

Poster Presentation : Anemia, CKD-MBD, Nutrition, and Metabolism

Poster No. : B0043

Abstract Submission No. : APCN20250018

Impact Of Dietary Counseling On The Health-related Quality Of Life And Integrative Clinical Nutrition Dialysis Score (ICNDS) Of Hemodialysis Patients

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Abstract

INTRODUCTION: Chronic Kidney Disease (CKD) significantly affects patients' health, particularly those undergoing maintenance hemodialysis (MHD), making them vulnerable to malnutrition and diminished quality of life (QoL). Dietary counseling has been recognized as a potential intervention to improve health outcomes, yet its impact on both health-related quality of life (HRQoL) and nutritional status remains underexplored. This study aimed to assess the impact of dietary counseling on the health-related QoL and Integrative Clinical Nutrition Dialysis Score (ICNDS) of patients undergoing MHD.

METHODS: A prospective cohort study was conducted involving 74 CKD Stage V patients on MHD at Cotabato Regional and Medical Center. Patients underwent dietary counseling sessions bi-weekly over two months. QoL was measured using the Filipino version of the KDQOL-SF 1.3, and nutritional status was assessed using ICNDS. Baseline and post-counseling data were collected and compared using paired t-tests, with Pearson correlation analysis performed to determine the relationship between ICNDS and QoL.

RESULTS: Post-counseling, a significant improvement in HRQoL was observed ($p < 0.001$). However, there was no statistically significant change in ICNDS ($p = 0.171$). The correlation between HRQoL and ICNDS although weak, showed a positive correlation. ($r = 0.037$, $p = 0.754$).

CONCLUSION: Dietary counseling significantly enhanced HRQoL among hemodialysis patients, demonstrating its potential to enhance well-being. While changes in the nutritional status were less pronounced over the two-month period, the positive impact on QoL highlights the value of continued dietary interventions. Further research is encouraged to assess the long-term benefits of dietary counseling on both nutritional outcomes and its broader influence on QoL in this patient population.

Keywords : hemodialysis, dietary counseling, ICNDS, nutritional status, quality of life, nutrition

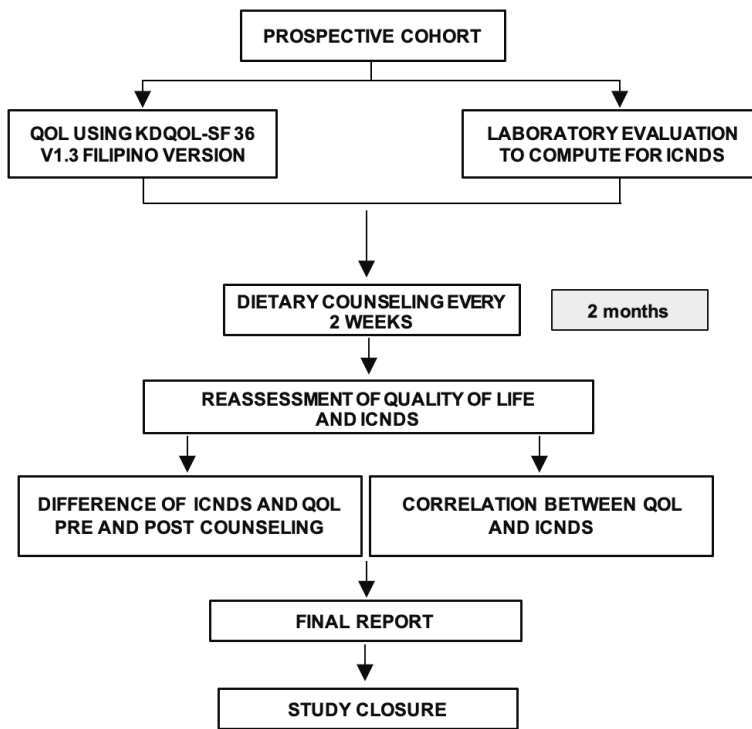


Figure 1. Operational flowchart of the Study

Poster Presentation : Anemia, CKD-MBD, Nutrition, and Metabolism

Poster No. : B0044

Abstract Submission No. : APCN20250066

Effectiveness and Acceptability of Continuous Glucose Monitoring in the Detection of Hypoglycaemia Among Renal Dialysis Patients with Diabetes Mellitus: A Pilot Study

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Abstract

Background: Hypoglycaemia remains a prevalent and dangerous complication of diabetes management in hospitalised dialysis patients, contributing to increased morbidity, mortality, and healthcare burden. This study evaluates the diagnostic performance, clinical applicability, and user acceptability of continuous glucose monitoring (CGM) in this vulnerable inpatient population.

Methods: A prospective pilot study was conducted involving 30 adult patients with diabetes mellitus undergoing either haemodialysis or peritoneal dialysis in an inpatient renal ward. Participants were monitored with the Dexcom G6 CGM system in parallel with routine capillary blood glucose (CBG) testing. Hypoglycaemic detection was assessed via sensitivity, specificity, positive predictive values (PPV), negative predictive values (NPV), and ROC analysis. Clinical concordance was evaluated using Bland-Altman plots, linear regression, mean absolute relative difference (MARD) and Clarke Error Grid analysis. Nurse and patient feedback were captured via validated questionnaires.

Results: CGM demonstrated a sensitivity of 68.75% and specificity of 97.33% for hypoglycaemia detection, with a PPV of 42.31% and a NPV of 99.09%. Subgroup analysis revealed similar trends across dialysis modalities, with slightly higher sensitivity in peritoneal dialysis patients. ROC curve analysis showed high diagnostic accuracy (area under the curve > 0.95), while Bland-Altman and regression analyses confirmed strong agreement with CBG. The estimated MARD was 10.6% (95% CI, 9.8-11.4%). Clarke Error Grid analysis showed 96% of CGM readings in clinically acceptable Zones A and B. Both patient satisfaction and nursing acceptance were high, supporting real-world feasibility.

Conclusions: CGM is a safe, reliable, and well-accepted adjunct for detecting hypoglycaemia in hospitalised dialysis patients. Its high specificity and NPV make it particularly valuable for ruling out hypoglycaemia. Broader implementation may enhance safety and reduce nursing burden. Further research with larger cohorts is warranted.

