

## Case Report

# Efficacy of Yoga and Naturopathy Interventions in Reducing Serum Urea and Creatinine levels in A Patient with Diabetic Nephropathy- A Case Report

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## ABSTRACT

This case report describes a 56yearold female patient, a known case of type 2 diabetes mellitus, who was diagnosed with diabetic nephropathy. Her renal profiles was deranged (serum creatinine 9.09 mg/dL, blood urea 118.2 mg/dL). She visited our yoga and nature cure hospital with complaints of insomnia, constipation, and low back pain for the past 3 months. She underwent yoga and naturopathy interventions- including hydrotherapy, mud therapy, massage, yoga and diet therapy for-10 days along with conventional management. After 10 days of treatment, the patient showed significant relief in symptoms. The Insomnia severity index (ISI) was reduced from 18 (moderate severity) to 5 (no clinical significance), and a significant reduction was seen in the renal profile (serum creatinine 7.8 mg/dL, blood urea 78 mg/dL). These results suggests that the yoga and naturopathy system of medicine might be considered effective in the management of diabetic nephropathy. However, as this is a single case study, further studies with larger samples are required to validate these findings.

**Key words:** Diabetic nephropathy, Diabetes mellitus, Naturopathy, Serum urea, Creatinine, Yoga therapy.

**D**iabetic nephropathy (DN) is a serious chronic microvascular complication of diabetes mellitus and is the leading cause of end-stage renal disease (ESRD) [1]. Factors contributing to diabetic nephropathy include insulin resistance, genetics, hyperglycemia and autoimmune processes [2]. In the first 10 to 20 years after the onset of diabetes, the risk of developing diabetic nephropathy is relatively high (about 3% annually). On average, it takes 15 years for small blood vessels in organs like kidney, eyes, and nerves to become damaged. About 20-40% of patients with diabetes develop chronic kidney disease (CKD), and many progress to end-stage kidney disease (ESKD), requiring dialysis or transplantation [3].

Diabetic nephropathy is defined by increased urinary albumin excretion and decreased renal function, as demonstrated by high plasma creatinine concentration, reduced creatinine clearance or a lower glomerular filtration rate (GFR) [4]. Other therapeutic modalities focus on treating the manifestations of the disease rather than addressing the root cause. There is growing evidence supporting the role of the yoga and naturopathy system in managing various

disorders. Previous studies have indicated that integrated yoga and naturopathic interventions, such as hydrotherapy, mud therapy, Manipulative therapy, and diet therapy, can significantly improve renal function and enhance the quality of life in kidney patients [5]. One study reported that yogic practices help to maintain blood sugar levels, reduce oxidative stress and alleviate psychological stress in CKD patients [6].

Therefore, we explored an alternative holistic approach aimed at reducing serum creatinine and urea levels and improving kidney function through yoga and naturopathy. This study was designed to evaluate the effects of yoga and naturopathy therapies in reducing creatinine and urea levels in a patient with diabetic nephropathy.

## CASE DESCRIPTION

A 56- year - old female patient reported to our nature cure hospital as a known case of type 2 diabetes mellitus, along with diabetic nephropathy for the past 10 years. She has been taking allopathic medication for type 2 diabetes mellitus for the past 10 years. She also complained of insomnia, constipation, and low back pain for past 3 months. A detailed case history was taken at the time of admission to the hospital.

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After a thorough study of her case history, we developed a 10 day integrated yoga and naturopathy protocol for the patient.

### Interventions

We gave her 10 days of yoga and naturopathy interventions along with conventional management. The procedures were thoroughly explained, and informed consent was obtained from the patient. Details of the yoga and naturopathy interventions given were provided in the Table1.

**Table 1: Details of the interventions given to the patient for 10 days:**

Name of the therapy	Name of the specific treatment	Duration per session (min)	Total no. of sessions/10 days
Hydrotherapy	Warm water Enema (37°C)	10	10
	Kidney pack	30	10
	Hot foot bath	20	10
	Cold hip bath (15.55°C)	30	10
	Steam bath	10	4
	Ginger pack	10	10
Mud therapy	Mud pack to eyes and abdomen	30	10
Massage	Abdomen massage	10	10
Yoga	Breathing practices	15	10
	Relaxation techniques	30	10
Diet therapy			
Timings	Food items	Quantity	Servings/day
7 Am	Ashgourd juice/ ginger tea with Neer muli decoction	250 ml	1
9 Am	Fruits with barley water	250 g	1
11 Am	Poonai meesai decoction	150 ml	1
1 Pm	Rice Porridge/ poha with boiled vegetables	200 g	1
3 Pm	Poonai meesai decoction	150 ml	1
5 Pm	Juice made by any one of the following: coriander, amla/ barley water/ ginger honey water/ basil tea	250 ml	1
7 Pm	Rice Porridge/ maize dosa/ ragi dosa with chutney	200 g	1
9 pm	Jeera water/ cinnamon water	100 ml	1

### Diagnostic assessment and monitoring

Height was measured using a stadiometer. Weight was recorded using a standard electronic weighing machine. Body mass index (BMI), calculated as weight in kg/ height in m<sup>2</sup>, indicated that the patient was overweight. . Vital data were recorded. Systolic blood pressure (SBP) and diastolic blood

pressure (DBP) were recorded using a manual sphygmomanometer. Pulse rate (PR) was measured manually on radial pulse. The Insomnia severity index (ISI) was recorded before and after treatment. Serum creatinine and urea levels were checked at baseline and after the interventions in the same laboratory. Baseline and post-test assessment were given in the Table 2.

