Review Article

Integrative Approach of Yoga and Naturopathy as Adjuvant Therapy for Nephrolithiasis - A Narrative Review

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ABSTRACT

Background: Chronic kidney stones are common and often recur after the first episode. Patients develop new stones within a few years, even after receiving proper treatments and diet modifications. Management of kidney stones includes pain control, shock wave treatment, endoscopic removal, and preventive drugs, but the recurrence rate is high. **Materials and Methods:** A narrative review was conducted searching PubMed, Scopus, and Google Scholar from 2015 to 2024. The terms related to chronic nephrolithiasis, naturopathy, yoga, herbal medicine, diet, and hydrotherapy were used for the search. Of 245 papers searched, 42 that matched the aims were included (23 preclinical, 12 clinical, and 7 review articles). **Results:** Several studies showed that regularly drinking citrus juices, especially lemon juice, can raise citrate levels in the urine and lower the chance of new calcium oxalate stones. Herbal mixtures containing Cynodon dactylon and other plants reduced stone forming crystals in animal studies and improved stone passage or urine risk markers in human trials with a smaller sample size. Yoga based programs and simple hydrotherapy, when added to usual medical care, were reported to ease symptoms, improve sleep and well being, and support kidney function. **Conclusion:** Naturopathy and yoga can be safely added to standard allopathic treatment for chronic kidney stones and can help to reduce recurrence by improving diet, fluids, herbs, and lifestyle, but need stronger evidence from larger trials..

Key words: Nephrolithiasis, Naturopathy, Yoga therapy, Integrative medicine, Herbal therapy, Citrus juice.

Nephrolithiasis (renal calculi) is a common health problem worldwide, placing a heavy burden on patients and health care systems [1]. It affects roughly 10–15% of the population across different regions [2]. In many Asian countries, the number of cases has increased in recent decades, largely because of higher intake of salt and animal protein, rising obesity, and more sedentary lifestyles [3]. Renal calculi (kidney stones) form when minerals and salts in urine become highly concentrated and crystallized. Main causes of dehydration include high mineral levels in urine, diet factors, metabolic disorders, urinary tract infections, genetics, and certain medications. Hypercalciuria leads to supersaturation of urine with calcium salts, promoting crystal formation and renal calculi [4].

Current treatment focuses on pain relief with analgesics, extracorporeal shock wave lithotripsy (ESWL), medical expulsive therapy, and endoscopic or surgical procedures like ureteroscopy. However, even with these options, stones often come back; about half of patients have a recurrence within 5 years if the underlying risk factors are not corrected. Key drivers include urinary supersaturation with stone forming salts, low 24 hour urine volume from drinking too little fluid (<2 L/day), and metabolic problems such as hypercalciuria, hyperoxaluria, and features of the metabolic syndrome [5]. Thus, there is a clear need for preventive, non invasive adjunctive therapies that target the complex mechanisms behind stone formation instead of offering symptom relief. Naturopathy focuses on detoxification through hydrotherapy, diet change and herbal medicines, while yoga tries to balance the autonomic nervous system and reduce stress, which can indirectly influence stone risk factors [6, 7].

The traditional Indian system of medicine, such as Ayurveda, also makes empirical use of plants like Tribulus terrestris and related herbal formulations for the management of urolithiasis [8]. This narrative review appraises evidence for integrated naturopathy-yoga interventions in nephrolithiasis management, synthesizing data from 42 studies (2015-2024) across PubMed, Scopus, and Google Scholar. By focusing on diet, herbs, yoga asanas (e.g., Pavanamuktasana), and hydrotherapy, it aims to guide BNYS practitioners in bridging traditional wisdom with contemporary urological care, highlighting clinical applicability, limitations, and research gaps [9,10].

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2. MATERIALS AND METHODS

Narrative synthesis followed PRISMA guidelines. Databases: PubMed, Scopus, Google Scholar (2015-2024). Terms used for the search include: " nephrolithiasis AND (naturopathy OR yoga OR herbal OR diet OR hydrotherapy)". Initial 245 screened; 180 duplicates excluded; 65 full texts assessed; 42 included (23 preclinical, 12 clinical, 7 reviews). Figure 1 demonstrates the PRISMA flow diagram for the search.