Keywords : Continuous glucose monitoring, hypoglycaemia, diabetes, dialysis, inpatient care, diagnostic performance, patient safety

Poster Presentation : Anemia, CKD-MBD, Nutrition, and Metabolism

Poster No. : B0045

Abstract Submission No. : APCN20250097

Prevalence and Factors associated with Vitamin D deficiency among Dialysis-requiring patients

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Abstract

Introduction

Vitamin D deficiency is a global health concern, with its prevalence reaching alarming rates among patients with chronic kidney disease (CKD), particularly those requiring dialysis. It ranges from 50-98% among hemodialysis patients and even higher at 86-100% for those on peritoneal dialysis. It is considered a mortality risk factor, however, the pathophysiology is still unclear. This study aimed to determine the local prevalence and factors associated with Vitamin D deficiency among dialysis patients.

Methods

A cross-sectional study was conducted wherein all end-stage renal disease (ESRD) patients aged >19 years old and on maintenance dialysis >3 months were included. The mean Vitamin D, intact parathyroid hormone, ionized calcium, phosphorus, alkaline phosphatase and hematocrit were recorded. Correlation of age, gender, pre-dialysis co-morbidities, dialysis vintage and frequency were determined using Spearman rank correlation coefficient, chi-square test and regression analysis with odds ratio.

Results

A total of 240 chronic dialysis patients in our unit were identified. Out of the 240 patients, 168 patients were included. The patients were distributed into Vitamin D sufficient and insufficient/deficient group. The prevalence rate of Vitamin D insufficiency and deficiency is low at 11.9% and 6%, respectively. Low hematocrit ($p=0.032$) and high alkaline phosphatase levels ($p=0.022$) were considered statistically significant among Vitamin D insufficient/deficient group. Thrice a week dialysis is positively correlated with Vitamin D levels ($r= 27.995$, $p<0.01$, 95% CI -0.245, 1.705). Patients, either on hemodialysis or peritoneal dialysis, have significantly increased Vitamin D levels by 104.64 ng/mL ($p=0.0016$).

Conclusion

The low prevalence of Vitamin D insufficiency/deficiency establishes the evidence that this disease condition is not universally observed among dialysis-requiring patients. Patients, either on hemodialysis or peritoneal dialysis, shows a significant increase in Vitamin D levels by 104.64ng/mL ($p=0.0016$). Thrice a week dialysis is positively correlated with Vitamin D levels ($r= 27.995$, $p<0.01$, 95% CI -0.245, 1.705). Medication use among these patients affects their serum Vitamin D levels.

Keywords : Chronic Kidney Disease, End Stage Renal Disease, Vitamin D deficiency, Dialysis

Poster Presentation : Anemia, CKD-MBD, Nutrition, and Metabolism

Poster No. : B0047

Abstract Submission No. : APCN20250191

FGF-23 Enhances Inflammatory Signaling and Suppresses Erythropoiesis in Chronic Kidney Disease

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Abstract

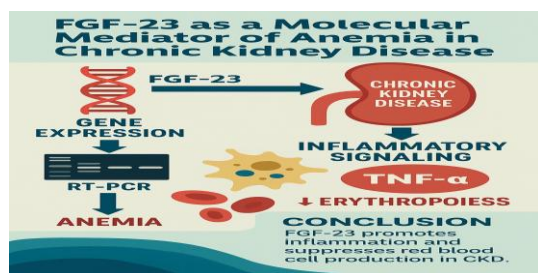
Background: Anemia remains a critical and multifactorial complication of chronic kidney disease (CKD), often mediated by chronic inflammation and impaired erythropoietin (EPO) signaling. While Tumor Necrosis Factor-alpha (TNF- α) is a well-established pro-inflammatory cytokine contributing to erythropoiesis suppression, recent studies suggest Fibroblast Growth Factor-23 (FGF-23), a phosphaturic hormone primarily involved in mineral metabolism, may also play a significant role in anemia pathogenesis. However, its molecular crosstalk with inflammatory mediators in CKD-associated anemia remains inadequately defined.

Methods: In this dual-molecular observational study, we assessed the gene expression levels of FGF-23 and TNF- α in peripheral blood samples collected from adult CKD patients, stratified by anemia status. RT-PCR was performed using β -actin as the housekeeping control. The FGF-23 study included 138 samples (118 CKD with anemia, 10 CKD without anemia, 10 healthy), while the TNF- α study included 118 CKD patients undergoing hemodialysis. Gene expression was visualized by agarose gel electrophoresis and interpreted based on band intensity.

Results: FGF-23 gene expression was markedly elevated in CKD patients with anemia, with prominent bands absent in healthy and non-anemic CKD controls. Parallel analysis of TNF- α gene expression showed higher expression in the same anemic CKD cohort, suggesting an overlapping pro-inflammatory state. Notably, TNF- α was also faintly expressed in control samples, potentially indicating subclinical inflammation. Co-expression of FGF-23 and TNF- α supports a hypothesis that FGF-23 may augment inflammatory signaling, thereby exacerbating anemia by impairing erythropoiesis and disrupting iron homeostasis.

Conclusion: These findings provide converging molecular evidence for a synergistic role of FGF-23 and TNF- α in the pathophysiology of anemia in CKD. The upregulation of FGF-23 in conjunction with TNF- α suggests a pro-inflammatory cascade that suppresses erythroid maturation. These biomarkers may serve as predictive tools for anemia progression and therapeutic response in CKD. Further mechanistic studies are warranted to delineate the pathways involved and to explore FGF-23 as a modifiable target in the management of inflammation-associated anemia in CKD.

Keywords : Chronic Kidney Disease, FGF-23, Anemia, Inflammation, TNF- α , Gene Expression, Erythropoiesis



Poster Presentation : Anemia, CKD-MBD, Nutrition, and Metabolism

Poster No. : B0048

Abstract Submission No. : APCN20250251

Kidney Superoxide Dismutase (SOD) and Plasma Malondialdehyde (MDA) Levels Correlation on Rats (*Rattus norvegicus*) Induced by High Purine Diets After Intervention of Non-Decaffeinated Coffee and Decaffeinated Coffee

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Abstract

Objectives: Nowadays, hyperuricemia is often associated with various diseases including kidney diseases. Hyperuricemia is associated with inflammation in the blood as well as the kidneys, this can be seen from increased levels of malondialdehyde (MDA) and decreased superoxide dismutase (SOD). This study purposed to determine the correlation between kidney SOD and plasma MDA levels in rats induced by a high purine diet after intervention of non-decaffeinated coffee and decaffeinated coffee.

