



Renal Nutrition

Specialist Group

Sustainable diets in
Chronic Kidney
Disease

By Angeline Taylor

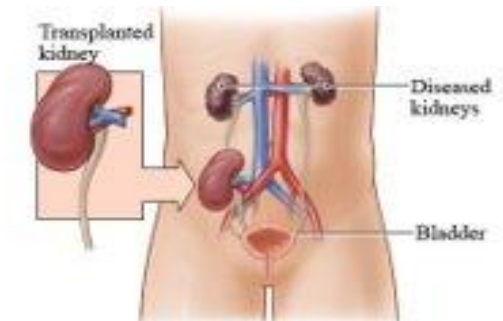
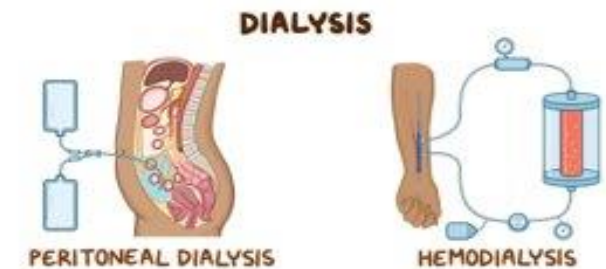
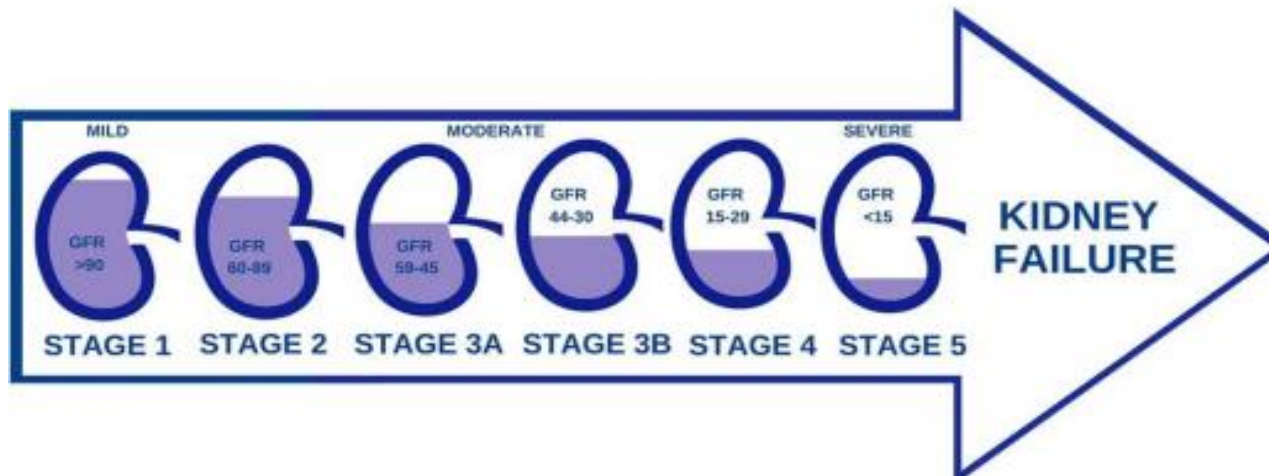
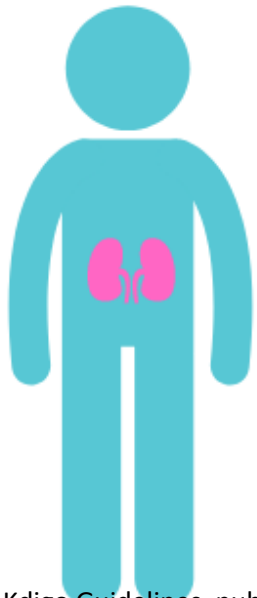
- Renal Dietitian
- Chair of the BDA Renal Nutrition Specialist Group (RNG)
- UK Kidney Association Sustainability Committee Member

Chronic Kidney Disease (CKD)

Chronic Kidney Disease is defined as a reduction in kidney function or structural damage (or both) for more than 3 months.

850 million people suffer from some form of kidney disease, roughly double the number of people who live with diabetes (422 million) and 20 times more than the prevalence of cancer worldwide (42 million).

Diabetes and high blood pressure (hypertension) are the leading causes.





