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ASSESING THE INFLUENCE OF HIGH PROTEIN DIET ON KIDNEY DISEASES IN GENERAL POPULATION

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ABSTRACT

Background and aims: *Kidneys are one of the most essential organs in the human body. It filters fluids and waste products from our body. Kidney diseases are one of the most common diseases worldwide. The study aims to assess the influence of a high protein diet on kidney diseases in the diagnosed general population.*

Method: *In this cross-sectional study, 30 participants from the age group of 15 -70 years suffering from kidney diseases were taken for this study. Data was collected through a food frequency questionnaire from service hospital dialysis centers and from the diagnosed population of Lahore, to assess the dietary intake of patients.*

Results: *70% of the participants were in average weight and 17% were overweight according to their BMI ranges. Males participants were 53% and females were 47%. The results of the study showed a negative influence of high protein diet on kidney diseases because high protein diet increases both the blood pressure and creatinine levels still not only high protein diet other dietary factors also plays a role in kidney health deterioration which include increased consumption of milk as milk contains phosphorus and potassium it also affects the kidney functions. And majority of the participants were vegetables and fruits at very merger rate.*

Conclusion: *Diet has an impact on kidney function and diseases progression. A diet low in meat and high in vegetables, fruits and fiber would be helpful for patients with kidney diseases.*

Keywords: *Fiber*

INTRODUCTION

The kidneys are vital organs responsible for filtering metabolic waste, toxins, and excess substances from the bloodstream while maintaining fluid, electrolyte, and mineral homeostasis (1). Impairment of kidney function results in kidney disease (KD), a major global health concern and a well-established independent risk factor for cardiovascular morbidity and mortality (2,3). Kidney damage primarily affects the nephrons the functional filtration unit and can arise from genetic abnormalities, trauma, exposure to nephrotoxic agents, and lifestyle-

related factors such as diets that promote hypertension and obesity (4).

KD encompasses a broad spectrum of disorders, including chronic kidney disease (CKD), acute kidney injury (AKI), kidney stones, nephrotic syndrome, and cystic kidney diseases. Diagnostic evaluation typically involves serum creatinine and blood urea assessment, estimation of glomerular filtration rate (GFR), urinalysis for albuminuria, and imaging modalities such as X-ray, ultrasound, or advanced renal scans (3). CKD alone has an estimated global prevalence of 13.4%, and its progression may ultimately lead to end-stage renal disease if untreated (4).

Kidney stones represent a growing health issue, affecting approximately 14% of the population, with stone formation strongly influenced by urine pH, solute concentration, and mineral composition (5). AKI is another critical condition, commonly arising in hospitalized or critically ill patients, with incidence rates of 2–5% and severe consequences for renal and systemic function (6). Cystic kidney diseases including autosomal dominant and recessive polycystic kidney disease are significant contributors to end-stage renal failure and present complex clinical challenges (7,8). Nephrotic syndrome, characterized by heavy proteinuria, hypoalbuminemia, and edema, further highlights the diverse pathological processes affecting kidney structure and function (9).

Lifestyle and dietary factors play a fundamental role in both kidney disease prevention and management. High intake of sodium, animal protein, and processed foods contributes to hypertension and accelerates CKD progression, whereas dietary interventions can reduce metabolic burden, proteinuria, and cardiovascular risk (10). Nutritional patterns emphasizing vegetables, fish, whole grains, and fiber along with limited consumption of red meat and refined sugars have been associated with improved patient outcomes, reduced inflammation, and enhanced survival in CKD populations (11). Evidence consistently demonstrates that diet is a modifiable risk factor with substantial potential to influence kidney function and long-term disease progression (12).

Material & Methods

Study Design

This research employed a cross-sectional study design to assess dietary patterns and kidney health among the selected population.

Study Locale

The study was conducted among diagnosed individuals residing in Lahore, specifically targeting patients identified with kidney-related conditions.

Study Population

The target population consisted of male and female participants between 15 and 70 years of age who had been diagnosed with kidney diseases. Only individuals from the diagnosed population of Lahore were included.

Duration of Study

The study was completed over a period of four months.

Sampling Technique and Size

A convenient sampling technique was used to recruit participants for the study. The sample size consisted of approximately 30 patients.

Inclusion Criteria

Participants included males and females aged 15 to 70 years, individuals with a glomerular filtration rate (GFR) less than 60 ml/min, and patients presenting with elevated blood urea levels.