Methods: This research used 24 male Wistar strain rats aged 1-2 months with BW of 100-150 grams. Rats were divided into four groups: normal (N), control (C), treatment 1 (T1), and treatment 2 (T2). All groups were given fed ad libitum for 1 month. The control group (C) was given 700 mg/kg BW/day of beef broth (high-purine diet), the treatment 1 group (T1) was given 700 mg/kg BW/day of beef broth + 144 mg/200 g BW/ day of non-decaffeinated coffee, and the treatment 2 group (T2) was given 700 mg/kg BW/day of beef broth + 144 mg/200 g BW/ day of decaffeinated coffee. The normal group (N) was only given fed ad libitum. At the end of the research, kidney SOD and plasma MDA levels were measured.

Results: The mean of kidney SOD (%) N, C, T1, and T2 consecutively were 70.22 ± 2.41 , 23.50 ± 4.60 , 43.99 ± 5.43 , and 59.84 ± 3.98 . The mean of plasma MDA (mg/dL) in N, C, T1, and T2 consecutively were 1.20 ± 0.22 , 9.80 ± 0.29 , 5.80 ± 0.55 , and 3.88 ± 0.47 . The result showed there is a very strong negative correlation between kidney SOD and plasma MDA levels with $r -0.949$ and significant difference with $p = 0.00$.

Conclusions: Kidney SOD and plasma MDA levels induced by a high purine diet after intervention of non-decaffeinated coffee and decaffeinated coffee have a strong correlation.

Keywords : Decaffeinated Coffee, Non-Decaffeinated Coffee, Kidney Superoxide Dismutase, Plasma Malondialdehyde, Hyperuricemia

Poster Presentation : Anemia, CKD-MBD, Nutrition, and Metabolism

Poster No. : B0049

Abstract Submission No. : APCN20250262

A Near-Miss: Case of Pseudo-Foreign Body in End Stage Renal Disease

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Abstract

Lanthanum Carbonate (LaC) is a non-calcium-based phosphate binder, widely used in patients with End-Stage Renal Disease (ESRD) for hyperphosphatemia. Due to its radio-opaque properties, LaC may appear similar to contrast agents on imaging, and typically presents as scattered calcific densities throughout the intestines.

Here, we report a patient with ESRD who presented with fever, vomiting and cholestatic liver injury, worrisome for hepatobiliary sepsis. Computed Tomography (CT) scan of the abdomen incidentally noted a 1.1 cm high density object of 7000 Hounsfield units (HU) in the stomach, suspicious for an ingested metallic foreign body. Urgent surgical consult was obtained for endoscopic retrieval, but eventual clinical consensus was for conservative management as ingested LaC was considered as one of the differentials. We elegantly demonstrated gut transition of LaC on serial radiographs, and the patient was discharged well.

This case report highlights a rare appearance of LaC masquerading as a metallic foreign body, which clinicians should be aware of, so as to avoid inadvertent procedures. Clinical history and serial examination are paramount to distinguish the two, failing which interval imaging might be useful as an adjunct.

Keywords : Lanthanum Carbonate, phosphate binder, calcific densities



Image 3a: CT localizer radiograph on day 1 of admission showing LaC within the stomach.

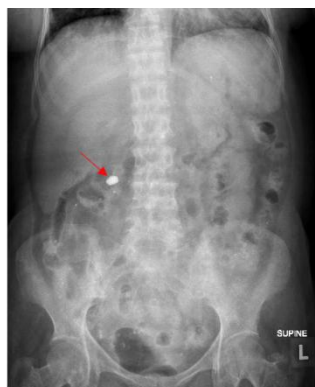


Image 3b: Abdominal radiograph on day 2 of admission showing LaC transition into the duodenum.



Image 3c: Abdominal radiograph on day 4 of admission showing LaC transition further down the small intestine.

Poster Presentation : Anemia, CKD-MBD, Nutrition, and Metabolism

Poster No. : B0050

Abstract Submission No. : APCN20250141

Health Effects of Dietary Patterns in Adults with Chronic Kidney Disease: A Systematic Review

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Abstract

Introduction:

The New Nordic Renal Diet (NNRD), Mediterranean diet, Plant-Dominant Low-Protein Diet (PLADO), and DASH diet have been shown to improve the development of several chronic diseases. However, data regarding its effect on chronic kidney disease patients is still limited. This review aims to evaluate the health effects of the dietary patterns (NNRD, Mediterranean diet, PLADO, and DASH diet) on preserving kidney function in CKD patients.

Methods:

This systematic review was obtained from the analysis and synthesis of the recent journals on Pub-Med, Science Direct, Nutrients, Clinical Key, and Google Scholar. Relevant studies were collected up to January 2024 using the following search terms: chronic kidney disease, DASH diet, Mediterranean diet, New Nordic Renal diet, plant-based diet, renal diet, dietary pattern, and dietary intervention.

Results:

From the 269 articles screened, 4 articles were included. We summarize that dietary patterns play an important role in preventing and reducing CKD progression. NNRD can reduce proteinuria ($p < 0.001$), plasma urea ($p < 0.001$), and urine phosphorus excretion ($p < 0.001$). The Mediterranean and DASH diets, which have higher intake of nuts and legumes, fish, cereals, and PUFA, were associated with higher eGFR among CKD patients. Despite being on a Mediterranean diet, DASH, or PLADO that is rich in potassium, was not associated with the risk of hyperkalemia.

Conclusions:

Dietary patterns, including the NNRD, Mediterranean diet, PLADO, and DASH diet, show beneficial effects on slowing CKD progression. However, this diet may conflict with the previous diet, which avoided plant-based diets because of the risk of hyperkalemia. It needs a personalized diet recipe for each CKD patient who has different nutritional needs depending on his condition. Further and long-term studies are necessary to establish the efficacy, safety, and feasibility of dietary patterns in CKD patients.

Keywords : chronic kidney disease, DASH diet, Mediterranean diet, New Nordic Renal diet, plant-based diet, renal diet, dietary pattern, and dietary intervention

Table 1. Characteristic of included studies.

