

# The practice of complementary and alternative medicine among chronic Kidney disease patients

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## ABSTRACT

Chronic kidney disease (CKD) has been defined by the presence of kidney damage with or without reduced kidney function. It is often coexisting with other conditions such as cardiovascular diseases and diabetes mellitus. Using complementary and alternative medicine (CAM) by the general population is common, including those with chronic illnesses such as CKD. There are various types of CAM such as acupuncture, massage, and relaxation response/guided or integrative imagery, meditation, and herbal supplements. At present, there exist limited systematic surveys on the prevalence of CAM use among CKD patients, and much research is needed to be done regarding the safety and efficacy issues. This article has provided a general overview on CAM, factors affecting the usage, and issues pertaining to its use in CKD patients.

**Keywords:** Complementary, alternative medicine, chronic Kidney diseases, harmful.

## Introduction

World health organization has described the complementary and alternative medicine (CAM) as folk medicine including the knowledge, skills and practices according to the theories, beliefs and experiences originated from different cultures, and employed to keep health, and prevent, diagnose, improve or treat physical and mental illnesses [1]. CAM has been used for thousands of years with contributions made by its practitioners, particularly as a non-pharmacological treatment at the community level, and it covers a wide variety of therapies and practices, which varies within people of different ethnic, regional and religious background, globally. In general, National Centre for Complementary and Alternative Medicine defined CAM as a group of diverse medical and health care systems, practices and products that is not a part of the conventional medicine. [2-7]

A study on CAM usage reported that 42 % of the people in the United States used at least one CAM therapy, however, less than 40 percent of those using CAM disclosed such use to their

physicians [2]. The study also reported that the total visits to CAM providers exceeded total visits to all primary-care physicians. The National Institute of Health in America has raised the concern over the increasing use of herbal remedies or high-dose vitamins, which may potentially lead to interactions with conventional medicine [2, 8-11].

The prevalence rate of CAM use among the general population in developed countries such as the US and Canada has been found to be 42% and 50%, respectively [3, 12, 13]. Similarly, in developing countries, CAM utilization is becoming increasingly popular, for example the prevalence rate of CAM utilization among the general population in Uganda has been 60% [4, 14-17]. In Asian and African countries, CAM usage was found to be higher. Up to 90% of the population from these regions relied on CAM for primary health purposes [5, 15, 16].

CAM may provide new therapeutic options for patients with chronic disorders including chronic kidney disease (CKD). Chronic Kidney Disease (CKD) has been a worldwide health issue affecting millions of people, and has been defined as abnormalities of kidney structure or function, present for more than 3 months, with implications in health [6, 17-21]. According to the previous studies, the magnitude of the problem has been clearly described by the number of people requiring renal replacement therapy (haemodialysis, peritoneal dialysis and renal transplantation) which is 13 in 10,000 per year in the general population [7-10]. CKD may also occur as a result of uncontrolled chronic diseases such as diabetes mellitus, hypertension or glomerulonephritis. Since the little information has been available about CAM use in the chronic kidney disease

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population, this review aimed to provide an overview regarding CAM, prevalence of usage and special consideration of its use in patients with CKD.

## CAM Classification

CAM modalities have been classified based on CAM classification of the National Centre of Complementary and Alternative Medicine (NCCAM). These included alternative medical systems such as acupuncture, homeopathy, Ayurveda, Siddha, Unani, mind-body interventions (relaxation techniques, spiritual healing/prayer, hypnosis, meditation, yoga), biologically based therapies (herbal therapy, dietary supplements), manipulative and body-based methods (massage therapy, exercise, chiropractic, or osteopathy) and energy therapies (energy healing, Reiki). Barnes et al. [11, 22-28] suggested the following models for complementary and alternative medicine as presented in Table 1.

**Table 1 : CAM modalities classified in the National Center for Complementary and Alternative Medicine (NCCAM)**

Classifications	CAM therapies (NCCAM samples)
Alternative medical systems	<ul style="list-style-type: none"> <li>• Homeopathic medicine</li> <li>• Naturopathic medicine</li> <li>• Traditional Chinese medicine</li> <li>• Ayurvedic medicine</li> </ul>
Mind-body interventions	•Meditation, prayer, mental healing, and therapies that use creative outlets such as art, music, or dance
Biologically based therapies	• Dietary supplements: vitamins, minerals, herbs or other botanicals, amino acids, and substances, such as enzymes, organ tissues, and metabolites
Manipulative and body-based methods	<ul style="list-style-type: none"> <li>• Chiropractic</li> <li>• Osteopathic</li> <li>• Massage</li> </ul>
Energy therapies	•Qigong, reiki, therapeutic touch, pulsed fields, magnetic fields

## General Issues of CAM Usage

CAM use among the general population is common. Although, potential for harm exists, there is evidence accumulating that several modalities may be beneficial for patients with chronic illnesses. Acupuncture, massage, relaxation response/guided or integrative imagery and meditation can be alluded as the modalities of CAM. CAM might help patients with kidney disease by extending the time of progression to end-stage renal failure, and also treating associated problems such as pruritus, anxiety, depression, and fatigue [12]. There is limited systematic survey data on the prevalence of CAM use in chronic kidney disease patients, and much research remains to be done in order to resolve the safety and efficacy issues. However, it is probable that there are many patients who are using the services of CAM providers without making their nephrologists aware of it. Thus, it is the responsibility of the healthcare professionals to be aware with these types of therapies in order to discuss about them more openly, discourage potentially harmful treatments, suggest potentially helpful ones, and observe them for their both beneficial and harmful effects [13, 14, 29-32].

