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Dietary management of pediatric patients with kidney disease: recommendations by The Korean Society of Pediatric Nephrology and The Korean Society of Clinical Nutrition

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Pediatric kidney disease has a relatively lower prevalence than do other pediatric conditions and has a notably different etiology from kidney diseases observed in adults. Furthermore, the pediatric population is unique in that they experience ongoing growth and development, distinguishing them from adult patients. Consequently, pediatric patients with kidney disease require more specialized and meticulous nutritional management than do adults. To address this need and promote optimal dietary practices for pediatric patients with kidney disease, pediatric nephrologists from the Korean Society of Pediatric Nephrology and nutritionists from the Korean Society of Clinical Nutrition have collaborated to establish nutritional guidelines specifically tailored to Korean dietary patterns. These guidelines offer detailed, nutrient-specific recommendations covering energy, protein, calcium, phosphorus, and potassium consumption while providing practical, culturally relevant guidance intended to support both pediatric patients and their caregivers.

Keywords: Child, Kidney diseases, Nutritional requirements, Republic of Korea

Introduction

Unlike adults, pediatric patients undergo continued growth and development, making nutritional management of pediatric patients with kidney disease particularly challenging. Providing adequate nutrition for growth while minimizing disease progression and complications is essential. However, several patients and caregivers rely on inaccurate information from online sources, leading to inappropriate dietary restrictions in hopes of mitigating kidney disease.

To address this issue, pediatric nephrologists from the Korean Society of Pediatric Nephrology and nutritionists from the Korean Society of Clinical Nutrition have collaborated to develop dietary recommendations tailored to the eating habits of Koreans. These recommendations aim to serve as the standard for nutritional care and dietary man-

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agement of pediatric patients with kidney disease in Korea and have been structured in a practical format that categorizes key nutrients to ensure comprehensibility for both patients and caregivers. This approach was also adopted to assist healthcare professionals in managing and educating pediatric kidney disease patients by providing them with helpful guides for nutritional management.

Energy in pediatric kidney disease

Carbohydrates, fats, and proteins in food serve as dietary energy sources. Carbohydrates and proteins each provide 4 kcal of energy per gram, whereas fats supply 9 kcal per gram. The daily energy requirement for pediatric patients with chronic kidney disease (CKD) does not differ from that of healthy children and adolescents of the same age (Supplementary Table 1, available online) [1]. Patients with kidney disease often have insufficient dietary intake due to dietary restrictions or reduced appetite, potentially causing protein depletion, weight loss, and delayed growth [1–3]. Therefore, adequate energy intake is crucial for maintaining optimal nutritional status and supporting proper growth. In recent years, however, obesity has become a growing concern among children and adolescents, often more so than energy insufficiency. Therefore, tailoring interventions according to the individual patient's condition is essential.

Dietary alternatives for insufficient caloric intake

When eating regular meals proves difficult, alternative foods with equivalent calories (kcal) can be selected as substitutes (Fig. 1) [4,5]. To increase the energy intake, jam can be added to bread or crackers, while honey or rice syrup can be added to rice cakes. Even with the same ingredients, energy intake can be enhanced by stir-frying or deep-frying them or making them into pancakes. Additionally, adding sesame oil or perilla oil during the preparation of porridges or side dishes, as well as using olive oil or oriental dressing on salads, can also help boost energy intake.

1/3 Bowl of rice, three pieces of injeolmi (rice cakes), 1 slice of bread, 1/2 bowl of boiled noodles, 1/2 of a medium-sized sweet potato (70 g), 1/2 an ear of corn (70 g), 2 chopsticks full of ramen, 2 tablespoons of sugar (25 g), 1.5 tablespoons of honey (30 g), 5 pieces of candy (25 g), 30 g of jelly, 1 piece of yakgwa (25 g), 1 cup of sweet rice drink

Figure 1. Examples of foods with 100 kcal.

Enteral formulas

In patients with kidney disease who require restrictions on protein, potassium, and phosphorus, a specialized enteral formula can be utilized. For infants, increasing the infant formula concentration by reducing the amount of water added can be used to increase its energy content; however, this method may also increase the protein, sodium, potassium, and phosphorus levels in the formula. Therefore, infant formula concentration should not be altered arbitrarily. Instead, energy modules, such as glucose polymers or fat emulsions specifically designed for caloric and nutritional supplementation, can be added to the formula [1–3]. For instance, infants fed formula eight times per day at 100 mL per feeding have a total daily energy of approximately 560 kcal. By supplementing each 100 mL of formula with 3 g of an energy-dense additive (e.g., high-calorie powder), the total energy intake can be increased to approximately 650 to 700 kcal per day, representing a 15% to 20% increase in caloric density [4].