Author (year), country	Study design	Type of Diet	Intervention description	Duration	Sample size, age, sex	Result
Hansen et al (2023), Denmark	Randomized control trial	NNRD, control diet	NNRD group : home deliveries of food and recipes (5x per week), measurements (1x per month).	26 week	NNRD: 30 CKD patients stage 3 to 4, 54 ± 12 years, 47% male Control: 30 CKD patients stage 3 to 4, 55 ± 13 years, 50% male	The NNRD group: <ul style="list-style-type: none"> • 24-h urine phosphorus excretion ↓ (p<0.001) • Proteinuria ↓ (p<0.001) • Plasma urea ↓ (p<0.001) • SBP ↓ (p=0.04) • Weight loss (p<0.001) • eGFR (NS)
D'Alessandro et al (2023), Italy	Cohort study	Mediterranean diet	The biochemical data from CKD nutrition clinic patients.	6 months	93 CKD patients stage 3, 64 ± 10 years	Serum levels: <ul style="list-style-type: none"> • Urea ↓ (p<0.001) • Phosphorus ↓ (p<0.001) • PTH ↓ (p<0.01)
Heindel et al (2020), Germany	Cross-sectional	DASH diet, Mediterranean diet, GFPI	Dietary intake: FFQ The biochemical data taken from GCKD	2 years	2813 severe CKD patients, 60.1 ± 11.6 years, 59% male	DASH diet: <ul style="list-style-type: none"> • SBP ↓ • HDL ↑ • Uric acid levels ↓ • eGFR ↑ (p<0.001) • Albuminuria (NS) GFPI: <ul style="list-style-type: none"> • SBP ↓ • HDL ↑ • Uric acid levels ↓ • Albuminuria (NS) Mediterranean diet: <ul style="list-style-type: none"> • eGFR ↑ (p=0.007) • Albuminuria (NS)
Gonzalez et al (2021), Mexico	Cohort study	Plant-based diet	Dietary assessment : 3-day food records and characterized by a HPDS (every 3 months)	1 year	150 HD patients, 42 ± 18 years, 41% male	Adherence HPDS was not associated with serum potassium levels or odds of hyperkalemia with OR of 1.00 (95% CI: 0.94–1.07)

NNRD; New Nordic Renal Diet, control; habitual diet, CKD; chronic kidney disease, SBP; systolic blood pressure, eGFR; estimated glomerular filtration rate, MedRen; Mediterranean Renal, PTH; parathyroid hormone, DASH; Dietary Approaches to Stop Hypertension, GFPI; German Food Pyramid Index, GCKD; German CKD, HDL; High-density lipoprotein, HPDS; healthy plant-based diet score, NS; Not significant

Poster Presentation : Anemia, CKD-MBD, Nutrition, and Metabolism

Poster No. : B0051

Abstract Submission No. : APCN20250527

A Case Report On Respiratory Failure Within The Spectrum Of Chronic Kidney Disease Mineral And Bone Disorders

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Abstract

The dysregulated metabolism of bone and minerals represents a prevalent issue frequently observed among individuals with chronic kidney disease. In the initial stages, alterations in the equilibrium of calcium and phosphate arise, manifesting as early biochemical deviations. As the disease advances, it ushers in a scenario characterized by diminished bone strength and the emergence of calcification beyond the skeletal framework's confines. This constellation of clinical manifestations is designated as chronic kidney disease-mineral and bone disorder.

This case examines a distinct and extraordinary presentation of chronic kidney disease-mineral and bone disorder (CKD-MBD) observed in a 55-year-old patient who has undergone long-term hemodialysis for a duration of 12 years to manage end-stage renal failure. The clinical course of this condition is characterized by the slow development of abnormalities in the skeletal structure of the thorax, affecting both the lower and upper limbs. Significantly, this series of skeletal abnormalities eventually reached a critical level where it caused a condition of impaired lung function, leading to the development of obvious symptoms and respiratory failure.

The implications of this case highlight the complex relationship between CKD-MBD and its systemic repercussions, shedding light on a rare and significant crossing where skeletal diseases significantly impact

respiratory function within the physiological realm.

Keywords : CKD-MBD, Renal osteodystrophy



Figure 1. Chest x-ray. Complete opacification of the left hemithorax. Diffuse osteopenia with multilevel thoracic compression deformities and widespread osteolytic changes in the rib cage.



Figure 2. Skull x-ray. Multiple punched-out lesions with non-sclerotic rims diffusely scattered in the calvarium and visualized mandible.

Poster Presentation : Anemia, CKD-MBD, Nutrition, and Metabolism

Poster No. : B0052

Abstract Submission No. : APCN20250566

Dynamic Changes in Circulating Mitokines Following Bariatric Surgery in Patients with Obesity

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Abstract

Introduction

Obesity is linked to mitochondrial dysfunction. Mitokines are released in response to mitochondrial stress and they play a crucial role in inter-organ communication. Bariatric surgery has been shown to improve mitochondrial dysfunction. In this study, we aimed to investigate the effects of obesity and bariatric surgery on mitokine levels.

Methods

We prospectively recruited patients with morbid obesity (n = 45) and healthy controls (n = 35). Circulating mitokine levels—fibroblast growth factor 21 (FGF21), growth differentiation factor 15 (GDF15), and humanin—were measured using ELISA. In patients with obesity, mitokine levels were reassessed at 3 and 6 months following bariatric surgery.

Results

In obese patients, levels of FGF21 and humanin were elevated, while GDF15 levels were reduced compared to healthy controls. Following bariatric surgery, GDF15 levels further decreased at 3 months and remained low at 6 months. FGF21 levels showed a decrease at 6 months after bariatric surgery. Humanin levels began to decrease at 3 months and continued to decrease through the 6 months after bariatric surgery.

Conclusion

Obesity is associated with dysregulated circulating mitokine levels. Mitokine levels decrease early after bariatric surgery. This suggests that bariatric surgery could mitigate mitochondrial damage in patients with obesity.

Keywords : Bariatric surgery, Mitochondria, Obesity

Poster Presentation : Anemia, CKD-MBD, Nutrition, and Metabolism

Poster No. : B0053

Abstract Submission No. : APCN20250670

Uncovering the Spatial Distribution of Fibrosis-Related Metabolites in the UUO Kidney Using Spatial Metabolomics

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Abstract

Background:

Kidney fibrosis is a key pathological hallmark of progressive chronic kidney disease. Recent advances suggest that metabolic alterations may play a pivotal role in fibrotic progression. However, studies investigating the spatial distribution and functional roles of fibrosis-associated metabolites within renal tissue remain limited. This study aimed to identify key metabolites related to renal fibrosis and to visualize their spatial localization in the kidney using spatial metabolomics in a unilateral ureteral obstruction (UUO) mouse model.

Method:

UUO was induced in 8-week-old male C57BL/6 mice via surgical ligation of the left ureter, and kidneys were harvested 7 days post-surgery. Cryo-sectioned kidney samples underwent untargeted metabolomic profiling using liquid chromatography–mass spectrometry (LC-MS) (sham group, n = 11; UUO group, n = 13) in positive mode and negative mode to gather the peaks of metabolites and spatially resolved metabolite imaging using Orbitrap™-Secondary Ion Mass Spectrometry (OrbiSIMS) in negative mode. Histological assessment was performed using periodic acid–Schiff (PAS) staining to compare with the image of metabolites for ensuring the distribution.