- Kdigo Guidelines, public review July 2023, Global Burden of Metabolic Risk Factors for Chronic Diseases Collaboration 2014, www.niddk.nih.gov/health-information/kidney-disease/chronic-kidney-disease.

How does diet affect kidney outcomes?

Systematic review & meta-analysis

 18 cohort studies 630,108 adults


 Median follow up 10.4 years

 Low risk of bias in included studies

Evidence certainty

 CKD **Moderate**

 eGFR decline rate **Low**

 Incident albuminuria **Low**

Healthy dietary patterns

Encouraged higher intake of

 Fruits and vegetables  Legumes  Nuts

 Whole grains  Fish  Low-fat dairy

Encouraged lower intake of

 Red meat  Sodium

 Processed meat  Sugar-sweetened beverages

A healthy dietary pattern



was associated with a lower incidence of CKD (OR 0.71, 0.60 – 0.82)



was associated with a lower incidence of albuminuria (OR 0.77, 0.59-0.99)



was not associated with rate of eGFR decline (OR 0.70, 0.49 – 1.01)

Conclusions A healthy dietary pattern may prevent chronic kidney disease and albuminuria.

Katrina E. Bach, Jaimon T. Kelly, Suetonia C. Palmer, et al. *Healthy dietary patterns and incidence of chronic kidney disease: A meta-analysis of cohort studies*. CJASN doi: <https://doi.org/10.2215/CJN.00530119>. Visual Abstract doi: <https://doi.org/10.2215/CJN.00530119>



kidney diet



Recipes

Images

7 day meal plan for

Problems

Regeneration

Royal Canin

NH

About 763,000,000 results (0.38 seconds)

Mayo Clinic
<https://www.mayoclinic.org/recipes/rcs-20522796>

Kidney diet (renal diet)

Foods in a kidney diet
are many foods you can

Cleveland Clinic
<https://my.clevelandc>

Renal Diet Basics

6 Dec 2021 — Potassium
(Watermelon is OK.) · Ba

National Institute
<https://www.niddk.nih.gov/eating-nutrition>

Eating Right for Chronic Kidney Disease - NIDDK

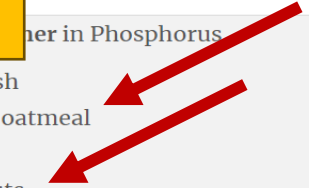
Step 4: Choose foods and drinks with less phosphorus · Fresh fruits and vegetables ·
Breads, pasta, rice · Rice milk (not enriched) · Corn and rice cereals · Light- ...
Diet & Nutrition for Adults with... · Preventing CKD · Bien manger pour la santé du...

If you have chronic kidney disease or limited kidney function, your health care provider may suggest a kidney diet (renal diet). Foods
n, protein,

Sadly, this often ends in confusion and unnecessary restrictive diets that go against healthy eating and sustainable diet guidance.

- Fresh fruits and vegetables
- Breads, pasta, rice
- Rice milk (not enriched)
- Corn and rice cereals
- Light-colored sodas/pop, such as lemon-lime or homemade iced tea

