Know Your Kidney - Prevent Kidney diseases

In India many Kidney Fatalities go undetected due to lack of awareness.

Healthy Diet – Key to successful treatment of kidney diseases

The Kidneys are amazing organs that play a major role in keeping our body clean and healthy by flushing out unwanted wastes and toxic materials.
The kidney’s chief function is to remove waste and harmful products and excess water in the form of urine.
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A SILENT KILLER
CKD STRIKES WITHOUT WARNING

What is kidney failure?
Kidney failure is known as Chronic Kidney Disease (CKD), which is more
than AIDS

100ml per minute is the rate of filtering of blood by a healthy kidney
60ml per minute is a filtering rate which indicates CKD

A SILENT KILLER
CKD STRIKES WITHOUT WARNING

5 STAGES OF CHRONIC KIDNEY DISEASE

Stage 1: 90% to 95%
Stage 2: 90% to 85%
Stage 3: 85% to 75%
Stage 4: 75% to 55%
Stage 5: Less than 20%

SYMPTOMS
- Nausea, vomiting
- Appetite loss, little
- Fatigue, swelling, nausea, vomiting
- Anemia, early bone
- High BP protein in urine

WORRYING STATISTICS
- In India, 1.36 lakh adults die due to chronic kidney disease (CKD), which is more than AIDS
- In Telangana, certain pockets such as Khammam and Visakhapatnam have reported higher no. of kidney failure cases
- Nizam’s Institute of Medical Sciences (NIMS) has taken up studies on CKD to understand its unknown causes and possible reasons

PATIENTS GETTING YOUNGER
5% below 30 years of age
40% in 40-70 age group

A SILENT KILLER
CKD STRIKES WITHOUT WARNING

RISK FACTORS
- Diabetes
- Hypertension or high blood pressure
- Recent history of kidney disease
- Family history of kidney diseases
- Obesity
- Cardiovascular disease
- High cholesterol
- Excess or prolonged use of drugs or toxins

A SILENT KILLER
CKD STRIKES WITHOUT WARNING

Ticking time bomb

In 2001-03
Undivided Andhra Pradesh recorded between 30 and 35 prematuresdeaths for one lakh population due to CKD
In India, 2.1% of total deaths among those in age group of 15-69 years were from renal failures

In 2010-13
Undivided AP recorded 46 to 65 fatalities for a lakh population
In India, 3% deaths among 15-69 years was due to renal failure

In 2015
Around 1,35,000 persons in India died due to CKD which was more than HIV/AIDS related deaths

In 2016
CKD in the country ranked 16th as the leading cause of diseases

By 2040
CKD could rise to 5th rank as the leading cause of diseases

GENERAL POINTS
- 30% of kidney diseases are related to diabetes
- CKD increasingly contributing to premature deaths of adults
- Almost 90% of cases detected at stage five

WHOM TO SCREEN?
- Diabetics, hypertension patients, persons with history of kidney ailments and those with family history of kidney diseases

WHAT ARE TESTS AVAILABLE?
- Urine examinations for proteins, serum creatinine test of blood and imaging through an abdomen ultrasound

NUMBERS ACROSS INDIA
- 1 crore Existing CKD cases
- 1 lakh New CKD cases reported every year
- 2,000 Nephrology specialists
- 200 New nephrology passes out per year

Illustration: Ram
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Kidney Diseases which leads to Chronic Kidney Disease

- Polycystic Kidney Disease & Diabetic Nephropathy
- Glomerular Disease
  1. Nephritic Syndrome
  2. Nephrotic Syndrome
- Chronic Kidney Disease
- Acute Kidney Injury
- Nephrosclerosis
- Nephrolithiasis
- Disease of the Tubular and Interstitium

CHRONIC KIDNEY DISEASE FACTS

CAUSES OF CHRONIC KIDNEY DISEASE
- 28% HIGH BLOOD PRESSURE
- 7% GLOMERULAR DISEASED
- 6% MISCELLANEOUS
- 4% UNKNOWN
- 4% TYPE 1 DIABETES
- 3% CYSTIC/HEREDITARY
- 3% NEPHRITIS
- 3% TUMORS
- 42% TYPE 2 DIABETES

Approximately 1 of 3 adults have chronic kidney disease, which adds up to about 1 in 10 people.