3.5.2 Exclusion Criteria

Patients with other co-morbidities in addition to kidney disease were excluded from the study.

Data Collection Instrument

Data were collected using a specially designed food frequency questionnaire standardized for kidney patients in a hospital setting. The questionnaire incorporated demographic variables such as age, gender, and medical history, along with detailed items covering all major food groups. This tool helped assess the dietary patterns of patients and determine which dietary habits most strongly influenced kidney health.

Ethical Approval

Ethical approval was obtained through an institutional permission letter issued by the Ethical Review Committee of NUR International University, Lahore, allowing the researcher to work as a clinical observer in the hospital wards according to the scheduled plan.

Informed Consent

Verbal informed consent was obtained from all participating patients prior to data collection.

Statistical Analysis

Data were analyzed using Microsoft Excel for basic statistical computations, data visualization, and the development of summary charts, customized graphs, and figures, making it suitable for foundational data entry and representation.

RESULTS

The study aimed to assess the influence of high-protein dietary intake on kidney disease patients in the general population of Lahore. Data were collected from 30 participants using a structured questionnaire that included demographic details, anthropometric measurements, BMI, and dietary patterns.

Table 1: Out of 30 participants, 53% were male and 47% were female, indicating a nearly balanced gender distribution in the study population.

Gender	Frequency (n)	Percentage (%)
Male	16	53%
Female	14	47%
Total	**30**	**100%**

Table 2: participants were divided into four age groups, ranging from adolescents to older adults, to evaluate dietary habits and kidney health across different life stages.

Age Group (years)	Category
15–19	Adolescents
20–40	Adults
41–60	Middle-aged adults
60–70	Older adults

Body Mass Index (BMI)

Table 3: Female participants were slightly lighter and shorter than males, resulting in a higher mean BMI among females (23.3 kg/m²) compared to males (21.6 kg/m²). Overall, the average BMI for all participants fell within the normal range.

Variable	Female (Mean ± SD)	Male (Mean ± SD)	Total (Mean ± SD)
Weight (kg)	59.6 ± 4.79	63.5 ± 2.52	60.8 ± 2.6
Height (m)	1.58 ± 0.03	1.70 ± 0.02	1.65 ± 0.02
BMI (kg/m²)	23.3 ± 1.36	21.6 ± 0.55	22.4 ± 0.67

BMI Categories of Participants

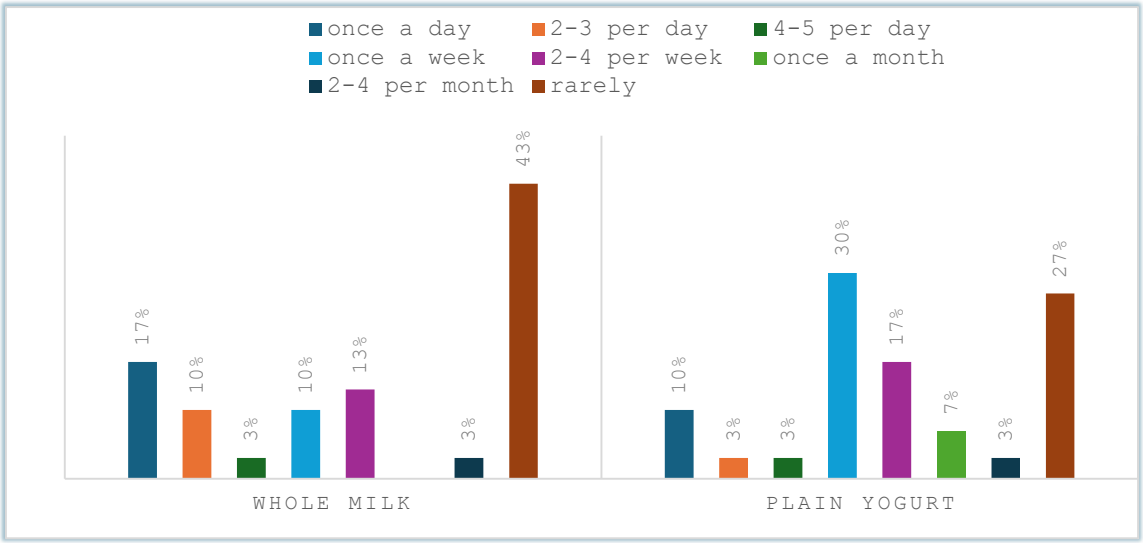
Table 4: Most participants (70%) had a normal BMI, while 17% were overweight and 10% were obese. Only a small portion (3%) was underweight, indicating that the majority had relatively balanced body weight for their height.