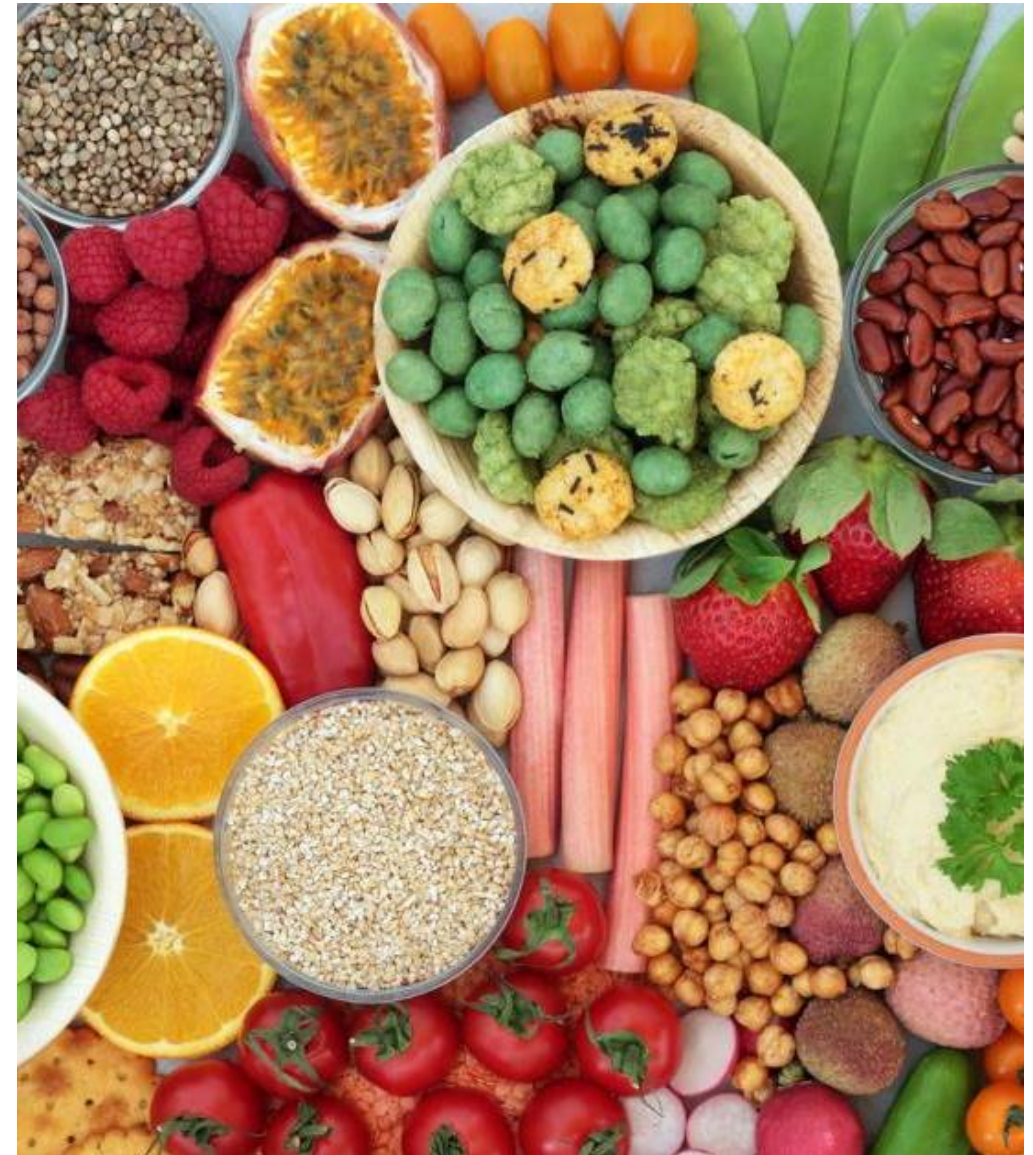
- Meat, poultry, fish
- Bran cereals and oatmeal
- Dairy foods
- Beans, lentils, nuts
- Dark-colored sodas/pop, fruit punch, some bottled or canned iced teas that have added phosphorus



Sustainable diets: Potential barriers in Kidney Disease

- **Hyperkalemia** management linked to fruit and vegetable intake.
- Wholegrains traditionally restricted due to **potassium (K⁺)** and **phosphate (Po₄)** content.
- Pulses traditionally restricted due to **po₄** and **K⁺** content as well low **biological protein**.
- Conflicting and outdated information freely available advocating the restriction of many plant foods to control **potassium** and **phosphate**.

Potassium and Phosphate



Potassium

Traditionally, many fruits and vegetables, pulses, nuts, seeds and wholegrains have been restricted to prevent high potassium levels in the blood (hyperkalaemia).