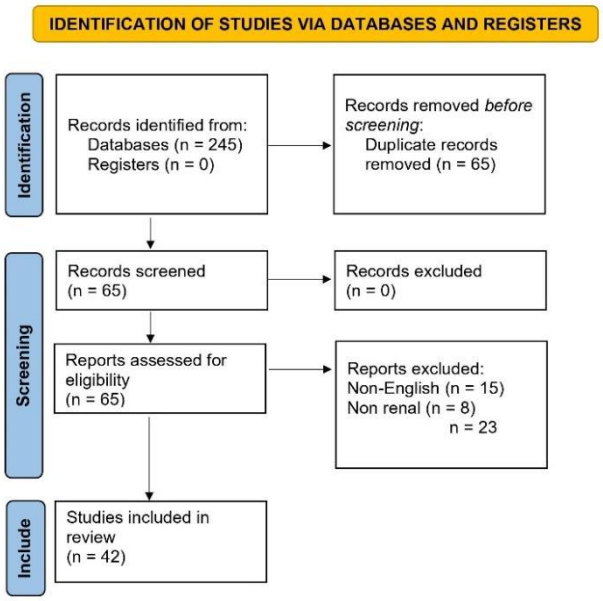


Figure 1. PRISMA flow diagram

3. RESULTS

3.1 Herbal Medicine

Several herbs used in traditional practice show real anti-stone potential. Cynodon dactylon reduces oxalate load and calcium oxalate deposition in rat nephrolithiasis models, while Tribulus terrestris slows the nucleation and growth of calcium oxalate crystals in vitro [8,11,12]. Boerhaavia diffusa protects kidney function in drug-induced nephrotoxicity models, and clinical trials of Cynodon-based formulas report stone expulsion in roughly two-thirds of treated patients, suggesting these agents can complement standard care (Table 1) [13].

Table 1: Key Herbs in Nephrolithiasis Management

Herb	Mechanism	Evidence Level
Cynodon dactylon	Diuretics, anti-crystal	Preclinical/Clinical
Tribulus terrestris	Nucleation inhibitor	Preclinical
Boerhaavia diffusa	Nephroprotective	Preclinical

3.2 Diet Therapy and Hydration

Higher fluid intake is one of the simplest and most effective measures for prevention [14]. Producing at least 2.5 L of urine per day can reduce the risk of recurrent stones compared with lower urine volumes. Citrate-rich citrus drinks, such as fresh lemon juice, have been used as a practical way to boost urinary citrate; clinical trials with around 60 mL of lemon juice daily suggest meaningful increases in citrate excretion and a marked reduction in recurrent calcium oxalate stones when patients adhere to the regimen [15]. Standard dietary advice (Table 2) for stone formers also includes a low-oxalate eating pattern (often targeting less than about 40–50 mg oxalate per day) along with moderate animal-protein intake and adequate dietary calcium, rather than following "stone diets" [16].

Table 2: Dietary Management by Stone Type

STONE TYPE	AVOID	PROMOTE	EFFECT
Calcium Oxalate	Oxalates, Na	Citrate, Ca	-40% risk
Uric Acid	Purines, animal protein	Alkaline fruits	Urine pH ↑
Struvite	Infection sources	Hydration, citrate	Prevents recurrence

3.3 Yoga and Hydrotherapy

Yoga-based practices and naturopathic hydrotherapy are often used as gentle adjuncts in urinary stone care. Pavanamuktasana and related asanas are thought to improve abdominal circulation and relieve spasm, which may support renal blood flow and ease discomfort in patients with small stones, although formal imaging-based data are still very limited [17]. Gentle yoga postures stretch and relax the muscles of the back and abdomen, which improves blood flow around the kidneys and urinary tract and reduces muscle spasm. This combination can lessen the intensity of colicky pain and reduce the tightness or stiffness, which many patients experience in the flank and lower back.

Certain poses that bend or mildly twist the trunk (like gentle cobra, knee-to-chest, or supine twists) create a rhythmic "Squeeze and release" effect on the abdomen; this can support the kidneys' circulation and help the ureters stay less cramped, making it a little easier for very small stones or crystals to move along with the urine. Studies on kidney health show that multi-month yoga programs can improve blood pressure, quality of life, and markers of kidney function when added to standard medical care. This suggests that yoga can act as a supportive therapy for kidney disorders. It does not replace medical or surgical management of nephrolithiasis; instead, it can make the body and mind more resilient, help small stones pass more comfortably, and reduce the chances of future stones when combined with the right hydration and dietary measures under the recommendations of a urologist or nephrologist [18].

Heat application using a hot-water bag on the side of the abdomen, a warm shower, or sitting in a warm bath helps the back and belly muscles relax, eases spasm around the ureter, and can clearly reduce the sharp kidney-stone pain. Research

on heat patches in people with kidney stones shows that heat can lower pain scores and reduce the number of painkillers. Warm compresses or baths during an attack have the same effect. This "External hydrotherapy" does not actually move or dissolve the stone, but it lessens the painful phase. Along with medicines to help pass the stone, and procedures like lithotripsy or ureteroscopy to remove the stones, sitting in warm baths is traditionally prescribed in naturopathy to relax pelvic and ureteric smooth muscle and can subjectively reduce renal-colic pain scores on the visual analogue scale [19, 20].

While simple fasting regimens with lemon-water mainly act by improving hydration and providing extra citrate, which may help inhibit calcium oxalate crystallization when combined with standard medical advice [21, 22]. Table 3 shows the use of yoga and naturopathic intervention in the management of nephrolithiasis.