BMI Category	Frequency (n)	Percentage (%)
Underweight (<18.5)	1	3%
Normal (18.5–24.9)	21	70%
Overweight (25–29.9)	5	17%
Obese (≥ 30)	3	10%
Total	**30**	**100%**

Milk and Yogurt Consumption

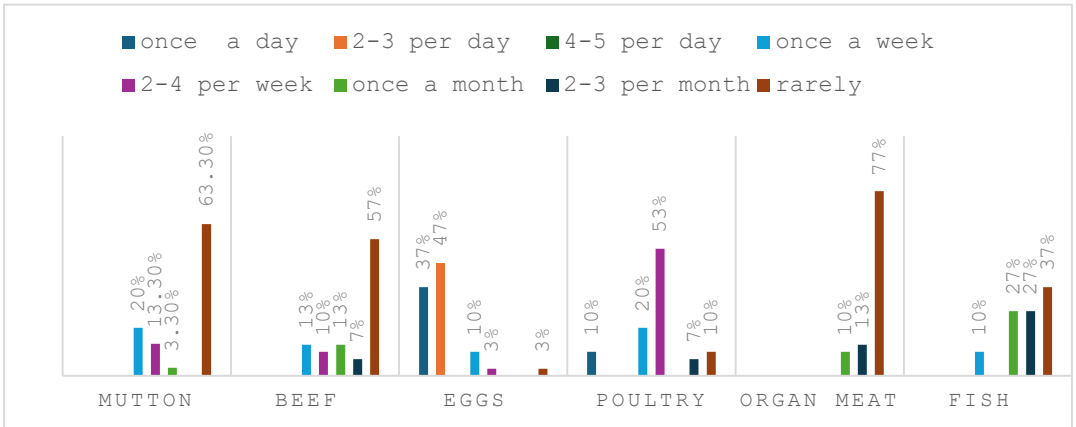
Table 5: This Table shows that kidney disease patients mainly consumed whole milk and yogurt occasionally, while skim and low-fat options were largely avoided due to misconceptions about nutrition. Fat-free yogurt was rarely consumed, reflecting limited awareness of kidney-friendly dairy alternatives.

Item	Daily Intake (%)	Weekly (%)	Rarely (%)	Others
Whole Milk	17%	–	43%	High phosphorus & potassium
Skim Milk	0%	0%	100%	Not preferred by patients
Low-fat Milk	0%	0%	100%	Believed to be “less nutritious”
Yogurt	10%	–	27%	CKD patients use for protein
Fat-free Yogurt	0%	–	100%	Low awareness



Dietary Intake Patterns Among Kidney Disease Patients

Meat Consumption Patterns			
Food Item	**Daily / Multiple Times Weekly (%)**	**Weekly (%)**	**Rarely (%)**
Mutton	13%	20%	63%
Beef	10%	–	–
Eggs	37% (1 daily), 47% (2–3 daily)	–	–
Poultry	53% (2–4/week)	–	–
Organ Meat	–	13% (2–3/month)	Majority
Fish	–	54% (1–3/month)	–