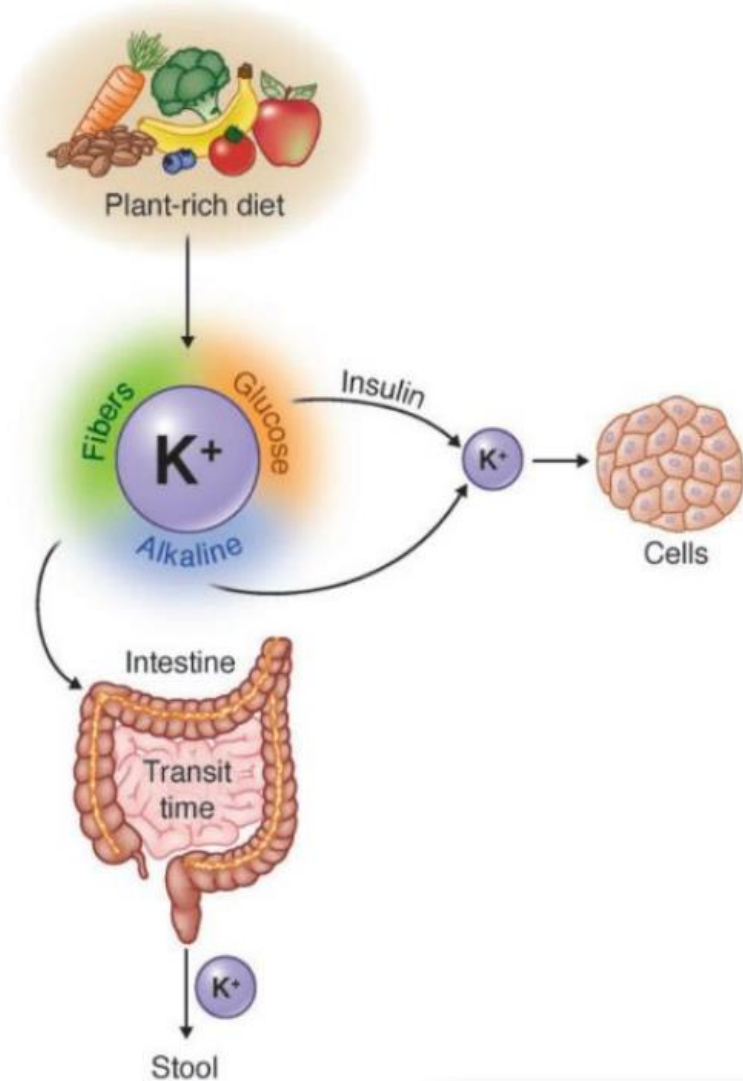
In one study, looking at the 'low-potassium dietary information' provided by health professionals. The advice disproportionately restricted fruits and vegetables.

No evidence for lowering dietary potassium as a treatment for hyperkalaemia. It is an OPINION based guideline.

Vegetables, fruits, pulses and wholegrains are 'plant foods'. Plant cells are bound by cell walls (fibre) decreasing the bioavailability (absorption) of potassium in these foods.

Evidence suggests potassium bioavailability of whole fruits and vegetables may be as low as 50% to 60%. While absorption of potassium from animal protein is up to 90%.

Restricting F&V doesn't consider the mechanisms to shift potassium intracellularly (inside the cells and out of the blood).



Other causes of hyperkalemia

Diabetes and glucose control

Constipation

Metabolic acidosis

Dehydration

Physical activity

Infection

Medications

Blood transfusion

Potassium additives

- Preservative
- Antioxidant and acidity regulator
- Stabiliser, emulsifier, thickener
- Flavour enhancer

Bioavailability as high as 100%



Composition tables
of food are not
representative
of the way foods
behave in the
body.....

Management of hyperkalaemia depends on several factors;

Portion control, bioavailability,
potassium additives,
processing, cooking methods,
fibre content, carbohydrate
content, acid-base balance,
activity level, medications and
conditions like diabetes.