Protein in pediatric kidney disease

Proteins serve as critical components of various body tissues, including muscles, skin, bones, nails, and hair, and are integral constituents of hormones, antibodies, and enzymes, indicating their essential role in growth, physiological function, and life maintenance. Additionally, proteins constitute an important energy source. However, pediatric patients with kidney disease may require protein intake restrictions due to impaired renal waste excretion and metabolic acidosis, which could vary with disease severity. Thus, the appropriate protein intake should be carefully determined by considering factors such as disease severity, age, growth velocity, and the necessity for promoting optimal growth and nutritional status.

Dietary sources of protein (Table 1)

Proteins can be classified into animal-based and plant-based sources [4]. Animal-based protein sources mainly include meats, fish, shellfish, eggs, and milk. Except for milk, animal-derived foods typically contain 8 g of protein per food exchange unit (a standardized measurement system that allows for interchanging foods within the same food group while ensuring equivalent nutritional value). Plant-based proteins include grains, vegetables, legumes (e.g., tofu), and soy milk. Among the sources of plant proteins, legumes have the highest protein content, providing 8 g per exchange unit [5]. Grains and vegetables each provide approximately 2 g of protein per exchange unit, whereas soy milk contains 6 g of protein per exchange unit, which is equivalent to cow's milk [5].

Protein intake in pediatric patients with nephrotic syndrome

Guidelines recommend that pediatric patients with nephrotic syndrome maintain a protein intake similar to that for healthy children of the same age, without increasing or restricting protein intake even during steroid treatment or proteinuria (Table 2) [6,7]. Historically, high-protein diets had been found to compensate for protein losses in nephrotic syndrome; however, such diets did not improve serum albumin levels and instead accelerated renal damage due to protein overload. Conversely, studies involving low-protein diets in patients with CKD demonstrated that such a diet slowed the decline in renal function but promoted nutritional deficiencies due to inadequate protein intake [8–11]. According to the 2021 KDIGO (Kidney Disease: Improving Global Outcomes) guidelines, protein restriction is recommended for patients with decreased kidney function and proteinuria, although its safety has not been conclusively established in pediatric populations due to concerns about the risk of malnutrition [12]. An exception to this recommendation, however, is patients with congenital nephrotic syndrome who may benefit from high-calorie, high-protein diets.

Table 1. Major dietary protein sources according to exchange unit [5]

Source	Weight	Estimated serving size	Protein content (g)
Animal-based foods			
Meat	40 g	Size of one ping-pong ball	8
Fish	50 g	Small piece	8
Shellfish	70 g	1/3 Cup	8
Egg	55 g	1 Medium-sized egg	8
Milk	200 mL	1 Cup (pack)	6
Plant-based foods			
Grains	70 g	1/3 Bowl of cooked rice	2
Vegetables	70 g	1/3 Cup cooked	2
Beans	20 g	2 Tablespoons	8
Tofu	80 g	1/4 Block	8
Soy milk	200 mL	1 Cup (pack)	6

Protein intake in pediatric patients with chronic kidney disease

To ensure normal growth and adequate nutritional status of pediatric patients with CKD, their protein intake should be carefully planned. Given that strict restriction of protein intake does not necessarily improve preservation of kidney function, guidelines recommend that pediatric patients with CKD consume the same amount of protein as their healthy peers (Supplementary Table 2, available online). However, healthy children and adolescents typically consume more than twice the recommended protein intake. Therefore, CKD patients need to strictly adhere to nutritional guidelines rather than trying to match the high-protein consumption of their peers.

Restricting protein intake often inadvertently reduces the overall caloric and nutrient consumption. Thus, significant protein restriction is not generally recommended for patients with stage 1 to 2 CKD. For those with CKD stage 3 or higher, guidelines recommended a protein intake that

Table 2. Recommended protein intake for healthy children and pediatric patients with nephrotic syndrome [6,7]

Parameter	Age group							
	Infant		Toddler	Child	Adolescent			
	0–6 mo	7–12 mo	1–3 yr	4–8 yr	9–13 yr		14–18 yr	
Sex	Both	Both	Both	Both	Male	Female	Male	Female
Protein (g/kg/day)	1.5	1.2	1.1	0.95	0.95	0.85	0.95	0.85

closely aligns with age-specific nutritional requirements (Table 3) [1,2,6,7,13].