26 million American adults have chronic kidney disease, which affects about 10% of the population worldwide.
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Symptoms

1. Nausea and vomiting
2. Tiredness
3. Loss of appetite
4. Swelling around eyes and ankles
5. Bubbling of urine
6. Persistent itching
7. Shortness of breath
8. Sleeping difficulties and waking up at night to urinate (nocturia)
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**Healthy Diet – Key to successful treatment of kidney diseases**

## Diagnostics to know the status of your kidney

<table>
<thead>
<tr>
<th>SR.NO</th>
<th>TESTS</th>
<th>NORMAL VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Sodium</td>
<td>135-145 mEq/L</td>
</tr>
<tr>
<td>2.</td>
<td>Potassium</td>
<td>3.5-5.5 mEq/L</td>
</tr>
<tr>
<td>3.</td>
<td>Blood Urea Nitrogen (BUN)</td>
<td>7-23 mg/dl</td>
</tr>
<tr>
<td>4.</td>
<td>Creatinine</td>
<td>0.6-1.5 mg/dl</td>
</tr>
<tr>
<td>5.</td>
<td>Albumin</td>
<td>3.5-5.0 g/dl</td>
</tr>
<tr>
<td>6.</td>
<td>Calcium</td>
<td>8.5-10.2 mg/dl</td>
</tr>
<tr>
<td>7.</td>
<td>Phosphorus</td>
<td>2.5-4.8 mg/dl</td>
</tr>
<tr>
<td>8.</td>
<td>Aluminium</td>
<td>0-10 mcg/L</td>
</tr>
<tr>
<td>9.</td>
<td>Magnesium</td>
<td>1.5-2.4 mg/dl</td>
</tr>
<tr>
<td>10.</td>
<td>Ferritin</td>
<td>Male: 20-350 mcg/L Female: 6-350 mcg/L</td>
</tr>
<tr>
<td>11.</td>
<td>CO₂</td>
<td>22-25 mEq/L</td>
</tr>
<tr>
<td>12.</td>
<td>Glucose</td>
<td>65-114 mg/dl</td>
</tr>
<tr>
<td>13.</td>
<td>PTH</td>
<td>10-65 pg/ml</td>
</tr>
</tbody>
</table>

**Early stages of chronic kidney disease are usually asymptomatic, laboratory tests are the only way of detection.**

**The most important screening tests for kidney diseases are the urinalysis, serum creatinine and ultrasound of kidney.**

**Routine urinalysis is very important for the early detection and diagnosis of kidney disease.**

**A kidney ultrasound is a simple and safe test used to assess the size, shape and location of the kidneys.**

Source: Complete guide for kidney patients
Edgar V. Lerma, Sanjay Pandya
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Healthy Diet – Key to successful treatment of kidney diseases

In CKD dietary restrictions help to delay the progression and prevent complications.

The most important treatment to delay the progression of CKD is strict control of blood pressure (less than 130/80).

Dialysis is a prompt and effective treatment modality in symptomatic patients with severe kidney failure.

Patients on CAPD must take a high protein diet to avoid malnutrition and reduce risk of infection.
# Know Your Kidney - Prevent Kidney diseases