Result:

LC-MS analysis identified several significantly altered metabolites in UUO kidneys compared to the sham group, including p-cresol sulfate, trimethylamine-N-oxide (TMAO) and other fibrosis-associated metabolites. LC-MS results on lipid metabolites revealed increased levels of triglycerides and cholesteryl esters, while ceramides, sphingomyelins, phosphatidylcholines, and phosphatidylethanolamines decreased in UUO kidneys. OrbiSIMS analysis yielded 272,404 distinct mass-to-charge (m/z) ion signals across kidney sections, providing high resolution of spatial metabolite distributions. The OrbiSIMS signal for phosphatidylethanolamines showed distribution on cortical tubular area and regional decreases consistent with LC-MS findings. However, phosphatidylcholines displayed increased signals in specific areas, contrasting with its decrease observed in LC-MS.

Conclusion:

OrbiSIMS-based spatial metabolomics enabled high-resolution mapping of fibrosis-associated metabolite distributions in the UUO kidney model. OrbiSIMS also revealed spatial changes in lipid metabolism. Future integration with spatial transcriptomics will help elucidate gene–metabolite interactions and may facilitate the discovery of novel therapeutic targets for kidney fibrosis.

Keywords : OrbiSIMS, UUO, metabolited, LC-MS, spatial metabolomics

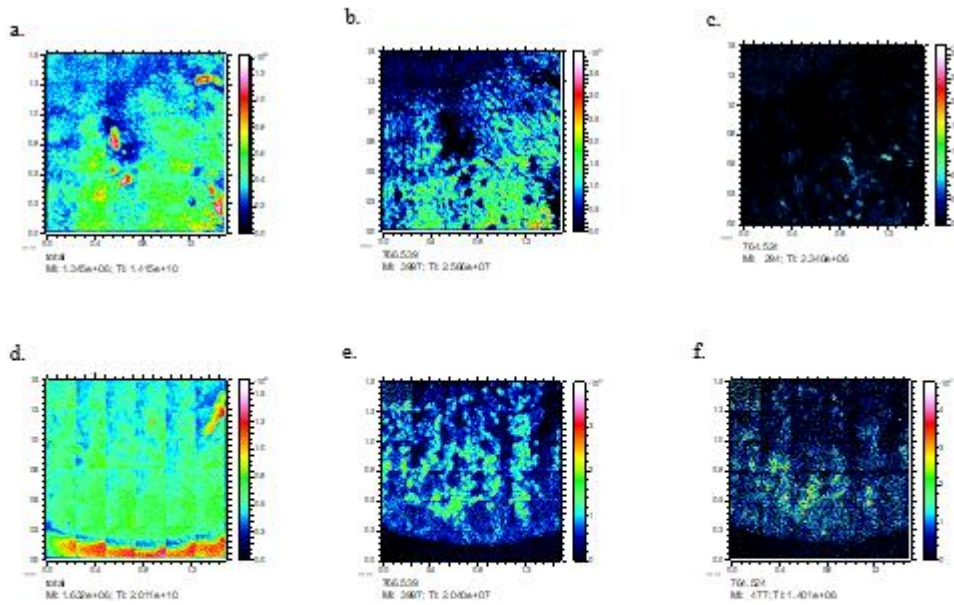


Fig. Representative Cryo-section OrbiSIMS Image

- a. Sham Group:** OrbiSIMS image showing the total ion distribution for all detected molecules (m/z 80–1200). MI: Maximum Intensity, TI: Total Intensity.
- b. Sham Group:** OrbiSIMS ion image of Phosphatidylethanolamine 38:4 (m/z 766.5384).
- c. Sham Group:** OrbiSIMS ion image of Phosphatidylcholine 36:5 (m/z 764.5227).
- d. UVO Group:** OrbiSIMS image showing the total ion distribution for all detected molecules (m/z 80–1200).
- e. UVO Group:** OrbiSIMS ion image of Phosphatidylethanolamine 38:4 (m/z 766.5384).
- f. UVO Group:** OrbiSIMS ion image of Phosphatidylcholine 36:5 (m/z 764.5227).

Poster Presentation : Anemia, CKD-MBD, Nutrition, and Metabolism

Poster No. : B0054

Abstract Submission No. : APCN20250728

Optimized Protein Intake in Pediatric Nephrotic Syndrome: Comparison Between Animal and Plant Based Protein Diet

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Abstract

Introduction:

Dietary modification in children with NS (nephrotic syndrome) is expected to help optimize their growth and development and also reduce the risk of NS relapse. Recent studies indicate a high-protein diet does not increase serum albumin concentration as expected. High-protein diet leads to changes in glomerular hemodynamics that may accelerate the progression of renal disease. Protein restriction can positively impact kidney function in adult patients with decreased renal function. However, a low-protein diet should be avoided in children as it is required for their growth and development. Adhering to the recommended protein intake, while choosing kidney-friendly protein sources, is the optimal approach. This study aims to examine the plant based diet and animal based diet that have the best outcome in children with NS.

Methods:

This systematic review was obtained from the analysis and synthesis of the recent journals on PubMed, Science Direct, Nutrients, Clinical Key, and Google Scholar. Relevant studies were collected up to January 2025 using the following search terms: nutrition, pediatric, plant based diet, nephrotic syndrome, protein intake, plant diet, animal diet.

Results:

Children with NS should be given dietary protein intake as per the recommendation in the general pediatric population. High protein diet causes glomerular hypertrophy and hyperfiltration, high-protein intake causes increased excretion of protein and consequently progression of NS. Low protein diet is not recommended for children because of its risk for the children's growth and development. Compared to animal protein, plant protein has a slighter effect on the glomerular hemodynamics and permeability. Studies suggested that plant proteins, especially soy proteins improve glomerular permeability and serum lipid profiles by reducing serum total cholesterol, low-density lipoprotein (LDL), and triglycerides, which often serves as a marker of metabolic syndrome. Plant protein helps prevent nephrotic syndrome from recurring by improving lipid profile and reducing urinary protein.

Conclusion:

Plant based protein diets have the potential positive effects as a protein source in children with NS as it helps with fatty acids, cholesterol and triglycerides. More research is required to understand whether it's necessary to mix plant-based and animal protein sources. Given that adequate protein intake is known to impact children's growth and development needs.