Suggested daily meat consumption

A serving of meat weighing approximately 40 g, around the size of a ping-pong ball, contains approximately 8 g of protein [4,5]. For example, the daily recommended protein intake for a 10-year-old boy is approximately 50 g. If the daily protein requirement were to be met exclusively through meat, approximately 250 g (approximately six ping-pong ball-sized portions) would be required (Table 1). However, actual meals typically include rice and vegetables alongside meat. Considering that one bowl of rice contains around 6 g of protein, along with vegetable side dishes, a total of around 20 to 25 g of protein can be consumed daily through these foods. Therefore, an additional 3 to 4 ping-pong ball-sized servings of meat would suffice to meet the protein requirement.

Uric acid in pediatric kidney disease

Uric acid is the final product created after the breakdown of purines, which are cellular components. It is generated through two primary pathways: (1) from the breakdown of the body's own cells and (2) from dietary intake of purine-rich foods. Most of the uric acid in the body is eliminated through urine via the kidneys. Hyperuricemia can occur with either excessive uric acid production or insufficient renal excretion. In adults, hyperuricemia is defined as uric acid levels exceeding 7 mg/dL, whereas in pediatric patients, hyperuricemia is defined as uric acid levels exceeding the 90th percentile for age and sex [14]. Severe hyperuricemia can cause gout, a condition characterized by the deposition of uric acid crystals in the joints, and also contributes to the development of hypertension and worsening kidney function. Thus, dietary management aimed at maintaining normal blood uric acid levels is crucial for pediatric patients with CKD.

Uric acid-containing foods

Fig. 2 lists the dietary sources of uric acid classified according to purine content [4].

Factors elevating uric acid levels

Fat

Excessive intake of fat stimulates fatty acid synthesis in the liver, which has been linked to increased purine synthe-

Table 3. Recommended protein intake for pediatric patients with CKD [6,7]

Parameter	Age group					
	Infant		Toddler	Child	Adolescent	
	0–6 mo	7–12 mo	1–3 yr	4–8 yr	9–13 yr	14–18 yr
Protein (g/kg)						
CKD 3	1.50–2.10	1.20–1.70	1.05–1.50	0.95–1.35	0.95–1.35	0.85–1.20
CKD 4–5	1.50–1.80	1.20–1.50	1.05–1.25	0.95–1.15	0.95–1.15	0.85–1.02

CKD, chronic kidney disease.

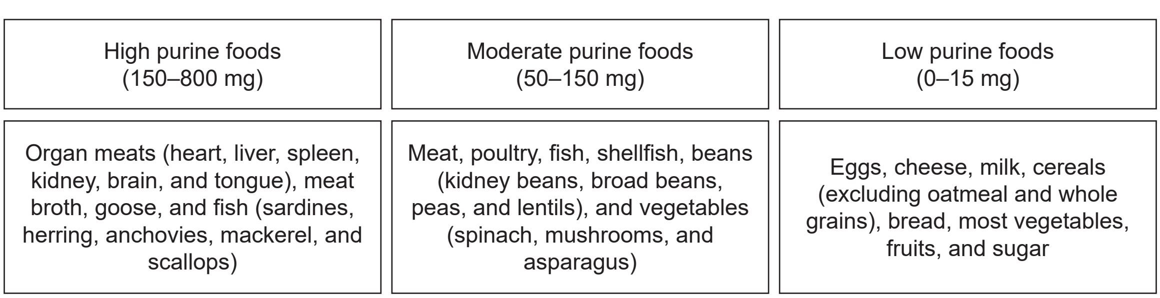

Figure 2. Classification of foods according to purine content (per 100 g) [4].

sis, consequently accelerating uric acid production and impairing uric acid excretion [15]. Therefore, reducing fat intake is important for managing hyperuricemia. To achieve this, studies recommend using alternative cooking methods, such as steaming or grilling, instead of frying or sautéing [16–18].