**Table 2: Baseline and post-test assessment of interventions**

Parameters	Date of admission (Baseline)	Date of discharge (Post-test)
Height	155	155
Weight	68	65
BMI (kg/ m <sup>2</sup> )	28.3	27.1
SBP (mm/hg)	138	130
DBP (mm/hg)	72	80
Pulse rate (beats/min)	78	76
Renal function test		
a) Serum creatinine (mg/dL)	9.09	7.8
b) Serum urea (mg/dL)	118.2	78
Insomnia Severity Index (ISI)	18 (Moderate)	5 (No clinical significance)

The result showed reduction in body weight (from 68 kg to 65 kg), BMI (from 28.3 to 27.1), normal vital data were recorded at the end of 10<sup>th</sup> day. After yoga and naturopathy interventions, serum creatinine and urea levels decreased significantly (serum creatinine: 9.09 mg/dL to 7.8 mg/d; serum urea level 118.2 mg/dL to 78 mg/dL). Further, there was a significant reduction in Insomnia severity index (ISI) score from 18 to 5. She also reported minimal back pain; constipation was relieved, with an improved feeling of wellness and overall health status.

### DISCUSSION

The 10-day yoga and naturopathy interventions in this case showed a significant reduction in serum creatinine and urea levels, along with improved sleep and relief from other symptoms of diabetic nephropathy. The outcome of the study was wholly due to the therapeutic effects of integrated naturopathic modalities used. According to Naturopathic principles, the primary cause of disease is violation of nature's laws, and healing occurs by enhancing the body's inherent recuperative power. This is composed of pancha mahabhutas (five great elements)- air, water, fire, earth and space -which are also therapeutically used in the treatment of disease [7]. As in this case of diabetic nephropathy, interventions such as hydrotherapy, mud therapy, massage, diet therapy and yoga acted synergistically to accelerate the body's own inherent healing response and improve renal function.

Hydrotherapy modalities (such as cold hip bath, steam bath and renal pack) activate body's innate ability to heal,

promoting circulation of blood and lymph to support internal organs [8]. Renal Pack is a form of the hydrotherapy treatment that involves the application of hot compress or fomentation over the middle back to coccyx, while an ice bag is placed covering the lower third of sternum. The hot application promotes vasodilation, enhancing blood flow to the renal area and potentially improving kidney perfusion, whereas the cold application triggers reflex vasoconstriction in the kidney through the autonomic nervous pathway, which encourages and supports the elimination of waste products (urea, creatinine) [9].

Mud packs applied to abdomen and eyes may stabilize serum creatinine and urea levels by improving renal circulation, reducing stress, and promoting thermoregulation [10]. Similarly, a ginger pack placed over the lower back (kidney region) may enhance renal perfusion through the primary bioactive compound gingerol, supporting detoxification and waste elimination from the kidneys [11].

Abdominal massage, one of the manipulative techniques might enhance the patients's renal function, reduce fatigue, and lower sympathetic overactivity, which collectively supports better physiological balance in the kidneys [12]. Pranayama practices, along with relaxation techniques, may contribute by regulating the autonomic nervous system, reducing blood pressure and heart rate, improving glucose regulation, and enhancing oxygen saturation- all of which support overall renal and systemic health [13].

In addition, administration of a decoction prepared from *Orthosiphon stamineus* (kidney tea plant) twice daily for 10 days may have contributed to the reduction in the urea and creatinine levels through the antioxidant and nephroprotective properties of various phenolic acids (such as protocatechuic acid, and vanillic acid), and flavanoids (such as baicalein). Other compounds, such as naringenin, arjunolic acid, ursolic acid and maslinic acid have been found to increase 24-hour urinary protein excretion, reduce blood urea nitrogen (BUN) levels, and decrease serum creatinine and creatinine clearance rate [14]. A low protein diet, [15] along with millet-based meal (such as poha, porridges), boiled vegetables, vegetable juices such as ash gourd juice, [16] fruits, and herbal teas (Ginger, honey, coriander, amla) [17] provided further renal support by lowering metabolic load and oxidative stress.

Overall, the 10-days integrated yoga and naturopathy interventions showed notable improvement in biochemical parameters (urea and creatinine), along with better sleep, reduction of other symptoms, and overall well-being in diabetic nephropathy. These effects may be attributed to improved autonomic regulation, enhanced renal perfusion, reduced oxidative stress and better metabolic homeostasis achieved through holistic therapies.

## CONCLUSION

The case report shows a considerable reduction in serum creatinine and urea levels of a patient with diabetic nephropathy following 10-days yoga and naturopathy interventions. Considering the improvements attained in this case, yoga and naturopathy interventions can be included in the management of diabetic nephropathy. Further studies with larger sample sizes are warranted to validate these findings.

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