Keywords : nutrition, pediatric, plant based diet, nephrotic syndrome, protein intake, plant diet, animal diet

Poster Presentation : Anemia, CKD-MBD, Nutrition, and Metabolism

Poster No. : B0055

Abstract Submission No. : APCN20250783

Hydration Status and Its Relationship with Body Composition and Fluid Intake in Older Nursing Home Residents

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Abstract

Background: The elderly are vulnerable to dehydration due to physiological changes with aging, which can lead to serious health problems. This study aimed to analyze the relationship between body fat mass, total body water, and fluid intake with hydration status in the elderly nursing home residents.

Methods: In this cross-sectional study, 66 elderly residents from Griya Werdha Surabaya were assessed. Body fat mass and total body water were measured using bioelectrical impedance analysis. Fluid intake data were recorded through direct food observation and hydration status was evaluated by measuring urine specific gravity.

Result: A total of 51.5% of the participants were dehydrated. Most participants had adequate body fat mass and total body water but insufficient fluid intake. There was no significant relationship between body fat mass ($p=0.527$) or total body water ($p=0.991$) and hydration status. A weak negative correlation was found between fluid intake and hydration status ($p=0.042$, $r=-0.251$).

Conclusion: Dehydration due to insufficient fluid intake is common among elderly nursing home residents, despite adequate body fat and total body water levels. Further study is necessary to establish the long-term effects and additional factors associated with poor hydration status in this population.

Keywords : hydration status, body fat, total body water, water intake, consumption,

Hydration Status and Its Relationship with Body Composition and Fluid Intake in Older Nursing Home Residents

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Table Distribution of Respondents' Body Composition.

Variables	Mean \pm SD or n (%)		
	Total (n=66)	Female	Male
BMI (kg/m ²)	21.38 \pm 0.581	21.86 \pm 5.116	20.21 \pm 3.431
Underweight (<18.5)	20 (30.3)	13 (27.7)	7 (36.8)
Normal (18.5-25.0)	32 (48.5)	23 (48.9)	9 (47.4)
Overweight (>25.0)	14 (21.2)	11 (23.4)	3 (15.8)
Fat Mass (%)	30.11 \pm 9.663	32.96 \pm 8.948	23.10 \pm 7.718
Excess	28 (42.4)	18 (38.3)	10 (52.6)
Good	38 (57.6)	29 (61.7)	9 (47.4)
TBW (%)	51.58 \pm 6.783	49.85 \pm 6.456	51.58 \pm 6.783
Low	3 (4.5)	2 (4.3)	1 (5.3)
Good	63 (95.5)	45 (95.7)	18 (94.7)

Table The Association Between Fat Mass, TBW, Fluid Intake and Dehydration of Elderly in Griya Werdha Surabaya.

Variable	Dehydration Status based on Urine Gravity		p	r
	Dehydrated (%) n=34	Hydrated (%) n=32		
Fat Mass			0.527	
Excess	15 (53.6)	13 (46.4)		
Good	19 (50)	19 (50)		
TBW			0.991	
Low	2 (66.7)	1 (33.3)		
Good	32 (50.8)	31 (49.2)		
Fluid Intake			0.042	-0.251
Low	27 (65.9)	14 (34.1)		
Good	7 (28)	18 (72)		

Poster Presentation : Anemia, CKD-MBD, Nutrition, and Metabolism

Poster No. : B0057

Abstract Submission No. : APCN20250832

An Evaluation of Different Types of Fasting Effect on Pre-treatment and Post-treatment Outcomes in Dialysis Patients

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Abstract

Background:

Fasting has been increasingly studied for its metabolic and physiological impacts. Among dialysis patients, fasting may influence nutritional status, inflammation, and overall treatment outcomes. However, limited evidence exists regarding how different fasting types impact dialysis patients in the Indonesian context. This study evaluates the effect of various fasting regimens on pre-treatment and post-treatment outcomes in dialysis patients.

Methods:

Using systematic review and meta analysis following PRISMA guidelines, this study included dialysis patients categorized by fasting type: no fasting, intermittent fasting, and Ramadan fasting. Dependent variables included kidney function (eGFR, creatinine), dialysis adequacy (URR, Kt/V), and inflammatory markers (CRP, IL-6). Control variables included demographic factors, socioeconomic status (SES), and lifestyle behaviors. Descriptive statistics and multivariable regression models were used to assess associations.

Results:

Fasting was associated with improved kidney function and dialysis adequacy. Ramadan fasting showed the strongest association with higher eGFR ($\beta = 1.70$, $p = 0.002$) and dialysis adequacy (OR = 1.45, $p < 0.001$). Intermittent fasting also demonstrated significant benefits (eGFR $\beta = 1.25$, $p = 0.005$; dialysis adequacy OR = 1.32, $p = 0.004$). CRP levels were lower in fasting groups, with Ramadan fasting showing the greatest reduction ($\beta = -0.85$, $p < 0.001$). Higher SES participants benefited more from fasting, suggesting socioeconomic factors influence outcomes.

Conclusions:

Fasting, particularly Ramadan fasting, was linked to improved kidney function, better dialysis adequacy, and reduced inflammation in dialysis patients. SES modified these effects, highlighting disparities in healthcare access. Integrating fasting protocols into dialysis management may enhance patient outcomes, but further research is needed to confirm long-term benefits.

Keywords : Fasting, Dialysis, Kidney Function, Inflammation, Socioeconomic Status

Fasting Type	Strengths of Results	Limitations of Results
No Fasting	Serves as baseline/control for comparison; reflects standard dialysis outcomes.	Showed lower eGFR, dialysis adequacy, and higher CRP; lacks metabolic or anti-inflammatory benefits.
Intermittent Fasting	Associated with moderate improvements in eGFR and dialysis adequacy ($p < 0.01$); lower CRP.	Variation in fasting duration and adherence may dilute effect; benefit may depend on SES.
Ramadan Fasting	Showed strongest improvements in eGFR and dialysis adequacy; most significant CRP reduction.	Limited to one month per year; religious fasting may not be generalizable to all patients.

Poster Presentation : Anemia, CKD-MBD, Nutrition, and Metabolism

Poster No. : B0058

Abstract Submission No. : APCN20250843

Investigation of MMP9-mediated bone–vascular crosstalk in chronic kidney disease–mineral and bone disorder

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Abstract

Introduction: Chronic kidney disease–mineral and bone disorder (CKD-MBD) is a multifactorial systemic complication characterized by disturbances in mineral homeostasis and hormonal regulation due to progressive renal dysfunction. A hallmark of CKD-MBD is the pathological interconnection between skeletal abnormalities, notably renal osteodystrophy (ROD), and vascular calcification, reflecting a dysregulated bone–vascular axis contributing to increased cardiovascular risk. This study aims to elucidate the molecular role of matrix metalloproteinase 9 (MMP9) in mediating the crosstalk between vascular and bone tissues within the pathophysiological context of CKD-MBD.