Fructose

Fructose has been clearly established as a significant risk factor for hyperuricemia [15–19], considering that uric acid is produced during fructose metabolism in the liver. Additionally, fructose and its metabolite lactate interfere with uric acid excretion, which quickly raises blood uric acid levels. Therefore, patients with CKD and hyperuricemia should limit their consumption of fructose-rich foods and beverages, including soft drinks, fruit juices, and syrups.

Protein

Traditionally, a low-protein diet has been recommended for the management of hyperuricemia in adults. However, reducing dietary protein intake can inadvertently increase the consumption of refined carbohydrates and foods high in saturated or trans fats. Moreover, protein is essential for growth in pediatric patients. Hence, pediatric patients with CKD should aim to meet their protein requirements rather than excessively restricting their protein intake [16].

Sodium in pediatric kidney disease

Sodium, which is primarily consumed through salt, plays a crucial role in maintaining fluid balance, stable blood pressure, and acid–base balance in the body [20]. Studies show that the sodium intake of Korean children and adolescents exceeds more than twice the recommended levels for maintaining good health suggested by the 2020 Korean Dietary Reference Intakes for sodium [21–25]. Excessive sodium intake in pediatric patients with CKD can increase blood pressure and potentially exacerbate kidney disease progression. Therefore, reducing sodium intake by identifying high-sodium foods and carefully managing their consumption is vital.

Foods containing sodium

Sodium is abundantly present in condiments or seasonings, pickled foods, processed foods, instant foods, and fast foods. Table 4 lists the primary dietary sources of sodium among Koreans. Accordingly, condiments make up a significant proportion of the daily sodium intake, accounting for approximately 46% [20]. Therefore, pediatric and adolescent patients with CKD should make concerted efforts to reduce their consumption of sodium-rich condiments and limit the frequency of dining out and consumption of processed foods.

Recommended daily sodium intake for a 7-year-old child

Given that 1 g of salt contains approximately 400 mg of sodium and that the recommended daily sodium intake for a

Table 4. Ranking of foods according to sodium content [21]

Rank	Food item	Sodium (mg/100 g)
1	Salt	33,417
2	Soy sauce	5,476
3	Kimchi (Napa cabbage)	548
4	Ramen (dried noodle and soup)	1,338
5	Soybean paste	4,339
6	Red pepper paste	2,486
7	Bread	516
8	Salted seafood	11,826
9	Anchovies	2,377
10	Noodles	395
11	Dried seaweed	7,535
12	Ham/sausage/bacon	759
13	Ssamjang	2,619
14	Powdered seasoning	15,836
15	Rice cake	261
16	Snacks	577
17	Cubed radish kimchi	501
18	Bulgogi marinade	1,964
19	Young radish kimchi	510
20	Fish cakes	699
21	Egg	131
22	Radish kimchi	692
23	Buckwheat noodles	455
24	Sandwich/hamburger/pizza	378
25	Milk	36
26	Pork (lean meat)	49
27	Cheonggukjang	3,083
28	Black bean sauce	3,227
29	Cheese	928
30	Dongchimi	53

7-year-old child is 1,900 mg (Supplementary Table 3, available online), such a child is able to safely consume approximately 5 g of salt per day (1,900 mg divided by 400 mg/g). Typically, around 1 to 2 g of salt is consumed naturally through unprocessed foods, allowing an additional 3 to 4 g of salt to be consumed through condiments or seasonings, which equates to roughly 1 g of salt from the condiments per meal. The amount of condiments containing 1 g of salt is illustrated in Fig. 3 [26].

Methods for reducing sodium intake when cooking at home

Patients should also avoid salted foods, processed foods, fast foods, dried fish, and chemically enhanced seasonings, which have high-sodium content [26]. Clear soups or rice water soups (Nurungji-guk) are preferable to stew, given their lower sodium content. Vinegar, lemon juice, wasabi, chili powder, pepper, green onions, onions, garlic, ginger, herbs, perilla oil, or sesame oil can be used to enhance flavor while reducing sodium. Additionally, serving sauces for dipping separately rather than seasoning soups and side dishes directly, preparing only one side dish with adequate seasoning while leaving others unseasoned, or using low-sodium condiments can further reduce sodium intake [27,28].

