessed via Cochran's Q and I^2 statistics. Subgroup analyses were conducted based on ethnicity, SNP type, and study design. Publication bias was evaluated through funnel plot symmetry and Egger's regression test.
Results
From 3,024 retrieved articles, 14 studies involving 9,783 hypertensive patients and 9,065 normotensive controls met inclusion criteria. The most frequently reported SNPs were rs1159744 and rs2107614. Meta-analysis revealed a significant association between WNK1 polymorphisms and increased EH risk under the dominant model (OR = 1.24; 95% CI: 1.12–1.37; I^2 = 42%). Subgroup analysis showed stronger effects among East Asian populations (OR = 1.35; 95% CI: 1.18–1.53) and for rs1159744 (OR = 1.29; 95% CI: 1.15–1.45). No significant publication bias was detected. Sensitivity analysis confirmed the robustness of results.
Conclusion
This meta-analysis provides the first comprehensive quantitative evidence that WNK1 gene polymorphisms, particularly rs1159744, are significantly associated with increased susceptibility to essential hypertension, especially among East Asian populations. These findings reinforce the pathogenic relevance of WNK1 in BP regulation and suggest its potential utility as a genetic biomarker for EH risk stratification. Future genome-wide studies and pharmacogenetic investigations are warranted to validate clinical implications and therapeutic targeting opportunities.