Methods: We analyzed MMP9 gene expression in osteoclasts (OCs) compared to other MMPs using Next-generation sequencing (NGS) analysis. Further, we utilized computer-aided drug design (CADD) to identify a candidate MMP9 inhibitor. We determined OC and osteoblasts (OBs) differentiation and vascular calcification under MMP9 inhibitor treatment. To evaluate whether the MMP9 inhibitor improves bone parameters and vascular calcification in a CKD-MBD mouse model.

Results: Using MetaCore analysis of the normalized NGS data, the “Amyloid precursor protein processing” pathway emerged as the top activated pathway, with MMP9 showing the highest upregulation. Among MMP family genes, MMP9 and MMP23 were significantly elevated in RANKL-treated cells, with MMP9 showing the most significant increase. Ingenuity Pathway Analysis indicated that MMP9 modulates autophagy and apoptosis during osteoclast (OC) differentiation. Immunohistochemistry confirmed elevated MMP9, FOXO1, and TRAF6 in bone from CKD-MBD mice and MMP9 expression in inflamed aortic tissue. The compounds from DrugBank and NPASS were identified as a potential MMP9 inhibitor. Functionally, MMP9 inhibition suppressed RANKL-induced OC differentiation and promoted osteoblast (OB) maturation.

Conclusion: We screened by the DrugBank (FDA-approved drugs) and NPASS database (natural compounds) using CADD to discover potent hit compounds toward the MMP9 protein. We found that the MMP9 inhibitor improves bone parameters and vascular calcification in a CKD-MBD mouse model.

Keywords : Matrix Metalloproteinase 9, Chronic Kidney Disease–Mineral and Bone Disorder, Bone–Vascular Crosstalk, Osteoclast Differentiation, Vascular Calcification

Poster Presentation : Anemia, CKD-MBD, Nutrition, and Metabolism

Poster No. : B0059

Abstract Submission No. : APCN20250857

Indoxyl Sulfate Promotes Vascular Calcification through ROS, Ferroptosis, and β -Catenin/ERK Activation in CKD

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Abstract

Background: Vascular calcification (VC) is a major cardiovascular complication in chronic kidney disease (CKD), often driven by oxidative stress, inflammation, and uremic toxins such as indoxyl sulfate (IS), which originates from gut microbiota metabolism. IS promotes vascular smooth muscle cell (VSMC) injury, osteogenic trans-differentiation, and calcification. Understanding how IS contributes to VC is essential for developing targeted therapies.

Methods: This study used both in vitro and in vivo approaches. In vitro, mouse VSMCs were treated with IS at concentrations of 125, 250, and 500 μ M for 21 days. Calcification was assessed by Alizarin Red S staining, while flow cytometry measured reactive oxygen species (ROS), ferroptosis, and cell viability. Western blotting was performed to evaluate osteogenic (Runx2), inflammatory (IL-6), and signaling markers (β -catenin, ERK, Nrf2). In vivo, thirty-two male C57BL/6 mice were divided into four groups: sham (vehicle), 1/3 nephrectomy (1/3 Nx), 1/2 Nx, and 5/6 Nx. CKD was induced via a two-step surgical nephrectomy. Mice were fed a standard diet post-surgery for 8 weeks. At 16 weeks, transcutaneous glomerular filtration rate (tGFR), serum biochemical markers (creatinine, BUN, and IS), and renal pathology were measured.

Results: In vitro, IS treatment caused a concentration-dependent increase in calcium deposition in VSMCs, confirmed by Alizarin Red S staining. Western blot analysis showed upregulation of osteogenic and inflammatory markers, including Runx2, IL-6, β -catenin, and ERK, alongside a stress-responsive increase in Nrf2. Flow cytometry revealed increased ROS, ferroptosis, and cell death under IS exposure. In the mouse model, the severity of renal impairment correlated with the degree of nephrectomy. The 5/6 Nx group showed the most significant reduction in tGFR and elevation in serum creatinine, BUN, and IS concentration, and showed the highest degree of aortic calcium deposition.

Conclusions: IS promotes VC by inducing oxidative stress, inflammation, ferroptosis, and osteogenic transformation in VSMCs. These effects are mediated through activation of Wnt/ β -catenin and ERK pathways and modulation of Nrf2 signaling. In vivo, progressive nephrectomy in mice induced CKD features, providing a model to study IS-related vascular damage. Together, the findings support IS as a key contributor to CKD-associated VC and highlight potential molecular targets for therapeutic intervention.

Keywords : Indoxyl Sulfate, Vascular calcification, High-phosphorus diet, ApoE-knockout mice, Chronic kidney disease, Beta-catenin/Erk, Nrf2 pathway

Poster Presentation : Anemia, CKD-MBD, Nutrition, and Metabolism

Poster No. : B0060

Abstract Submission No. : APCN20251054

Fruit and vegetable consumption, potassium intake, and obesity among adolescent in Indonesia

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Abstract

Obesity is an excess accumulation of body fat, which can be caused in part by a high-energy but micro-nutrient-deficient. Fruits and vegetables play an important role in weight management as they are rich in micro-nutrients such as potassium, which contributes to weight reduction. This study aims to analyze the association between fruit and vegetable consumption as well as potassium intake and obesity in adolescents.

This was an analytical observational study using a cross-sectional design conducted at Government Senior High School in Surabaya, Indonesia. The sample consisted of 165 students selected by stratified cluster sampling. The fruit and vegetable consumption, and also potassium intake was collected by Semi Quantitative-Food Frequency Questionnaire (SQ-FFQ). Data were analyzed using the chi-square test, with p value <0.05 was significant.

The prevalence of obesity was 10%, with the majority having inadequate fruit and vegetable consumption (94.5%) and low potassium intake (64.8%). Fruit consumption was the most food contributing to potassium intake totally as 24.6%. Fruit and potassium intake were significantly associated with lower obesity risk with $p = 0.044$; OR = 0.282 and $p = 0.046$; OR = 0.237, respectively.

In conclusion, most of adolescents still have inadequate consumption of fruits, vegetables, and potassium intake. It is recommended adolescents to improve their dietary intake and food processing particularly fruits consumption which are primary sources of potassium as protective factors against obesity in adolescents.