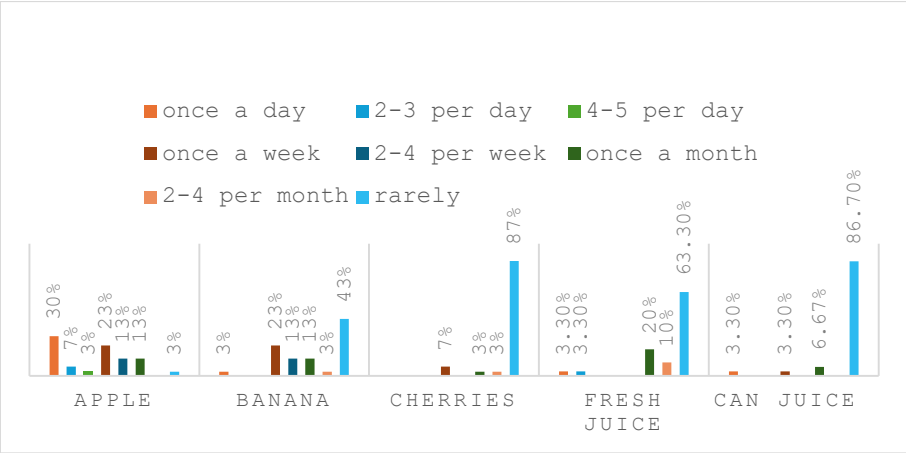


Bread and Cereals Intake

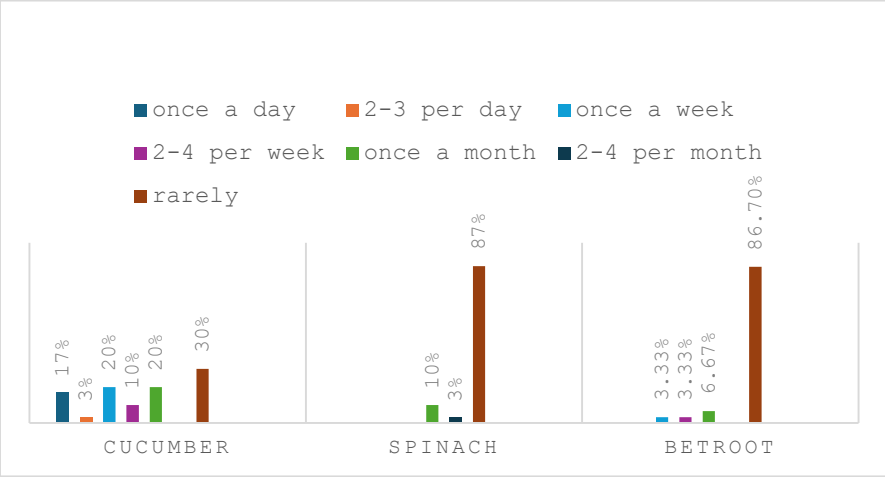
Meat Consumption Patterns			
Food Item	**Daily / Multiple Times Weekly (%)**	**Weekly (%)**	**Rarely (%)**
Whole Wheat Chapati	46.5%	–	–
White Flour Chapati	13%	–	–
Multigrain Chapati	0%	–	100%
White Bread	7%	47% (2–4 servings)	–
Bran/Multigrain Bread	0%	–	100%
White Rice	7% (2–3/day)	37%	–

Fruits and Juices Intake			
Apple	30%	25%	–
Banana	3%	23%	–
Cherries	–	7%	87%
Fresh Juices	30%	20%	63%
Canned Juices	3%	–	86%

Meat Consumption Patterns			
Food Item	**Daily / Multiple Times Weekly (%)**	**Weekly (%)**	**Rarely (%)**

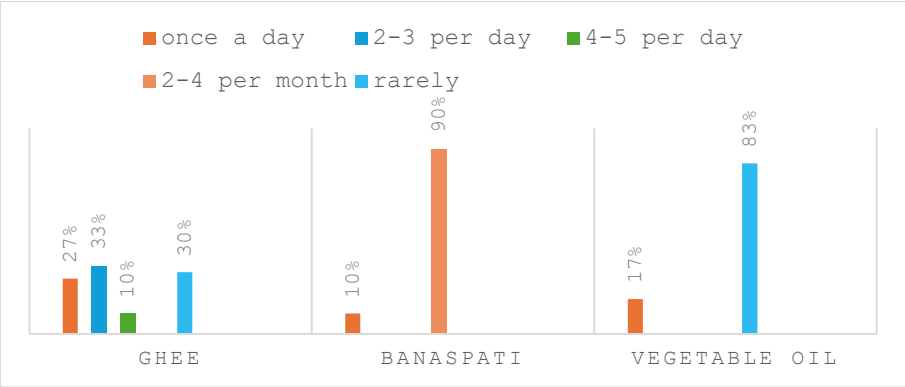


Vegetable Consumption			
Cucumber	17%	20%	–
Spinach	–	10%	87%
Beetroot	–	3.3%	87%