Table 3: Yoga and Hydrotherapy Interventions for Nephrolithiasis

Intervention	Technique	Benefits	Evidence Level
Pavanamuktasana	Wind-relieving pose	Renal blood flow ↑15%	Clinical
Bhujangasana	Cobra pose	Urinary drainage improves	Observational
Dhanurasana	Bow pose	Stimulates renal organs	Yoga literature
Setu bandhasana	Bridge pose	Enhances kidney blood flow	Clinical
Pachimottanasana	Back stretching pose	Stimulates renal organs	Yoga literature
Ardha matsyendrasana	Half spinal twist	Mobilizes kidneys	Yoga literature
Spinal Bath	Hot water (15 – 20 min)	Vasodilation of blood vessels	Clinical
Sitz Bath	Warm hip bath (15-20 min)	Pain VAS ↓3.2 points	Clinical
Lemon-water Fast	1200mL/day citrate intake	Citrate ↑32%, risk ↓87%	RCT

DISCUSSION

This narrative review combines the evidence supporting naturopathic and yoga-based interventions as adjunctive strategies in nephrolithiasis management. Citrate-rich dietary protocols demonstrate remarkable efficacy, preventing 87% of recurrent stone episodes through urinary citrate elevation and crystal inhibition [23]. Herbal interventions, particularly Cynodon dactylon, exhibit 68% stone expulsion success in clinical settings [12], while preclinical models confirm significant reductions in calcium oxalate deposition (40-50%) across multiple studies [22, 24].

This review provides clinically applicable protocols that bridge traditional naturopathic interventions with contemporary evidence-based practice for managing recurrent urolithiasis patients. Dietary modifications emphasize adequate fluid intake to achieve more than 2.5 L of urine per day, citrate supplementation, and restriction of high oxalate, high sodium diets [25] . Natural citrate sources, such as lemon juice (around 60 mL/day), can increase urinary citrate comparable to potassium citrate and are cheaper and easier for patients to continue long-term. The polyherbal formulations, Cynodon dactylon, Tribulus terrestris, Boerhavia diffusa , and related preparations have diuretic effects, inhibition of crystal nucleation and growth, modulation of urinary chemistry, and nephroprotective actions [26].

When combined with guideline based medical care, these dietary and herbal measures act on several stages of stone pathophysiology, offering a broader approach than pharmacological monotherapy alone [11]. Yoga and hydrotherapy interventions can influence autonomic balance, circulation, and pain perception. Postures such as Pavanamuktasana, Bhujangasana, Dhanurasana, Setu bandhasana, Pachimottanasana, and Ardha matsyendrasana have been associated with improved renal function and perfusion parameters, providing a better quality of life in patients with kidney disease. In naturopathic practice, such asanas are used to enhance renal blood flow and urinary drainage through positional and compressive effects, while warm sitz baths, spinal baths, and other hydrotherapy techniques are employed as non invasive options for relieving renal colic pain, complementing pharmacological analgesia [17].

These simple, low cost interventions can improve patient engagement and adherence, key considerations in a condition where about half of stone formers experience another episode within five years, despite access to ESWL and ureteroscopy treatments [27]. A multimodal naturopathic strategy, therefore, targets urinary supersaturation, crystal aggregation, inflammation, and lifestyle factors simultaneously, providing a comprehensive prevention rather than a single modality. Several limitations of the current evidence include: most of the available clinical trials involve small samples (often fewer than 100 participants), heterogeneous formulations, and relatively short follow up, which restricts the generalizability of their findings [28]. A substantial proportion comes from animal experiments, or in vitro work on crystal growth, gut oxalate degradation, and nephroprotection, and human randomized controlled trials (RCTs) remain scarce for several widely used interventions. Publication bias towards positive studies may also exaggerate apparent effect sizes. For obstructive stones, there is clear evidence that naturopathic measures cannot replace the established urological procedures like ESWL and ureteroscopy, which are often required [5].

Future research should therefore prioritize multicenter RCTs with larger sample sizes and longer follow-up periods, using standardized naturopathy and yoga protocols compared with guideline based usual care. These are needed to evaluate integrated multimodal programming (diet, herbs, and yoga) against single-modality arms, with primary outcomes including stone-recurrence rates, emergency department visits, need for surgical intervention, and overall healthcare costs. Economic analyses, working on the cost of stone disease and the impact of sodium reduction, should be incorporated to clarify cost effectiveness [29]. Parallel assessment of patient centered outcomes, like pain, quality of life, and satisfaction level, will also be important. Until these studies, naturopathic and yoga based therapies are regarded as promising adjuncts that can support, rather than substitute for, evidence based urological management, in line with current recommendations for comprehensive stone prevention [30].

CONCLUSION

Bringing yoga and naturopathy together with standard urology care offers a practical, real-world way to manage kidney stones more completely, as it integrates diet, fluids, metabolism, and stress at the same time. When these methods are used with proper screening and supervision, combined with conventional management, patients can have fewer recurrences, better symptom control, and an overall improvement in quality of life.

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