

## Foods For People With Kidney Diseases: Fundamental Guidelines & Choice

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### ABSTRACT

Chronic Kidney Disease (CKD) leads to increased cardiovascular mortality and a loss of disability-adjusted life years. In addition lack of data / information in most low- and middle-income countries made it difficult to ascertain the true burden. Moreover, high incidence and prevalence of CKD is being driven by regional and global increase in the prevalence of Diabetes Mellitus (DM), hypertension, obesity and aging in particular. Community surveys indicate people with end-stage kidney disease are only the tip of "CKD iceberg." Therefore, preventive strategies of CKD must involve educating the population creating public awareness with early detection of CKD. The paper highlights categories of healthy foods for the people with kidney diseases for one's better choice and alternatives in choosing one's meal plan. Therefore, to deal with CKD emphasis should be given on people's awareness about fundamental guidelines and choice of available foods in order to prepare a kidney friendly diet towards better and prolong life.

**Key Words:** CKD, Incidence, Prevalence, Kidney Friendly Diet

### Introduction

Persons more than 65 years of age constitute a substantial and growing fraction of people having the End-Stage Renal Disease (ESRD)<sup>1</sup>. Renal Data System of US (USRDS) indicates that the incidence rates of ESRD have continued to increase among those 65 and older<sup>2</sup>. Studies examining the factors affecting survival of elderly patients put on dialysis, age at start of dialysis and multiple co morbidities have been found most implicated<sup>3-5</sup>. However, a recent study showing dialysis might not offer a survival benefit in patients over 75 ages with multiple co morbidities, especially if having ischemic heart disease<sup>6</sup>. Moreover, functional dependence, impaired intellectual status, diabetes, malnutrition (low serum albumin) peripheral vascular disease and late referral for ESRD treatment are also seen as poor prognostic factors in the elderly<sup>7-8</sup>. Diet will vary based on general needs, but will be most impacted by the stage of kidney failure and of end-

stage renal disease. Studies have shown that irrespective of type of dialysis received a low protein diets (hypoproteic) can help postpone dialysis<sup>9</sup>. Protein is important in diet because it helps keep the body nourished and healthy to fight off potential infections, repair tissue and for growth. A healthy diets overall the best to select trimmed cuts of meat or low fat dairy. Nuts and beans are also a good source of protein, but also contain phosphorus. Moreover, a hyperkalemia or high level of potassium in the body is associated with a significant increase in an irregular heartbeat and sudden death as well<sup>10</sup>. Therefore, preventive strategies of CKD must involve educating the population on how to prevent renal disease; risk involved in the development of CKD; public awareness on food for the people with kidney diseases, lifestyle of susceptible individuals; early detection of CKD; and creating facilities for global assistance in generation database<sup>11</sup>.

In considering CKD it is important to maintain healthy weight with low salt intake to control blood pressure, a meal that will control DM. The basis and guidelines of the meal plan for a kidney friendly diet deserves consideration of calories, protein, carbohydrates, fat, nutrition facts and portion. However, role of dieticians in that case is vital for consultation. In a diet calorie comes from protein, carbohydrate and fat but it is to be remembered that one's need depends on individual age, sex, body size and activities and thus be adjusted as per body weight goals.

In addition, *protein* is needed but too much of it can be a problem. Again the amount of protein depends on body size & activity level. It is recommended to limit protein or change their sources. One can follow the sources of lower protein foods and higher protein foods mentioned below:

Lower protein foods includes; bread, fruits, vegetables, pasta and rice

Higher protein foods includes; meat, poultry, fish, eggs

Carbohydrates are the easiest energy source in use but healthy sources include fruits and vegetables and unhealthy sources are sugar, honey, hard candies & soft drinks. Moreover some carbohydrates are high in potassium and phosphorus that is to be considered as per the stage of CKD. A person with additional DM it is wise to take help in dealing carbohydrate in the meal plan with a dietitian in particular.

Too much *fat* can lead to weight gain and heart disease therefore choice of healthier fats in a meal plan is essential e.g. unsaturated fats Olive oil, Vegetable oils. It helps reducing cholesterol. If one need gaining weight it is better to eat more unsaturated fats but if losing weight is concern limit unsaturated fat? Consider examples of bad fat (Saturated) that includes; butter, lard, meats. However, removing the skin from chicken can help limit saturated fat.

Be careful with *salt substitutes* in reducing sodium in foods. Many salt substitutes are high in potassium which is dangerous for someone suffering with CKD.

The following *nutrition facts* will help deciding how much protein; carbohydrates, fat and sodium are in each serving of a food. One can pick it up that are

high in nutrients that is needed and low in nutrient should limit.

Eating too much of healthy food can be a problem and thus to control one's *portions / part or share* eat slowly and stop eating when not hungry anymore if anyone eat too quick there is chance of eating more than need. Avoid eating while doing something like TV watching, driving as it is distracting hoe much eating. It is good to avoid eating directly from package instead taking out one serving of food and put the bag or box away.

Limit *potassium, phosphorus, and fluids* in consultation with physician or dietitian in particular. The following examples are the high and low potassium, and phosphorus containing foods one can choose in consultation with physician or dietitian.