## REQUIREMENT OF MACRO AND MICRO - NUTRIENTS

<table>
<thead>
<tr>
<th>Nutrients</th>
<th>Non-dialysed</th>
<th>Hemodialysis</th>
<th>Peritoneal dialysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories (k.cal)</td>
<td>30-35 (kcal/kg)</td>
<td>30-35 (kcal/kg)</td>
<td>30-35 (kcal/kg) (includes energy from dialysate)</td>
</tr>
<tr>
<td>Protein (gm)</td>
<td>0.6-0.75 (g/kg)</td>
<td>1.2 (g/kg)</td>
<td>1.2-1.3 (g/kg)</td>
</tr>
<tr>
<td>Fat (gm)</td>
<td>25-35% of total energy</td>
<td>25-35% of total energy</td>
<td>25-35% of total energy</td>
</tr>
<tr>
<td>Sodium (mg/d)</td>
<td>1000-4000 (Individualise)</td>
<td>≤ 1L urine 2000-4000</td>
<td>2000-4000 (Individualise)</td>
</tr>
<tr>
<td>Potassium (gm/d)</td>
<td>Mild to moderate CKD - 4.7 unless frequent or severe hyperkalemia likely</td>
<td>&lt;3 if hyperkalemia occurs during high fibre intake</td>
<td>&lt;3 if hyperkalemia occurs during high fibre intake</td>
</tr>
<tr>
<td>Calcium (mg/d)</td>
<td>&lt;2000 (&lt;1500mg/d from binders)</td>
<td>&lt;2000 (&lt;1500mg/d from binders)</td>
<td>&lt;2000 (&lt;1500mg/d from binders)</td>
</tr>
<tr>
<td>Phosphate (mg/d)</td>
<td>800-1000 /10mg/kg/10-12mg/g Protein P-binders</td>
<td>800-1000/&lt;17 mg/kg</td>
<td>800-1000 / 10-15mg/g Protein P-binders</td>
</tr>
<tr>
<td>Magnesium (mg/d)</td>
<td>200-300</td>
<td>200-300</td>
<td>200-300</td>
</tr>
<tr>
<td>Iron (mg/d)</td>
<td>10-18 (Individualise)</td>
<td>10-18 (Individualise)</td>
<td>10-18 (Individualise)</td>
</tr>
</tbody>
</table>

**NOTE:** Dietary calcium intake, including a calcium-based phosphate binder, should not exceed 2000mg/day to reduce the risk of hypercalcaemia and vascular calcifications.

**Know Your Kidney- Prevent Kidney diseases**

Calculate your day’s **PROTEIN** from following Exchange list.

50% of total Protein should be of high biological value

### Pulses = 6 gm Protein
- Rajmah – 30gm
- Masoor – 25 gm
- Channa Dal – 30 gm
- Green gram dal – 25 gm
- Peas (fresh) – 80 gm
- Red gram dal – 30 gm
- Cow pea (lobia) – 30 gm
- Soyabean – 15 gm

### Milk = 6 gm Protein
- Buffalo Milk – 150 gm
- Curd (cow milk) – 200 gm
- Sk milk powder – 15gm
- Paneer – 35 gm
- Whole milk – 200ml
- Sk.Milk (Liquid) - 250 ml
- Khoya – 30 gm
- Egg – 60 gm

### Cereals = 3 gm Protein
- Wheat flour – 25gm
- Puffed rice – 40gm
- Rice – 45gm
- Rice flakes – 45gm
- Bread slice (40gm) – 2 slice
- Maida – 30gm
- Vermicilli – 35gm
- Corn (Maize) – 30gm

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**LIQUID/FLUID INTAKE**

For ADEQUATE URINE OUTPUT --Normal fluid intake

**FOR INADEQUATE URINE OUTPUT**

- Urine output+500ml (Eg- 100 ml urine output)
- Take a 500 ml water bottle-fill it up with water and drink from this bottle only to tap your liquid intake.
- Make tea/coffee/lassi/nimboo pani etc. from water from this bottle

Renal dietitians analyze protein and calorie intake-monitor the albumin, potassium, sodium, fluid and phosphorus levels. They prescribe a right diet to correct nutritional deficiencies and prevent muscle wasting.
Foods high in sodium

- Table salt (common salt), baking powder, Baked food items like biscuits, cakes, pizza and breads. Processed foods like canned foods, fast foods
- Pickles, pappad, Namkeen savouries & Bhujias.
- Wafer, chips, popcorn, salted groundnuts, salted dry fruits like cashew nuts and pistachios.
- Commercial salted butter and cheese, Instant foods like noodles, spaghetti, macaroni, and cornflakes.
- Non-vegetarian foods like meat, chicken, and seafood products like crab, lobster, oyster, shrimp, oily fish and dried fish.

