



Short Communication

Development and Validation of Yoga Program for Patients with Chronic Kidney Disease

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ABSTRACT

Chronic kidney disease (CKD) is a widespread health issue impacting millions globally. Recognizing the potential benefits of yoga in enhancing physical and mental well-being, this research aims to develop and validate a yoga module tailored for CKD patients, with a specific focus on improving their general health. The yoga module was meticulously crafted through an extensive review of traditional and contemporary literature, incorporating postures, breathing techniques and meditation practices deemed safe and beneficial for CKD patients. Content validity was established through input yoga experts with over 7 years of experience. The study spanned from January 2020 to December 2021. The final version of the yoga module retained 83.33% of the proposed yoga techniques, incorporating modifications suggested by experts. The content validity index for the entire yoga module averaged 0.83. This work establishes the viability, validity and practicality of a yoga module designed for CKD patients. With 35 out of 42 items retained, the module exhibited significant health improvements after 12 weeks of practice. The findings position yoga therapy as a potentially effective complementary treatment for CKD patients, offering improvements in general health and quality of life and potentially slowing disease progression.

Keywords: Chronic kidney disease, Yoga practice, Complementary therapy, Validation

INTRODUCTION

Non-communicable diseases (NCDs) remain a neglected health problem which requires utmost importance in recent times.^[1] Chronic kidney disease (CKD) is one of the major contributors to increasing the morbidity and mortality of NCDs.^[2] Despite advances in medicine, the disease burden remains unchanged. CKD affects 10% of the world's adult population, with approximately 1.2 million deaths worldwide.^[3] Globalisation of CKD is associated with other lifestyle diseases such as obesity, diabetes mellitus, cardiovascular disease and hypertension.^[4] Specialised clinical protocol developed for effective management of CKD in patients with diabetes mellitus, hypertension, anaemia and coronary artery disease.^[5-8] By the year 2040, CKD would be the fifth leading cause of death worldwide.^[9] Hence, the effective management of CKD is the need of the hour. Complementary therapies such as yoga, meditation and acupuncture have gained momentum in recent years

for the management of chronic illnesses.^[10] A systematic review and meta-analysis on the efficacy of Alternative Medical Systems (Traditional Chinese Medicine, Ayurveda, Homeopathy and Naturopathy) in adult CKD showed improvement in biochemical markers and reduction in symptom severity scores.^[11] In addition, research evidence on yoga states that it reduces oxidative stress, inflammation and sympathetic tone in CKD patients.^[12,13] Yoga is a type of complementary and integrative therapy cognised worldwide. Yoga helps us to maintain physical, psychological and emotional balance with special attention on breathing, posture and meditation.^[14] Yoga being the most cost effective, non-invasive and patient friendly treatment can be effectively used in patients with CKD. Therefore, the present study aims to develop a yoga module tailored for CKD patients with special attention to improving their general well-being.

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MATERIALS AND METHODS

Yoga protocol development

The present study was approved by the appropriate Research Ethics Committee (IEC/19/FEB/148/15). The yoga module was created with input from experts, including qualified professionals in yoga, naturopathy and nephrology, as well as through a review of previous literature on CKD.^[13,14] Yoga practices were selected from classical yoga texts such as Hatha Yoga Pradipika, Yoga Darsana and light on yoga.^[13,15-17] Available scientific evidence on yoga and CKD was significantly utilised to identify evidence-based practices that could be included in the module. The yoga module consisted of a pawanmuktasana series (loosening/anti-rheumatic group), 9 asanas, two pranayama, AUM chanting, yoga nidra and yogic counselling [Table 1].

Validation of protocol

The framework of the questionnaire was sent to 20 field experts (four yoga doctors, four yoga professors, four yoga research scholars, six yoga therapists and two nephrologists) through Gmail and Google documents to obtain their opinion on a three-point Likert scale ([1] = not necessary, [2] = useful but not essential and [3] = essential) for validation purpose. A panel of yoga experts, including yoga doctors, certified yoga instructors and nephrologists, were consulted to identify safe and beneficial practices. Experts who have more than 10 years of experience in treating various ailments with yoga therapy are included for validation purposes. The protocol was modulated in accordance with the comments from the expert. The content validity ratio (CVR) for each practice was calculated using Lawshe's law, and those with CVR ≥ 0.6 are included in the final protocol.^[18] The average of all CVRs was 0.76. A yoga module for CKD patients was formulated, validated and checked for practicability.

$$CVR = (N_e - N/2) / N/2$$

where,

N_e = Total number of panellists indicating 'essential' for each practice.

N = Total number of panellists.

Sequence of practice

The sequence of practice is from standing asana, supine lying, sitting, and prone lying, followed by breathing techniques, meditation and yogic counselling.

RESULTS

All experts ($n = 20$) provided opinions on the selected yoga practices to be followed for CKD. Table 2 shows the validation of yoga practices for CKD. In the final interpretation of the module, 15 out of 25 items in the formulated protocol were retained, according to changes suggested by the experts.

Table 1: Proposed protocol formulated for CKD patients.