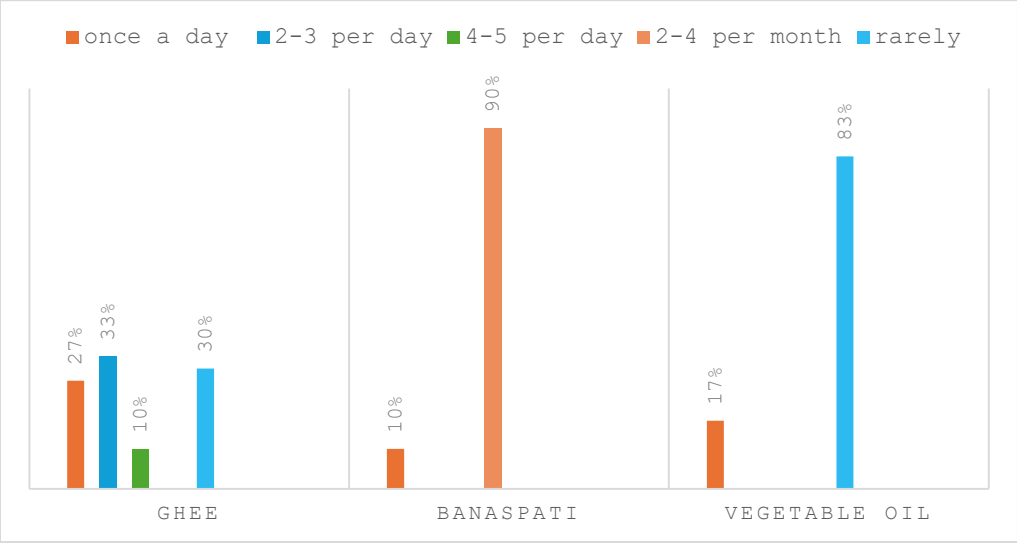


Fats Intake			
Ghee	33%	–	–
Banaspati Ghee	–	90% (2-4/month)	–
Vegetable Oil	17%	–	–

Meat Consumption Patterns			
Food Item	**Daily / Multiple Times Weekly (%)**	**Weekly (%)**	**Rarely (%)**



Nuts and Seeds Intake			
Almonds	13%	—	23%
Walnuts	—	13%	20%
Chia Seeds	3.3%	—	—
Pumpkin Seeds	0%	—	—
Flax Seeds	0%	—	—



Caffeine Intake	
1 cup daily	30%
2–3 cups daily	23.3%

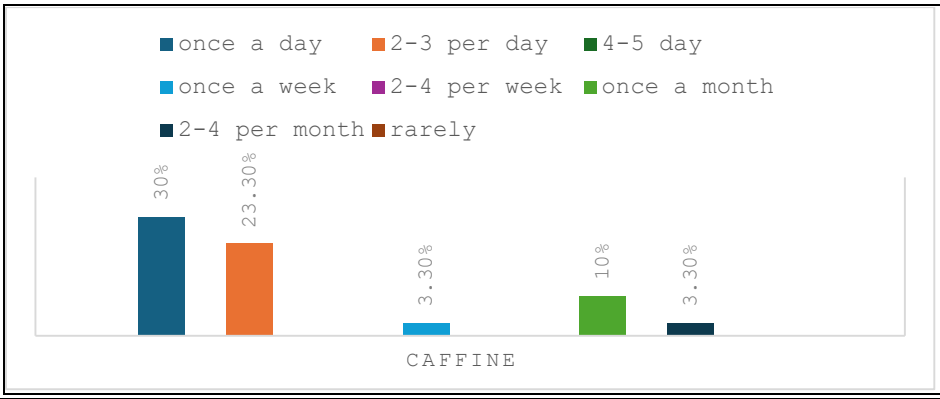
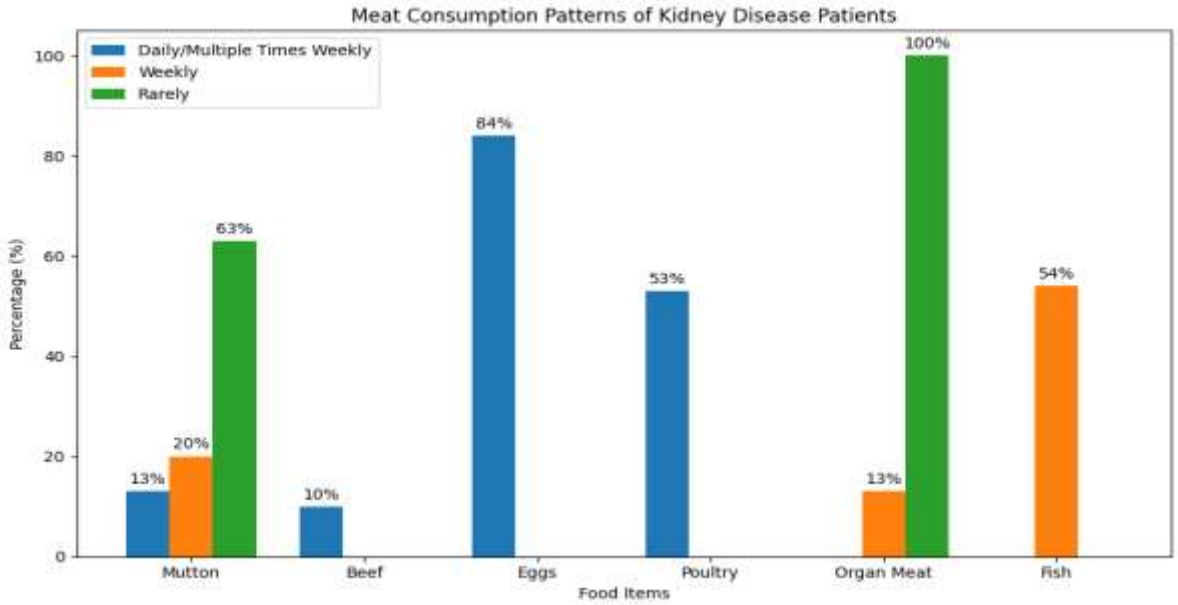
Meat Consumption Patterns			
Food Item	**Daily / Multiple Times Weekly (%)**	**Weekly (%)**	**Rarely (%)**
			

