

*Commentary***Risk factors of kidney stone disease**

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**ABOUT THE STUDY**

Nephrolithiasis, or kidney stone disease, is a crystallopathy in which a solid piece of material (a kidney stone) forms in the urinary tract. Typically, kidney stones develop in the kidney and pass through the body through the urine. Small stones may travel through the body unnoticed. The ureter can become blocked if a stone is larger than 5 millimetres (0.2 inches), which can cause excruciating pain in the lower back or abdomen. In addition, a stone may cause vomiting, blood in the urine, or uncomfortable urination (Chewcharat, et al., 2021). Within ten years, over half of kidney stone sufferers will experience another one. Most stones develop as a result of heredity combined with environmental influences. High amounts of calcium in the urine are a risk factor, as are obesity, some diets, certain drugs, calcium supplements, hyperparathyroidism, gout, and inadequate hydration (Hesse, et al., 2003). When minerals in urine are present in high concentrations, kidney stones might develop. The diagnosis is frequently made using medical imaging, urine testing, and the patient's symptoms. Blood testing could be helpful as well. The most common way to categorise stones is where they are found, such as nephrolithiasis, ureterolithiasis, cystolithiasis, or what they are formed of (calcium oxalate, uric acid, struvite, and cystine). Prevention for people who have had stones involves consuming enough fluids to create more than two litres of pee every day. Allopurinol, citrate, or thiazide diuretics may be given if this is not successful. Avoiding soft drinks with phosphoric acid, which are mainly colas, is advised. If a stone doesn't cause any symptoms, there is no need for therapy; in the absence of symptoms, pain management using pharmaceuticals such as nonsteroidal anti-inflammatory drugs or opioids is typically the initial step. Tamsulosin, a drug, may be used to help larger stones pass, or other procedures such

percutaneous nephrolithotomy, ureteroscopy, or extracorporeal shock wave lithotripsy may be necessary (Heers, et al., 2016).

**Risk factors**

Stone formation is significantly influenced by dehydration from inadequate fluid consumption. People who live in warm climates are more at danger because they lose more fluid. Other significant risk factors include obesity, inactivity, and sedentary lifestyles. Due to increased uric acid excretion and raised urinary oxalate levels, a high dietary intake of animal protein, sodium, sugars, including honey, refined sugars, fructose, and high fructose corn syrup, as well as an excessive amount of fruit juice consumption, may increase the risk of kidney stone formation (Romero, et al., 2010). A metabolic disorder such as distal renal tubular acidosis, Dent's disease, hyperparathyroidism, primary hyperoxaluria, or medullary sponge kidney can cause kidney stones. Medullary sponge kidneys are present in 2%-20% of individuals who develop kidney stones (Scales, et al., 2012).

**Calcium oxalate**

Electrolytes play a role in kidney stone formation in addition to calcium. High dietary sodium levels, for instance, may raise the risk of stone formation by increasing urine calcium excretion. Although further epidemiologic research are need to evaluate whether fluoride in drinking water is linked to an increased incidence of kidney stones, drinking fluoridated tap water may raise the risk of kidney stone formation by a similar mechanism. Because potassium encourages the urine excretion of citrate, an inhibitor of calcium crystal formation, high dietary potassium consumption appears to lower the risk of stone development. Low dietary magnesium levels increase the likelihood that kidney stones will form and enlarge. Stone formation is prevented by magnesium (Shoag, et al., 2014).

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## Animal protein

Consuming animal protein results in an increase in the amount of calcium, uric acid, and decreased citrate that is excreted in the urine. Kidney stone formation is encouraged by the urine's acidification, which is caused by the body excreting too many sulphurous amino acids, uric acid, and other acidic metabolites from animal protein. People that consume a lot of animal protein in their diets frequently have low urinary-citrate excretion, whereas vegetarians typically have greater levels of citrate excretion. Low urinary citrate also encourages the development of stones (Stamatelou, et al., 2003).

## Vitamins

There is conflicting data connecting vitamin C supplementation to a higher incidence of kidney stones. A high vitamin C diet may make people more likely to develop calcium-oxalate stones. Additionally tenuous is the relationship between vitamin D consumption and renal stones (Uribarri, et al., 1989).

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