Methods for reducing sodium intake when dining out

Processed foods often contain high amounts of sodium for preservation purposes; therefore, caution should be exercised when consuming bread, snacks, convenience store meals, frozen foods, and instant foods [26]. When eating school meals or dining out, only consume half portions of high-sodium foods, such as braised or pickled dishes and soups. Moreover, individuals can ask the sauce to be served separately and use minimal amounts for dipping. Consumption of pickles, ketchup, cheese, bacon, and processed meats should also be minimized [26–28].

Calcium and phosphorus in pediatric kidney disease

Calcium, the most abundant mineral in the body, plays a crucial role in bone health, blood coagulation, nerve conduction, muscle contraction, and hormone secretion. Similarly, phosphorus, the second most abundant mineral, contributes significantly to skeletal structure, regulation of acid–base balance, activation of vitamins and enzymes, and energy metabolism. Calcium and phosphorus concentrations in the body are maintained through integrated regulation involving intestinal absorption, renal reabsorption, and bone exchange. Imbalances that decrease calcium and phosphorus levels can cause bone disorders, such as rickets, osteomalacia, and osteoporosis, whereas high levels of calcium and phosphorus may cause cardiovascular diseases and calcification of the blood vessels and kidneys. Thus, appropriate regulation of calcium and phosphorus is particularly important in pediatric patients with CKD.

Dietary sources of calcium and phosphorus

Calcium-rich foods include milk, dairy products, anchovies, oysters, dried seaweed, cheese, and tofu. According to the 2018 Korean National Health and Nutrition Examination Survey [29], Koreans consume an average of 128.1 mg of calcium per day through milk and dairy, accounting for 29.4% of the daily calcium intake. Milk and dairy products, including manufactured infant formulas, are especially important calcium sources for infants and children.

Although phosphorus is found in almost all animal and

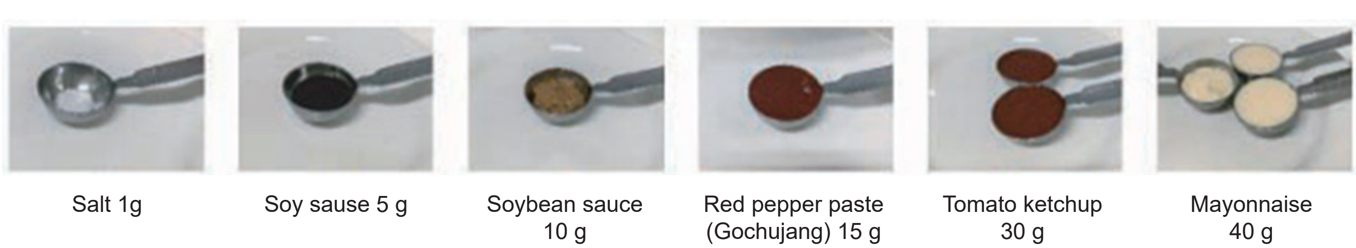

Figure 3. Amount of condiments containing 1 g of salt (400 mg of sodium) [26]. Spoon used is 1 tablespoon.

plant foods, it is particularly abundant in protein-rich foods, such as fish, meat, eggs, dairy products, grains, and nuts. The major dietary phosphorus sources among Koreans [29,30] include rice and animal-based foods, such as pork (lean meat), chicken, anchovies, milk, and eggs. For infants and children, milk and dairy products serve as more significant sources of phosphorus than do rice and meat.

Food additives and supplements

Phosphorus can be consumed through natural foods, as well as food additives and supplements in various forms. Food additives have been widely used in food processing; thus, frequent consumption of processed foods increases the intake of food additives [31]. These additives, which are mostly inorganic phosphates, are more readily absorbed than is phosphorus naturally present in foods. Additionally, phosphates are added to various medications (e.g., antacids and antihypertensive drugs) to aid dispersion and absorption [32,33]. Therefore, assessment of phosphorus intake should consider the consumption of carbonated beverages, processed foods, and medications containing inorganic phosphates.

In Korea, 27 types of phosphates, including potassium phosphate, calcium phosphate, and sodium phosphate, have been approved for use as food additives in food production [34]. Phosphates function as acidity regulators, emulsifiers, nutrient enhancers, leavening agents, and preservatives. In Korea, phosphates are most commonly used in bakery products, processed foods, and complex seasonings. Although Koreans primarily consume phosphorus from natural agricultural and animal products [21], the growing trend of processed food consumption among adolescents may increase phosphate intake from food additives.