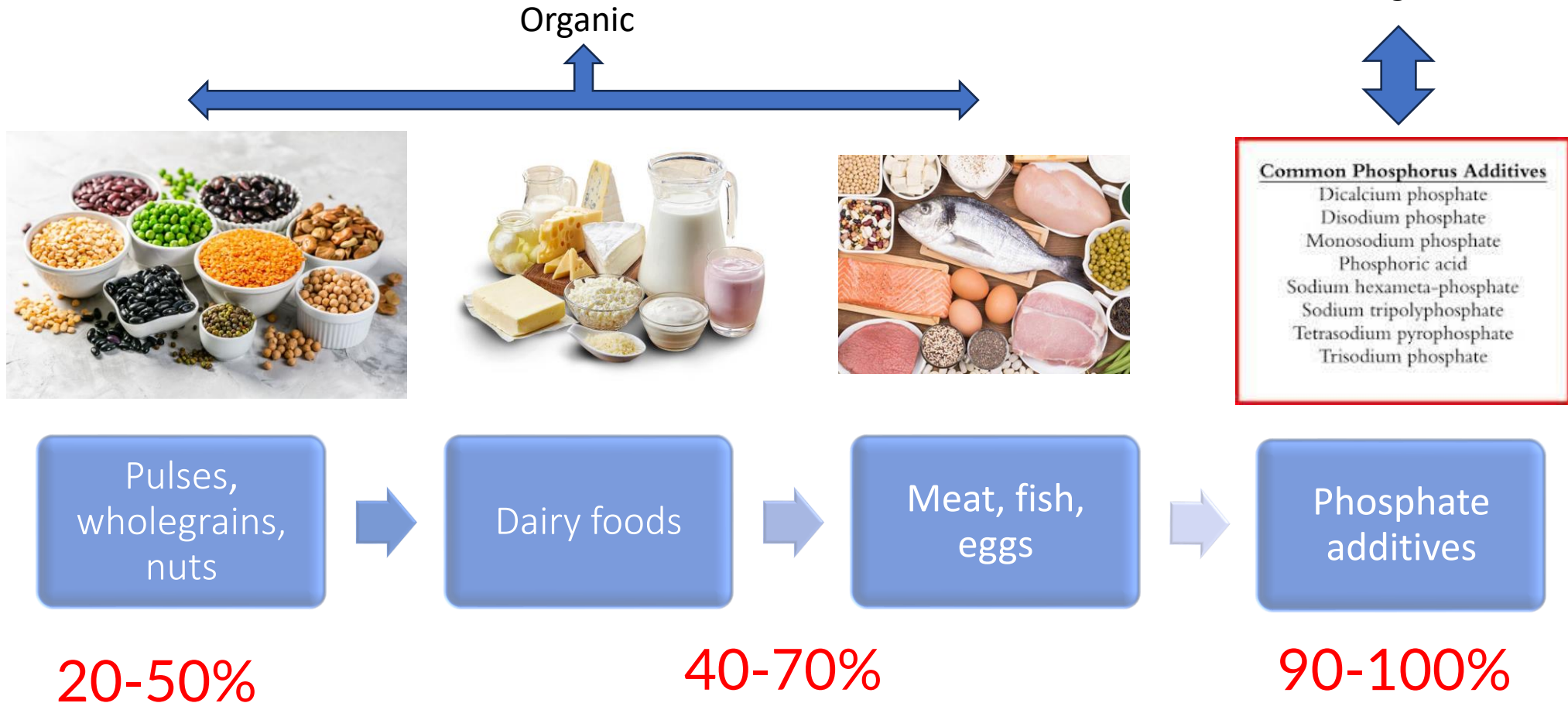
Evidence supports a change in hyperkalaemia management

Consider non-dietary causes first.

The focus should then be on reducing potassium additives (processed foods) and animal sources, due to bioavailability.

Recommendations should include healthy dietary patterns, sufficient fibre for faecal excretion, and adequate fruits and vegetables.

Phosphate



- Calvo et al., Assessing the health impact of phosphorus in the food supply: issues and considerations. Adv Nutr 2014;5:104-13.
- Calvo et al The Regulatory Aspects of Phosphorus Intake: Dietary Guidelines and Labeling. In: Uribarri J, Calvo MS, eds. Dietary Phosphorus: Health, Nutrition, and Regulatory Aspects. Boca Raton, Florida: CRC Press; 2018:249-66.
- St-Jules et al, Examining the proportion of dietary phosphorus from plants, animals and food additives excreted in urine. J Ren Nutr. 2017 27 2):78-83

Evidence supports change in dietary education on sources of phosphate

Phosphate from animal foods and additives has a much greater impact on blood phosphate levels than plant sources

Bioavailability is key and is not reflected in food tables

Recommendations should include reducing processed foods, meats and excess dairy intake

Wholegrains, pulses, nuts and seeds should not be limited

Most recent draft guidelines, July 2023

3.3.1: Advise people with CKD to adopt healthy and diverse diets with a **higher consumption of plant-based foods compared to animal-based foods and a lower consumption of ultra-processed foods.**

A whole-food, plant-based diet low in animal protein and ultra-processed foods may be helpful to slow the **progression of CKD** and **delay the need for dialysis** via reduction of cardiometabolic risk factors such as **hypertension, CVD, diabetes, and obesity.**

Kdigo Guidelines public review July 2023



Eating a plant-based diet with Chronic Kidney Disease (CKD) Stage 1-5 (not having dialysis)

Angeline Taylor, Kidney Dietitian

What is CKD?