Practical Tips to Reduce Sodium in Diet

- Restrict salt intake and avoid extra salt and baking soda in diet.
- Carefully read labels of commercially available packaged and processed foods.
- To make a low salt diet tasty, one can add other spices and condiments such as garlic, onion, lemon juice, bay leaf, tamarind pulp, vinegar, cinnamon, cloves, nutmeg, black pepper, and cumin.
- While eating at restaurants, select foods that contain less sodium.

Healthy Diet – Key to successful treatment of kidney diseases

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An estimated 200,000 British Columbians have some degree of kidney disease, and many don’t even know it.

Reduce your chances of developing kidney disease by adopting a kidney and heart smart diet and following these simple tips:

1. REDUCE YOUR SALT LEVELS – IT’S EASY!

   - **MINIMIZE:** Salty snack foods, cured meats, pickled foods, processed and convenience foods, canned foods.

   - **TRY:** Salt-free seasonings like Mrs. Dash, or make your own.

   - **REMEMBER:** Foods labelled “no salt” or “low sodium” (cup sizes, vegetable juices, soups) may still be high in sodium. Check the label.

2. PRACTICE MODERATION

   - Eating small frequent meals or healthy snacks 4-6 times a day or every 3-4 hours can help keep blood sugars stable through the day and prevent overeating.
   - Look at your portion size. Choose a smaller portion and go back for more if you are still hungry.
   - Always use a plate—eating from a package or bag encourages “endless eating.”

   - Don’t skip meals—this contributes to overeating at meal times and fatigue.

3. WATCH OUT FOR FATS

   - Avoid trans-fats found in packaged foods that contain partially hydrogenated fats.
   - Limit saturated fat. Choose lean meats, poultry, low fat dairy, eggs whites and fish.
   - Avoid fried foods.

VISIT WWW.KIDNEYSMART.COM

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PHOSPHORUS FACTS
- Phosphorus can be found naturally in protein-rich foods (organic phosphorus) such as meats, poultry, fish, nuts, beans and dairy products.
- Phosphorus found in animal foods is absorbed more easily than phosphorus found in plant foods.
- Phosphorus that has been added to food in the form of an additive or preservative (inorganic phosphorus) is found in foods such as fast foods, ready to eat foods, canned and bottle beverages, enhanced meats, and most processed foods and should be avoided strictly.

POTASSIUM FACTS
- Remember almost all foods have some potassium. The size of the serving is very important. A very large amount of a low potassium food (non citrus fruits or their juice, summer squashes etc) can turn into a high-potassium food.
- Eat a variety of foods but in moderation.
- If you want to include some high potassium vegetable in your diet (like spinach, potato etc), leach them before using. Leaching is a process by which some potassium can be pulled out of the vegetable.
- Do not drink or use the liquid from canned fruits and vegetables, or the juices from cooked meat.

MINERALS AND CKD DIET
- The level of Potassium, Sodium, Phosphorus and Calcium is matter of concern in kidney patients.
- Not all the patients needs to cut down their Sodium, Potassium, Phosphorus and Calcium but one must be careful about the food that can alter the levels.
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Prevention of Kidney Disease

Diet
- Balanced diet with some modifications with respect to the ailment.
- Moderate protein consumption.
- Reduce salt intake.

Awareness
- Education enhances quality of life.
- Aids in improving health status.

Stay Hydrated
- Avoid dehydration and overhydration.
- Filter waste materials from the body.

Toxins
- Nephrotoxins intake such as pesticides, heavy metals, few antibiotics NSAIDS etc. should be filtered from the body.