Calcium and phosphorus intake in pediatric patients with chronic kidney disease

Regular monitoring of calcium and phosphorus intake, including intake from food additives, processed foods, and calcium-containing medications (e.g., calcium-based phosphate binders), is crucial for pediatric patients with CKD. Calcium intake should align with the recommended daily allowance for age (Supplementary Table 4, available online) and should ideally not exceed twice this amount. Phosphorus intake should also adhere to age-specific recommendations (Supplementary Table 5, available online) while still ensuring adequate nutritional intake. However, given the high phosphorus content in dairy products, fish, and meat, strict adherence to the recommended levels can be challenging, often necessitating the use of phosphate binders to manage phosphorus effectively.

Meal planning for phosphorus control

Meal planning should prioritize foods low in phosphorus (Table 5) [4]. Given that phosphorus from animal-based foods is absorbed more efficiently than that from plant-based foods, animal proteins should be evenly distributed across meals rather than consumed excessively at one time [32]. Considering that phosphorus is water-soluble, boiling foods in plenty of water can be used to reduce their phosphorus content [31,35,36]. After boiling, the cooking water is discarded as it contains high levels of phosphorus. Boiling reduces phosphorus content in vegetables, legumes, and meats by approximately 51%, 48%, and 38%, respectively [4]. Boiling food for over 30 minutes using a pressure cooker is more effective than using a regular pot. If processed foods are desired, they should be cut into small pieces, boiled, and then drained before consumption. Always check the labels on processed foods to identify

Table 5. Foods rich in phosphorus [4]

Food group	Food items
Grains	Potatoes, taro, black rice, barley, mung beans, Job's tears, sorghum, millet, chestnuts, bread, breadcrumbs, oatmeal, corn, ginkgo nuts
Animal proteins	Dried fish (anchovies and whitebait), fish roe (pollock/cod eggs), liver, ham, beef bone broth, egg yolks
Dairy products	Milk, cheese, yogurt, ice cream, and custard cream
Nuts	Peanuts, walnuts, and almonds
Others	Chocolate, brown sugar, raw sugar, royal jelly, and Coke

Table 6. Nutritional contents of breast milk and infant formulas [37]

Type	Energy (kcal/100 mL)	Protein (g/100 mL)	Calcium (mg/100 mL)	Phosphorus (mg/100 mL)	Potassium (mg/100 mL)	Sodium (mg/100 mL)
Breast milk	61	1.1	27	14	48	15
Infant formula, step 1 (up to 6 mo)	71	1.7	77	45	98	23
Infant formula, step 2 (6–12 mo)	71	1.8	89	52	103	24
Infant formula, step 3 (after 12 mo)	67	2.4	119	73	130	26
Infant formula, low-phosphate	70	2.0	52	12	63	20

phosphorus additives (e.g., phosphate compounds) and manage intake carefully.

Calcium-rich beverages as alternatives to milk

Breastfeeding is primarily recommended even for infants with CKD [35]. However, if breastfeeding is not possible and manufactured infant formulas are selected, studies recommend using standard formulas suitable for the infant's age and weight. As infant formulas advance in stages, their protein and mineral contents increase slightly despite having similar caloric content. Thus, if an infant consumes adequate amounts of formula, maintaining a lower-stage formula might be beneficial to prevent excessive intake of proteins and minerals [4]. Specifically, infants older than 6 months who primarily rely on formula due to difficulties transitioning to complementary foods may consume excessive amounts of minerals when consuming large amounts of advanced-stage formula. The use of formulas low in phosphorus can be considered after consultation with healthcare providers. Table 6 compares the nutritional contents of breast milk and infant formulas [37].

Potassium in pediatric kidney disease

Potassium is an essential mineral necessary for maintaining muscle, nerve, and heart function. In patients with decreased kidney function, impaired potassium excretion can cause potassium imbalances and related complications. Therefore, recognizing potassium-rich foods and managing their intake as needed is imperative. Pediatric patients with CKD whose potassium levels remain normal can consume potassium in amounts similar to those recommended for healthy children (Supplementary Table 6, available online). However, patients with hyperkalemia should avoid foods high in potassium and employ cooking methods that lower potassium content (Table 7) [37]. Conversely, patients with hypokalemia should emphasize consuming potassium-rich foods.