Chronic Kidney Disease (CKD) is a condition where the kidneys don't work as well as they should.



It affects **10%** of the adult population globally. **Diabetes and high blood pressure (hypertension) are the leading causes.**

Stages of CKD

CKD is classified into stages, **stage 1** being the early stage and **stage 5** being the most advanced.

Stage	eGFR	Kidney Function
1	90 or higher	Normal kidney function with some kidney damage
2	89-60	Mild loss of kidney function
3a	59-45	Mild to moderate loss of kidney function
3b	44-30	Moderate to severe loss of kidney function
4	29-15	Severe loss of kidney function
5	less than 15	Kidney failure (not having dialysis)

The stage of your CKD is mostly determined by your 'Estimated Glomerular Filtration Rate', also called eGFR.

When CKD progresses into stage 5, then this is known as **kidney failure (or renal failure)**. To sustain life, dialysis or a kidney transplant will be needed.

Why eat a plant-based diet?

There are lots of different reasons for someone to develop CKD, but, the risk of progression through the stages to kidney failure can be related to: **High blood pressure, Uncontrolled diabetes, Obesity, Smoking, Cardiovascular disease** (a condition that affects the heart and blood vessels, which is common when you have CKD).

Managing these conditions may help slow down the progression of CKD.

A healthy plant-based diet can help manage high blood pressure, diabetes and reduce the risk of developing type 2 diabetes, cardiovascular disease as well as help with weight loss.

If you have been diagnosed with CKD, and you would like to eat a plant-based diet, then you may find the following information a useful guide.



Eating a plant-based diet when having dialysis

Angeline Taylor, Kidney Dietitian

Kidney failure and dialysis

Kidney failure (sometimes called renal failure) happens when the kidneys stop working and are unable to carry out all their vital jobs.

When this happens, harmful waste products build up in your body, which is fatal without treatment. Dialysis is the treatment given to remove these harmful waste products.



In the UK, there are almost **30,000** people receiving dialysis.

Benefits of a healthy plant-based diet

Eating a healthy plant-based diet may prevent or reduce the complications that people having dialysis often experience.



DIALYSIS COMPLICATIONS

PREVENT and Reduce

These complications can include

- High blood pressure
- Bone disease
- Cardiovascular disease (a condition that affects the heart and blood vessels)

CONTROL

- Diabetes
- Healthy weight

A healthy plant-based diet can also help with controlling diabetes and reaching a healthy weight, which is helpful if you need to lose weight to have a kidney transplant.

If you are currently having dialysis and wish to eat a plant-based diet, then you may find this information a useful guide.

It is important to understand that having dialysis can sometimes mean more complex individual dietary needs, and you should see a kidney dietitian as part of your dialysis care.

Eating a plant-based diet with a kidney (renal) transplant

Angeline Taylor, Kidney Dietitian

Kidney failure (sometimes called renal failure), happens when the kidneys stop working, and are unable to carry out all their vital jobs.

When this happens, harmful waste products build up in the body, which is fatal without treatment. A kidney transplant is one treatment for kidney failure.

Why eat a plant-based diet?

If you have a kidney transplant what you eat and your lifestyle is important for looking after your transplant and general health.

To prevent your body rejecting your kidney transplant you will need to take medication and some people get side effects from this medication. These side effects include:

- A larger appetite which can lead to unwanted weight gain.
- Increased risk of bone problems.
- Increased risk of developing diabetes (called post-transplant diabetes).
- Increased levels of blood cholesterol which increases your risk of cardiovascular disease (a condition that affects the heart and blood vessels).

A healthy plant-based diet is high in fibre. Fibre helps to keep you feeling fuller for longer. This helps to maintain or lose weight if needed. Fibre is also beneficial for lowering cholesterol, managing diabetes, lowering the risk of developing diabetes, and maintaining a healthy blood pressure. In addition, many plant foods are a source of calcium, which helps to support healthy bones.

All these foods contain the same amount of energy (calories).

As you can see, plant foods are **more filling** for the same number of calories when compared to fats and animal foods (meat and dairy).



If you have a kidney transplant and wish to eat a plant-based diet, then you may find the following information a useful guide.

Thanks for
listening