S. No	Yoga practices	Duration/frequency
1.	<i>Pawanmuktasan series 1</i>	5 rounds/5 min
2.	<i>Tadasana</i>	3 rounds/3 min
3.	<i>Ardha chakrasana</i>	3 rounds/3 min
4.	<i>Kati-chakrasana</i>	3 rounds/3 min
5.	<i>Triyaka Tadasana</i>	3 rounds/3 min
6.	<i>Dwikonasana</i>	3 rounds/3 min
7.	<i>Supta swastikasana</i>	3 rounds/3 min
8.	<i>Supta -udarakarsana</i>	3 rounds/3 min
9.	<i>Sedubandasana</i>	3 rounds/3 min
10.	<i>Uttanpadasana</i>	3 rounds/3 min
11.	<i>Ardha pawanmuktasana</i>	3 rounds/3 min
12.	<i>Vakrasana</i>	3 rounds/3 min
13.	<i>Ardha matsyendrasana</i>	3 rounds/3 min
14.	<i>Supta-badakonasaana</i>	3 rounds/3 min
15.	<i>Sarvangasana</i> (wall support)	3 rounds/3 min
16.	<i>Bhujangasana</i>	3 rounds/3 min
17.	<i>Dhanurasana</i>	3 rounds/3 min
18.	<i>Ardha-shalabasana</i>	3 rounds/3 min
19.	<i>Nadi-shodhana pranayama</i>	15 rounds/5 min
20.	<i>Ujjai pranayama</i>	10 rounds/5 min
21.	<i>Bhramari pranayama</i>	10 rounds/5 min
22.	AUM chanting	5 rounds/5 min
23.	<i>Yoga nidra</i>	20 min
24.	Deep relaxation technique	30 min
25.	Yogic counselling	15 min

CKD: Chronic kidney disease

Table 2: Protocol approved by expert.

S. No	Yoga practices	Duration/frequency	CVR Lashle's law
1.	<i>Pawanmuktasan series 1</i>	5 rounds/5 min	0.7
2.	<i>Ardha chakrasana</i>	3 rounds/3 min	0.8
3.	<i>Kati-chakrasana</i>	3 rounds/3 min	0.9
4.	<i>Triyaka Tadasana</i>	3 rounds/3 min	0.7
5.	<i>Supta -udarakarsana</i>	3 rounds/3 min	0.8
6.	<i>Sedubandasana</i>	3 rounds/3 min	0.7
7.	<i>Vakrasana</i>	3 rounds/3 min	0.8
8.	<i>Supta-badakonasaana</i>	3 rounds/3 min	0.7
9.	<i>Bhujangasana</i>	3 rounds/3 min	0.9
10.	<i>Ardha-Shalabasana</i>	3 rounds/3 min	0.7
11.	<i>Nadi-shodhana pranayama</i>	15 rounds/5 min	0.8
12.	<i>Bhramari pranayama</i>	10 rounds/5 min	0.7
13.	AUM chanting	5 rounds/5 min	0.7
14.	<i>Yoga nidra</i>	20 min	0.8
15.	Yogic counselling	15 min	0.7

CVR: Content validity ratio

DISCUSSION

The practices in the yoga protocol were framed from the knowledge of the pre-existing literature and the scientific

evidence available to date. The experts also agreed on the clinical importance of the developed module for improving the physical and mental well-being of patients with CKD. Similar to other protocols, the present protocol also contains asanas (posture), pranayama (breathing technique), AUM chanting and yoga nidra (relaxation). The present protocol was revised and validated only using two aspects: ^[1] CVR and ^[2] suggestions and comments from the experts. Recommended duration of practice was 1 h session at least weekly twice for the period of 12 weeks. In addition, experts also suggested giving utmost importance to slow and rhythmic breathing patterns along with the practice. Experts were also asked to add any missed-out practices from the literature which will be potentially beneficial for CKD patients. Most of the experts ($n = 16$) agreed and did not add up any practices. Few experts ($n = 4$) asked to emphasise the importance of a plant-based yogic diet. Yoga practices included in the final protocol were easy to practice, and they can be modified based on individual needs. In recent times, yoga protocol was formulated for specific conditions such as depression, mental health, somatoform disorder and diabetes.^[19-22] However, there is no specific module developed for CKD; hence, we aimed to formulate a yoga protocol for patients with CKD. There are a few limitations in the present module; we have sent the module to 35 yoga experts out of them, only 20 responded. Obtaining information from more experts would be very beneficial. All the experts are of Indian origin; hence, it limits the generalisation of the protocol with respect to the Western context. We have not asked for the sequence of the asanas in which they could be practised.

CONCLUSION

The yoga practices developed based on experts' opinion is the first step toward the development of a validated protocol for CKD. However, randomised control trials are needed to check the efficiency of the protocol. If the current module is beneficial, then it can be used as therapeutic tool in patients with CKD.

Data availability statement

Based on the reasonable request, the data will be provided by the corresponding and first authors.

Ethical approval

The research/study approved by the Institutional Review Board at Sri Ramachandra Medical College and Hospital, SRIHER, number IEC/19/FEB/148/15, dated 10 February 2019.

Declaration of patient consent

Patient's consent was not required as there are no patients in this study.

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Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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