Keywords : Obesity, Potassium, Fruit, vegetable

Poster Presentation : Anemia, CKD-MBD, Nutrition, and Metabolism

Poster No. : B0061

Abstract Submission No. : APCN20251165

Harmonizing Parathyroid Hormone Measurement in CKD: Comparison of ECLIA and LC-MS/MS and Impact of Storage Conditions

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Abstract

Background

Accurate parathyroid hormone (PTH) measurement is essential for managing chronic kidney disease–mineral and bone disorder (CKD-MBD). Differences in assay detection principles and calibration can result in substantial variability near therapeutic decision thresholds. Pre-analytical factors, such as sample storage and handling, may further contribute to measurement instability, potentially affecting clinical interpretation.

Methods

Serum PTH levels were measured using electrochemiluminescence immunoassay (ECLIA) and liquid chromatography–tandem mass spectrometry (LC-MS/MS). In Study 1, 378 CKD stage 1–5 patients were analyzed to compare assay performance across disease stages. In Study 2, 30 CKD stage 5 samples were reassessed after one month of storage at -20°C to evaluate pre-analytical effects on PTH stability and clinical classification.

Results

ECLIA and LC-MS/MS demonstrated strong overall correlation ($R^2=0.91$). Across CKD stages 1–4, mean PTH levels by ECLIA were consistently higher than LC-MS/MS, with median percentage differences ranging from 8.5% in stage 1 to 12.3% in stage 4. Despite these discrepancies, most patients remained in the same therapeutic category across assays. In stage 5, however, the divergence was more pronounced. Mean PTH measured by ECLIA was 286.8 pg/mL (range 4.5–1,853), compared to 192.5 pg/mL (range 3.7–1,050) by LC-MS/MS. Therapeutic discordance was observed in 17 stage 5 patients, where assay-dependent classification shifted KDOQI target range assignment. In 10 cases, patients were categorized as within target range by ECLIA but outside by LC-MS/MS, potentially leading to undertreatment or overtreatment with vitamin D analogs or calcimimetics. After one-month storage at -20°C, PTH levels declined significantly: ECLIA by 8.4% ($p=0.005$) and LC-MS/MS by 11.5% ($p<0.005$). Notably, samples with higher baseline PTH values showed greater proportional decreases, suggesting instability of intact PTH at -20°C over time. Post-storage, therapeutic classification changed in five additional cases, reducing assay concordance from 56.7% (17/30) at baseline to 40.0% (12/30). These findings underscore how pre-analytical handling can compound assay-related variability and directly impact treatment decisions in advanced CKD.

Conclusions

Significant inter-assay variability and storage-induced degradation can alter PTH interpretation in CKD patients, particularly near therapeutic thresholds. Standardizing assay calibration and enforcing stringent pre-analytical protocols are critical to ensure reliable PTH-based management and avoid inappropriate clinical interventions.

Keywords : Chronic kidney disease, ECLIA LC-MS/MS, Pre-analytical variability

Poster Presentation : Anemia, CKD-MBD, Nutrition, and Metabolism

Poster No. : B0062

Abstract Submission No. : APCN20250826

Comparing Microbiome Therapeutic Outcomes among Elderly with Kidney Disease in Southeast Asia

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Background: 90 million Southeast Asian adults are living with diabetes (1:11). It is estimated that diabetes among elderly (aged 60+) will double from 35.5 million in 2019 to more than 78 million in 2045 due to aging, urbanization, and lifestyle changes. The gut microbiota's role in modulating metabolic health has garnered significant attention, offering promising therapeutic interventions for diabetes management. Probiotics, prebiotics, synbiotics, and fecal microbiota transplantation (FMT) are emerging microbiome-targeted therapies. However, their efficacy in diabetic elderly populations, influenced by socioeconomic factors and lifestyle behaviors such as smoking, remains underexplored.

Methods: Followed PRISMA guidelines, this study analyzing data from PubMed, Embase, and regional sources published from 2010 to 2025. Inclusion criteria were RCTs on Asian elderly patients (60+) evaluating microbiota therapies with outcomes such as HbA1c, fasting glucose, and inflammatory markers (CRP). Control variables included socioeconomic status (SES), smoking, and age.

Results: FMT achieved the largest HbA1c reduction (-1.1%, 95% CI: -1.5 to -0.7) and fasting glucose decrease (-18.7 mg/dL, 95% CI: -23.1 to -14.3), followed by synbiotics (-0.8%, -16.2 mg/dL). Probiotics (-0.6%, -12.4 mg/dL) and prebiotics (-0.4%, -9.8 mg/dL) had moderate effects. CRP reductions mirrored these trends, with FMT showing the greatest reduction (-2.5 mg/L, 95% CI: -3.2 to -1.8). Meta-regression revealed significant moderating effects of smoking and SES on HbA1c and fasting glucose improvements ($p < 0.05$). Smokers exhibited smaller reductions in glycemic outcomes compared to non-smokers ($\beta = -0.42$, $p = 0.01$). Patients with higher SES experienced greater HbA1c improvements ($\beta = -0.38$, $p = 0.009$). Age stratification showed participants aged 65-75 achieved superior glycemic control ($\beta = -0.28$, $p = 0.03$) compared to those over 75. Subgroup analysis highlighted intervention duration (>12 weeks) as a critical factor for enhanced efficacy, particularly for FMT and synbiotics. Studies conducted in East Asia exhibited slightly larger effect sizes compared to South and Southeast Asia, possibly reflecting regional dietary differences impacting baseline microbiota composition.

Conclusions: Microbiota therapies, especially FMT and synbiotics, effectively improve glycemic control and inflammation in diabetic elderly Asians. Outcomes are influenced by socioeconomic and lifestyle factors, emphasizing the need for personalized interventions. These findings support microbiota therapies as valuable additions to diabetes management.

Keywords : Microbiota Therapy, Diabetes, Elderly, Asia, Glycemic Control

Metric	Probiotics	Prebiotics	Synbiotics	FMT
HbA1c Reduction (%):	-0.6 (95% CI: -0.8 to -0.4)	-0.4 (95% CI: -0.6 to -0.2)	-0.8 (95% CI: -1.1 to -0.5)	-1.1 (95% CI: -1.5 to -0.7)
Fasting Glucose (mg/dL):	-12.4 (95% CI: -15.6 to -9.2)	-9.8 (95% CI: -12.7 to -6.9)	-16.2 (95% CI: -19.5 to -12.9)	-18.7 (95% CI: -23.1 to -14.3)
CRP Reduction (mg/L):	-1.8 (95% CI: -2.4 to -1.2)	-1.4 (95% CI: -2.0 to -0.8)	-2.2 (95% CI: -2.8 to -1.6)	-2.5 (95% CI: -3.2 to -1.8)