

# Role of Nutrition in Chronic Kidney Disease

Ms. Tanvi Sunil Ballal, Mr. Sojwal Ramkant Patil  
Food science and Nutraceutical, B.K Birla College, Kalyan, India  
Food science and Nutraceutical, B.K Birla College, Kalyan, India

## ABSTRACT

*In this paper we are going to discuss about what is CKD? Role of Kidney in the body? And how many people in India suffer from CKD? We are also going to found out what is the risk factor or CKD? What are the symptoms of CKD? We are going to learn about different stages of CKD and we are going to found out how and what diet will help in treatment of CKD according to stages. Also what healthy habits can be incorporated in daily diets? Which can minimize the risk of suffering from CKD?*

**Keyword:** - CKD, Nutrition, stages of CKD, role of kidney , Risk factors of CKD.

---

## 1. Introduction

Nutrition plays a crucial role in managing chronic kidney disease (CKD) as it can impact the progression of the disease and overall health outcomes. CKD is a condition that affects the kidneys' ability to filter waste and excess fluid from the body. In CKD, the kidneys gradually lose function over time, leading to the accumulation of waste and excess fluid in the body, which can cause a range of health problems.

## 2. What is Chronic kidney disease ?

Chronic kidney disease is global public health burden , needing comprehensive Preventing and dealing the progress on advanced chronic kidney disease . Long Standing disease of the kidneys leading to renal failure. The kidney filters waste & excess fluid from the blood . As kidneys fail,waste builds up.

## 3. Role of kidney in Body:

The kidneys main job is to filter extra water & wastes out of your blood to make urine . To keep your body working properly , the kidneys balance the salts and minerals such as calcium , phosphorus, sodium & potassium that circulate in blood . Your kidneys also make hormones that help control blood pressure , make red blood cells , and keep your bones strong . kidney disease often can get worse over time & may lead to kidney failure . If your kidney fails , you will need dialysis or a kidney transplant to maintain your health. The sooner you know you have kidney disease .The sooner you can make changes to protect your kidneys .

## 4. How many people suffer from CKD in india ?

The approximate prevalence of CKD is 800 per million population (pmp) in india and the incidence of end-stage renal disease (ESRD) is 150–200 pmp.

## 5. What are risk factor for CKD ?

A person have have diabetes , high blood pressure , heart disease & are over 60 yrs of age also that person have abnormal kidney structures. Have a long history of taking painkillers and also have family history of kidney disease.

## 6. Symptoms of CKD

- Loss of appetite
- Shortness of breath

- Bleeding your urine
- foamy urine
- Trouble sleeping
- High Blood Pressure
- Puffy eyes
- Dry and itchy skin
- Nausea and vomiting
- Tiredness
- weakness
- Low Energy
- A need to pee ( urinate) more often

## **7. Stages of chronic kidney disease :**

The five stages of CKD refer to how well your kidney working . kidney disease can get worse in time . In the early stages ( stages 1- 3 ) your kidneys are still able to filter waste out of your blood. In the later stages (stages 4- 5 ) your kidneys must work harder to filter your blood and may stop working altogether.

### **7.1 Stages 1 of Chronic kidney disease:**

Stages 1 CKD means you have a normal eGFR of 90 or greater and mild damage . kidney are still working well.so you have any symptoms you may have other signs of kidney damage . such as protein in your kidney.

### **7.2 Stages 2 of Chronic kidney disease:**

Stages 2 CKD means your eGFR has gone down to between 60 and 89 and you have mild damage to your kidneys. Most of the time your kidneys are still working well . so you may not have any symptoms. You many have other signs of kidney damage , such as protein in your urine or physical damage .

### **7.3 Stages 3 of Chronic kidney disease:**

Stages 3 CKD means you have an eGFR between 30 and 59 and mild to moderate damage to your kidneys .In this stage kidney not working properly they should to filter waste and extra fluid out of the blood .this waste can build up in your body and again to causes other problems suc as blood pressure and bone disease . In begining to have symptoms such as feeling weak and tired or swelling in your hand or feet.

Stage 3 CKD is split into two sub stages based on your eGFR

Stages 3a means you have an eGFR between 45 and 59

Stages 3b means you have an eGFR between 30 and 44

### **7.4 Stage 4 of chronic kidney disease:**

Stage 4 CKD means you have an eGFR Between 15 and 29 and moderate to severe damage to your kidneys . kidney will not working well as they should to filtrate waste out of your blood. This waste can build up in your body and cause other health problems. Such as high blood pressure bone disease and heart disease . likely have symptoms such as swelling of your hands and feet and pain in lower back . this is last stage before kidney failure important to have regular visit with kidney doctor ( nephrologist ) to take steps to slowly damages and plan ahead for possible treatments for kidney failure .

### **7.5 Stages 5 of chronic kidney disease:**

Stage 5 CKD means you have an eGFR less than 15 severe damage to your kidney getting very close to failure almost kidney failed stop working . because your kidney stopped working to filter waste out of your blood .waste

products build up in your body which can make you very sick and cause other health problems when your kidneys fail. Treatment option to survive include dialysis or a kidney transplant.

## **8. The first steps to eating right**

### **8.1 Step 1: Choose and prepare foods with less salt and sodium**

Why? To help control your blood pressure. Your diet should contain less than 2,300 milligrams of sodium each day. Buy fresh food often. Sodium (a part of salt) is added to many prepared or packaged foods you buy at the supermarket or at restaurants.

Cook foods from scratch instead of eating prepared foods, “fast” foods, frozen dinners, and canned foods that are higher in sodium. When you prepare your own food, you control what goes into it.

Use spices, herbs, and sodium-free seasoning in place of salt.