Table 6: The table depicts the dietary patterns of kidney disease patients.



high consumption of animal proteins, ghee, and refined cereals, while nutrient-dense options like fruits, vegetables, multigrain breads, and healthy fats were limited. Most patients avoided nuts and seeds due to phosphorus concerns, and moderate caffeine intake was observed. Overall, these patterns suggest several nutritional risk factors that may worsen kidney function.

Discussion

Our Study aimed to evaluate dietary patterns among kidney disease patients in Lahore and assess how high-protein intake affects kidney health. The findings indicate a clear trend of **excessive animal protein consumption,** particularly through eggs, poultry, mutton, and organ meats. Studies have shown that high dietary protein increases renal workload by elevating glomerular filtration rate (GFR) and promoting nitrogenous waste accumulation, which can accelerate chronic kidney disease (CKD) progression (13, 14). The MDRD study similarly demonstrated that a low-protein diet can slow GFR decline in CKD patients compared to high-protein diets, highlighting the clinical importance of protein moderation (15).

Dairy intake among participants showed a preference for whole milk, while skim and low-fat options were largely avoided due to misconceptions regarding their nutritional value. This pattern is concerning because whole milk is high in **phosphorus and potassium,** which can exacerbate CKD-related mineral imbalances and increase the risk of bone disorders (16). Yogurt consumption was moderate, primarily for its protein and calcium content, but participants lacked awareness of kidney-friendly low-fat or fat-free alternatives. Nutrition education targeting CKD patients has been shown to improve dietary choices and slow disease progression (17).

Fruits and vegetables were consumed in insufficient amounts, with high-potassium foods like bananas and spinach being largely avoided. While such restriction may be necessary for patients with advanced CKD, evidence supports that diets rich in fruits and vegetables, such as the **DASH diet,** reduce dietary acid load, lower nephron stress, and are associated with slower CKD progression (18). Similarly, participants' low intake of nuts, seeds, and healthy fats suggests a diet limited in protective nutrients such as polyunsaturated fatty acids (PUFAs), which are known to reduce inflammation and maintain kidney function (19). High consumption of saturated fats, particularly ghee and banaspati, further contributes to cardiovascular risk and may accelerate renal damage (20).

Caffeine intake was moderate, yet over half of the participants consumed at least one cup of tea or coffee daily. Studies indicate that high caffeine consumption may increase the risk of kidney stones and exacerbate renal injury in susceptible individuals (21). This finding emphasizes the importance of patient education regarding both macronutrient and lifestyle factors in CKD management.

Overall, the dietary patterns observed in this study reveal **multiple nutritional risk factors** that may worsen kidney function, including high animal protein and saturated fat intake, inadequate consumption of fruits, vegetables, and healthy fats, and misconceptions about dairy products. Implementing structured **renal nutrition education** and individualized dietary plans can mitigate these risks and improve patient outcomes (22, 23).

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