Dietary sources of potassium and food additives

Table 7 lists dietary sources of potassium. Additionally, potassium intake can be influenced by potassium salts used as food additives in various processed foods. Thus, individuals needing potassium-restricted diets should carefully check the food ingredient label for potassium additives. In Korea, potassium salts approved for use as food additives [34] have been primarily used as acidity regulators, flavor enhancers, nutrient enhancers, coloring agents, sweeteners, emulsifiers, thickeners, stabilizers, flour treatment agents, bleaching agents, preservatives, and leavening agents. Consuming a higher proportion of processed or instant foods can increase potassium intake compared to consuming fresh foods. Patients with hyperkalemia should therefore evaluate nondietary factors causing potassium imbalance (e.g., adjustments to dialysis prescriptions, medication review) before modifying dietary intake.

Meal planning for hyperkalemia management

When consuming a regular diet, processed foods containing potassium additives should be avoided. If hyperkalemia persists, the intake of high-potassium foods should be reduced, and cooking methods that lower the potassium content should be adopted [4]. If dietary adjustments fail to control potassium levels, oral potassium binders may be necessary [38].

Regarding vegetable intake, not all raw vegetables must be blanched. Instead, select low-potassium options and avoid high-potassium varieties. Vegetables can be peeled, removed of their stems, sliced thinly or diced, and then

Table 7. Dietary sources of potassium (mg per serving) [37]

Food group	Food item (serving size, g)	Potassium (mg)
Vegetable	Dried seaweed (2)	8.6
	Bean sprouts (70)	58.8
	Seaweed sheets (2)	70.1
	Onion (70)	101.5
	Cucumber (70)	112.7
	Soybean sprouts (70)	152.6
	Zucchini (70)	156.8
	Cabbage (70)	168.7
	Kimchi (50)	177.5
	Radish (70)	182.7
	Lotus root (40)	191.2
	Carrot (70)	209.3
	Bok choy (70)	255.2
	Broccoli (70)	255.5
	Chard (70)	393.4
	Spinach (70)	483.7
	Chamnamul (70)	538
Grains	Rice (70)	14
	Boiled noodles (90)	6.3
	Spaghetti (boiled, 90)	26.1
	Potato (140)	522.9
	Sweet potato (70)	262.5
	Corn (70)	212.1
Fats	Almonds (8)	60.7
	Sesame oil (5)	2.8
Dairy	Soy milk (200)	304
	Milk (200)	284
Fruits	Blueberry (80)	56
	Persimmon (50)	66
	Apple (80)	88.2
	Mango (70)	99.4
	Lychee (70)	119
	Mandarin (120)	121.2
	Grapes (80)	133
	Pear (110)	136.4
	Orange (100)	158.5
	Watermelon (150)	163.5
	Banana (50)	177.5
	Pineapple (200)	194
	Kiwi (80)	218.4
	Strawberry (150)	229.5
	Plum (150)	246
	Peach (150)	324.0
	Nectarine (150)	346.5
	Melon (120)	448.8
	Avocado (100)	485
	Korean melon (150)	675
	Cherry tomato (300)	731.5
	Tamato (350)	1,006.3
Animal protein	Chicken (40)	130.8
	Pork (40)	127.2
	Beef (40)	132.3
	Anchovy (15)	79.65
	Egg (55)	69.9
	Quail egg (40)	67.8
	Tofu (80)	105.6

soaked in water (10 times the volume of the vegetables) for at least 2 hours before rinsing and cooking [4,38]. Blanch vegetables in water five times their volume, boil thoroughly, and rinse afterward [4,38].

When consuming fruits, the skin should be peeled off before eating. Be cautious with dried fruits, which typically have at least twice the potassium content of fresh fruits [4]. Canned fruits generally have lower potassium content and can be consumed safely in moderation, but excessive syrup intake should be limited [4].

Conclusions

Through the dietary recommendations developed jointly by the Korean Society of Pediatric Nephrology and the Korean Society for Clinical Nutrition, pediatric patients with kidney disease in Korea can better establish optimized dietary regimens and nutritional management plans. These recommendations, which reflect essential nutrient-specific recommendations tailored to the Korean dietary context, are expected to serve as a valuable resource not only for patients and caregivers but also for healthcare professionals involved in the management and education of pediatric kidney disease.

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Conflicts of interest

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Data sharing statement

The data presented in this study are available from the corresponding author upon reasonable request.

Authors' contributions

Conceptualization, Data curation, Investigation: All authors
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