**Lower potassium foods includes;** apple, grapes, strawberries, cauliflower, onion, lettuce, pita, white bread

**Higher potassium foods includes;** bananas, melons, oranges, potatoes, tomatoes, beans

**Lower phosphorus foods includes;** rice cereals and cream of wheat unsalted popcorn, some light colored sodas & lemonade

**Higher phosphorus foods includes;** whole-grain bread, bran cereals and oatmeal, nuts and sunflower seeds, dark-colored colas

One may not need much *fluid* due damage in kidney and too much will be dangerous. It can lead to high blood pressure, swelling and heart failure. Extra fluid will affect lungs and will make hard to breath. Limit fluid in consultation with physician or dietitian on how much one can drink. Foods that melt like; ice, ice cream and gelatin have lot of water. It is true for many other fruits & vegetables that must be taken in consideration to avoid extra fluid. Limit sodium to help cut down on thirst. If one still feel thirsty might try with chew gum, by rinsing mouth.

Take help of your physician or dietitian about any *vitamins, supplements or over the counter medicines* that one taking. Some may be harmless, but other can be dangerous for kidney more or can cause other health problems<sup>12</sup>.

## Literature Review

Kidneys filter toxins from your body and regulate body fluids and electrolytes sodium and potassium. Its failure results immediate symptoms of nausea and vomiting due to toxin in the blood. People having chronic kidney disease can be able to modify their diets to reduce stress on these vital organs although no diet is good for everyone. Dietician & physician (nephrologists in particular) in consultation with patient can make a meal plan specific for you in addition to follow up laboratory tests. This article highlights categories of healthy foods for the people of kidney disease as an option to choose.

In **BREAKFAST** one egg is enough to meet the demand of protein without much of added fat. In addition white toast and a small glass of skim milk will be suitable as a kidney-preserving meal.

**LUNCH** may include many colored vegetables as salad with some grilled chicken to start. Low fat salad dressing is preferable. In maintain hydration between meals a large glass of water will be enough.

**DINNER** may add a fruit beverage that may help maintaining a well balanced diet within list of fruits restrictions. Additional one piece of 6 oz grilled salmon, with some steamed white rice can be a better choice along with half a fresh banana for dessert.

*(Source: Meal Plan for Kidney Diseases Last updated: Feb 21, 2014 by Jennifer)<sup>14</sup>*

Moreover, foods that contain antioxidants can help neutralize free radicals and protect body. Many of such foods can be an excellent choice and be included in the kidney diet or people with CKD. The **quantity and composition** of TOP 15 health foods for people with kidney diseases are furnished below as an option or choices to make diet health and friendly as well. However, some of those may not be available in the local market in many countries.

Sl. no	Name of foods	Quantity	Composition	Remarks
1	Red bell peppers	Half cup serving	1 mg sodium 88 mg potassium 10 mg phosphorus	Low potassium, tasty vegetable, source of Vit C & A. Also an appetizer
2	Cabbage	Half cup serving	6 mg sodium 60 mg potassium 9 mg phosphorus	High Vit K, C and fiber. Good source of Vit B6 & folic acid & in low potassium & low cost
3	Cauliflower	Half cup serving boiled	9 mg sodium 88 mg potassium 20 mg phosphorus	High in Vit C & good source of folate and fiber
4	Garlic	1 clove	1 mg sodium 12 mg potassium 4 mg phosphorus	Prevent plaque, lowers cholesterol & reduce inflammation
5	Onions	Half cup serving	3 mg sodium 16 mg potassium 3 mg phosphorus	Powerful antioxidant works to reduce heart disease & protect many cancer
6	Apples	1 medium apple with skin	0 mg sodium 158 mg potassium 10 mg phosphorus	Reduce cholesterol, prevent constipation, protect heart disease & reduce risk of cancer. High fiber, anti-inflammatory. <b>Apple a day keep doctor away</b>
7	Blue berries	Half cup serving fresh	4 mg sodium 65 mg potassium 7 mg phosphorus	High in anti-oxidant & a good source of Vit C
8	Cranberries	Half cup serving dried	2 mg sodium 24 mg potassium 5 mg phosphorus	Protect bladder infection & stomach ulcer. Also protect cancer & heart disease
9	Raspberries	Half cup serving	0 mg sodium 93 mg potassium 7 mg phosphorus	Source of manganese, Vit C, fiber and folate & Vit B. Inhibit cancer cell growth & tumor formation
10	Strawberries	Half cup serving fresh (5 medium)	1 mg sodium 120 mg potassium 13 mg phosphorus	Source of Vit C, manganese & fiber, Protect heart, having anti-cancer& anti-inflammatory
11	Cherries	Half cup serving fresh	0 mg sodium 160 mg potassium	Reduce inflammation, Anti-oxidant & protect

(Source: Da vita renal dietitian, Sara Colman, RD, CSR, CDE)<sup>15</sup>

## Conclusion

A well balanced diet plan is important for maintaining good health in case of CKD but compliance, choice and consideration in addition to consultation with nephrologists and dietitian is important because it help prevent further damage of the kidneys. Depending on the stage of CKD it is better to limit potassium, phosphorus and fluids.

## Recommendations

- It is important educating people through public awareness program how to prevent kidney disease, and the risk involved in CKDs
- Importance should be given through motivation of the population in choosing healthy foods having kidney disease and its compliance in consultation with nephrologists & dieticians in particular
- Regular follow up evaluation & monitoring is important for better compliance & confidence among clients & providers
- Cost minimization & choice of treatment options should be rational & well informed
- A large scale community based survey is essential to generate real scenario of kidney disease in our setting to have a data base in making future plan of action.
- Measures should be taken towards early detection & prevention of Kidney diseases through active surveillance including other Non Communicable Diseases (NCDs) like; Diabetes, Hypertension, Cancer, Obesity, and Aging in particular

## Conflict of Interest

The authors have no conflict of interest to anybody

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