Blood Glucose Levels
- Should be in range as diabetes may lead to nephropathy causing degradation of renal system.

Blood Pressure
- Should be in range as hypertension may cause degeneration of glomeruli causing dysfunction.

Protection of Kidneys and Prevention of Kidney Disease

Hygiene
- Personal hygiene should be maintained.
- Bacterial infection should be avoided or treated at an early stage.

Electrolyte Balance
- Renin angiotensin-aldosterone mechanism should work in cohesion to the body.

Genetics
- People with family history should be extra cautious in protecting their kidney from diseases.

Lifestyle
- Regular exercise.
- Weight control.
- Avoid smoking.
- Reduce alcohol consumption.

**Myths:** Tomato, brinjal and guava can cause kidney stones....  
**Fact:** A good intake of fruits and vegetable along with a healthy balanced diet can be protective against various disease conditions including kidney stones. However, a diet that is high in calcium and oxalates found in leafy vegetables, milk products etc along with lower water intake can pose a risk for kidney stones. The seeds in fruits and vegetables cannot cause kidney stones.

**Myths:** Eating non-vegetarian food damages your kidneys…  
**Fact:** Non-vegetarian foods are rich in sources of protein along with micronutrients like B1, B2, B12, iron and zinc. If eaten in moderation as suggested by a Dietitian, it does not cause any harm to your kidneys. Those suffering from kidney disease should consult their Dietitian for amount and quality of protein to be consumed.

**Myths:** Patients with kidney disease should drink large amount of water..  
**Fact:** Kidney patients may have reduced urine output and therefore maintaining water balance is essential. Such persons may have fluid restriction. Those with kidney stones or normal kidney function can have water in ample amounts (approx. 2-3 litres per day).

**Myths:** Eliminate salt completely to keep your kidneys healthy  
**Fact:** Sodium is an essential nutrient present in salt, it controls your blood pressure and it is needed for normal nerve and muscle functions. Persons with diabetes, high blood pressure and kidney disease may be at risk of hypertension and hence, salt may be restricted in their diets. Total sodium intake should not exceed 2300 mg or approx. 1 tsp salt/ day.

**Myths:** All Fruits should be avoided during kidney disease.  
**Fact:** Fruits are rich sources of Vitamin C, beta carotene, dietary fibre, antioxidants and phytochemicals. Some fruits are also rich source of potassium which may be restricted in kidney disease. Hence, people with kidney disease are often prescribed low potassium fruits. Fruit juices are a concentrated source of potassium devoid of the fibre and hence, should be strictly restricted in people with kidney disease. Consult a dietitian to know which fruits are suitable to your condition.

**Myths:** Consuming Calcium rich foods causes Kidney stones  
**Fact:** Kidney Stones are of different types and therefore calcium restriction is not required in all kidney stone patients. Consult a dietitian to identify the type of stone you have and the mineral that requires restriction/adjustment in your diet.

Ref: NIDDK NIH and Krause and Mahan  
Prepared by Ms. Megha Terse, Dr Anagha Palekar and Ms. Sukhada Bhatte  
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Ek Chamach Kam
Namak, Chini aur Tel!
(One Tsp less Salt, Sugar and Oil)
will go a long way to protect you from metabolic diseases!

#EkChamachKam
#KidneyBachaoAndolan
References

• National Institute of Diabetes and Digestive and Kidney diseases. NIH publication No. 11-7407. revised September 2011.

• National Renal Nutrition Practice guidelines for Adults, National department of health Directorate: Nutrition, June 2018

• KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. 2013.3. (1)

• Wright M and Jones C.2013. Nutrition in CKD

• Save your kidneys, 2nd edition. Complete guide for kidney patients, Edgar V. Lerma, Sanjay Pandya. 2015

• Nutrition and Chronic disease (Stages 1-4), National Kidney Foundation. 2014.

• The Renal Diet- A Guide to Eating Healthier for Hemodialysis Patients,. VCU Health System,

• National Kidney Foundation www.kidney.org

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