Check for sodium on the Nutrition Facts label of food packages. A Daily Value of 20 percent or more means the food is high in sodium.

Try lower-sodium versions of frozen dinners and other convenience foods.

Rinse canned vegetables, beans, meats, and fish with water before eating.

Look for food labels with words like sodium free or salt free; or low, reduced, or no salt or sodium; or unsalted or lightly salted.

### **8.2 Step 2: Eat the right amount and the right types of protein**

Why? To help protect your kidneys. When your body uses protein, it produces waste. Your kidneys remove this waste. Eating more protein than you need may make your kidneys work harder. Eat small portions of protein foods. Protein is found in foods from plants and animals. Most people eat both types of protein. Talk to your dietitian about how to choose the right combination of protein foods for you.

#### **8.2.1 Animal-protein foods:**

- Chicken
- Fish
- Meat
- Eggs
- Dairy

A cooked portion of chicken, fish, or meat is about 2 to 3 ounces or about the size of a deck of cards. A portion of dairy foods is ½ cup of milk or yoghurt, or one slice of cheese.

#### **8.2.2 Plant-protein foods:**

- Beans
- Nuts
- Grains

A portion of cooked beans is about ½ cup, and a portion of nuts is ¼ cup. A portion of bread is a single slice, and a portion of cooked rice or cooked noodles is ½ cup.

### **8.3 Step 3: Choose foods that are healthy for your heart**

Why? To help keep fat from building up in your blood vessels, heart, and kidneys. Grill, broil, bake, roast, or stir-fry foods, instead of deep frying. Cook with non-stick cooking spray or a small amount of olive oil instead of butter.

Trim fat from meat and remove skin from poultry before eating. Try to limit saturated and trans fats. Read the food label.

### 8.3.1 Heart-healthy foods:

- Lean cuts of meat, such as loin or round
- Poultry without the skin
- Fish
- Beans
- Vegetables
- Fruits
- Low-fat or fat-free milk, yoghurt, and cheese

### 8.3.2 Limit alcohol

Drink alcohol only in moderation: no more than one drink per day if you are a woman, and no more than two if you are a man. Drinking too much alcohol can damage the liver, heart, and brain and cause serious health problems. Ask your health care provider how much alcohol you can drink safely.

### 8.4 Step 4: Choose foods and drinks with less phosphorus

Why? To help protect your bones and blood vessels. When you have CKD, phosphorus can build up in your blood. Too much phosphorus in your blood pulls calcium from your bones, making your bones thin, weak, and more likely to break. High levels of phosphorus in your blood can also cause itchy skin, and bone and joint pain. Many packaged foods have added phosphorus. Look for phosphorus—or for words with “PHOS”—on ingredient labels. Deli meats and some fresh meat and poultry can have added phosphorus. Ask the butcher to help you pick fresh meats without added phosphorus.

#### 8.4.1 Foods Lower in Phosphorus

- Fresh fruits and vegetables
- Breads, pasta, rice
- Rice milk (not enriched)
- Corn and rice cereals
- Light-fingered sodas/pop, such as lemon-lime or home-made iced tea
- Foods Higher in Phosphorus
- Meat, poultry, fish
- Bran cereals and oatmeal
- Dairy foods
- Beans, lentils, nuts
- Dark-colored sodas/pop, fruit punch, some bottled or canned iced teas that have added phosphorus

Your health care provider may talk to you about taking a phosphate binder with meals to lower the amount of phosphorus in your blood. A phosphate binder is a medicine that acts like a sponge to soak up, or bind, phosphorus while it is in the stomach. Because it is bound, the phosphorus does not get into your blood. Instead, your body removes the phosphorus through your stool.

### 8.5 Step 5: Choose foods with the right amount of potassium

Why? To help your nerves and muscles work the right way. Problems can occur when blood potassium levels are too high or too low. Damaged kidneys allow potassium to build up in your blood, which can cause serious heart

problems. Your food and drink choices can help you lower your potassium level, if needed. Salt substitutes can be very high in potassium. Read the ingredient label. Check with your provider about using salt substitutes. Drain canned fruits and vegetables before eating.

### **8.5.1 Foods Lower in Potassium**

- Apples, peaches
- Carrots, green beans
- White bread and pasta
- White rice
- Rice milk (not enriched)
- Cooked rice and wheat cereals, grits
- Apple, grape, or cranberry juice

### **8.5.2 Foods Higher in Potassium**

- Oranges, bananas, and orange juice
- Potatoes, tomatoes
- Brown and wild rice
- Bran cereals
- Dairy foods
- Whole-wheat bread and pasta
- Beans and nuts

## **9. Conclusion**

CKD is a degenerative condition that can be avoided by following a healthy diet and taking certain measures. As a result, nutrition plays a significant role in diseases such as CKD.

## **10. ACKNOWLEDGEMENT**

The completion of this undertaking review article could not have been possible without the guidance of Dr. Pooja Gupta and Dr. Shivani Kakkar B. K. Birla College, Kalyan, India. Their contributions are sincerely appreciated and gratefully acknowledged. We would like to express our gratitude for the recommendations and helping us at all stages.

## **11. REFERENCES**

1. <https://www.niddk.nih.gov/health-information/kidney-disease/chronic-kidney-disease-ckd/eating-nutrition>
2. <https://www.kidneyfund.org/all-about-kidneys/stages-kidney-disease>
3. <https://www.mayoclinic.org/diseases-conditions/chronic-kidney-disease/symptoms-causes/syc-20354521>
4. <https://www.niddk.nih.gov/health-information/kidney-disease/chronic-kidney-disease-ckd/what-is-chronic-kidney-disease>