Toxicity studies are needed to be performed on CAM products used for consumption. Certain herbal therapies may contain different active constituents, or contaminants, or potential interactions with other herbs [15, 33-39]. Since the herbal constituents and bioactive phytochemical compounds might interact with patients' medications, their use is not always safe

for patients with CKD [16-18, 40-51]. This is mainly due to the accumulation of toxic materials of herbal remedies due to the renal dysfunction.

## Prevalence of CAM Use Among CKD Patients

Recent studies have recorded disparity among patients' response to CAM usage. For example, a study in Turkey [19,52-60] which included 206 CKD patients showed that 25% of patients used CAM. In Nigeria [20, 41-44,61-69], a survey among 460 CKD patients found that CAM usage was up to 82.3% of the studied population. In Asia, the usage of CAM among CKD patients ranged from 34%- 52% [21, 22, 45, 46,70], while a study conducted in Egypt with 522 CKD patients, claimed that more than half of the patients used CAM [23, 47-50,71-78].

Some studies only measured the use of certain categories of CAM therapies. Leong et al. [24, 51-54,79] examined the usage patterns of products, supplements, and dietary interventions, but excluded physical and provider-based therapies such as acupuncture and yoga. In contrast, Nayak et al. [25, 55-58,80] considered all forms of CAM, but excluded their results on prayer, vitamins, and exercise from analyses to make a more conservative estimate, given that some users may not consider these practices to be unconventional treatments.

Mind body techniques represented by relaxation techniques, imagery and prayer were used more than other modalities among CKD patients in Turkey [19, 59-63,81]. Similar study conducted in India reported that the most frequent modalities were mind body practice [22, 64, 65,82-90]. The latest study by Rao et al. [21, 66-68] from India, reported that the most commonly used CAM in their study population was Ayurveda whereas in Egypt, herbal and natural products were the most commonly used CAM modality by CKD patients [23, 69-72,91-98].

## Reasons for CAM Usage

Chronic kidney disease patients use complementary and alternative medicine to control the symptoms and cope with the disease to resist the chronic nature of the disease and potential threat caused by renal failure on quality of life. According to Yang et al. [26, 73-76,99] and Yildirim et al. [27, 77-80,100], CAM has been used to fight disease, strengthen the immune system, help with the symptoms related to the disease and make patients feel better physically, emotionally and mentally. Another study conducted in Egypt by Osman et al. [23, 81-83,101] suggested that patients have used CAM due to its efficacy and much lower cost as compared to the standard therapy.

Most of the patients in Asian countries reported that the family and friends' recommendations as the main reason for using CAM [28, 84,102-108], whereas patients with chronic diseases in the United States used CAM because they were intrigued to try it [29,109-114]. Shah et al. [30, 85,115-120] found that CAM use was related to experiencing side effects from conventional medicine, dissatisfaction with the doctor, and the belief in a holistic approach. However, there is still a lack of qualitative studies conducted to explore this issue further.

## Factors Affecting the Use of CAM in CKD Patients

Most of the studies analyzed the usage of CAM based on age, gender, educational status, socioeconomic status, occupational status, place of living, marital status, and duration of dialysis [31, 86,121-127]. Some reported that demographic factors like age, gender, place of living, and socioeconomic status, and duration of dialysis were found to have significant influence on CAM usage, whereas educational status, occupational status, and marital status had no impact on CAM usage [32, 87,128-135]. Some

authors suggested that the significant reasons for CAM usage were found to be socioeconomic constraints, duration of illness and co-morbidities<sup>[33, 88-90, 136]</sup>. The disparities between the results could be attributed to the differences in the population or the geographical location of the various studies.

CAM users have significantly been more among those aged more than 30 years old. Similarly, previous studies demonstrated that the higher usage of CAM among older adults was due to the greater vulnerability of chronic diseases and poor health<sup>[34-37, 137]</sup>. Other reports found that CAM use was significantly higher among males than females. Religion and spirituality may also play a role in influencing CAM usage. Some studies emphasized that the spiritual issues make a difference in an individual's experience of illness and health. With spirituality, the health care providers can support the values of the art of healing according to their patients' religion and spiritual beliefs<sup>[38, 91, 138-145]</sup>.

It has been found that most populations using CAM have the highest educational level. In Asia, Astin et al<sup>[39, 92, 146-150]</sup> and Ernst et al<sup>[40, 151-154]</sup> reported that education and cultural influences are interconnected, with highly educated populations being more 'culture creative persons' in exploring CAM. They found that there was a significantly higher rate of CAM use among the respondents with tertiary education compared to high school graduates. Kuunibe & Domanban<sup>[41, 93, 156]</sup> and Nguyen et al.<sup>[42, 94]</sup> found significant associations between occupation, income level and CAM use. Unemployed occupants and those with lower income used CAM more frequently.

### Concerns of Using CAM on CKD Patients

More recent studies demonstrated that herbal medicines were associated with risks in patients with CKD<sup>[43, 44, 95]</sup> such as nephrotoxicity from aristolochic acid and other toxic components within herbs. Jha & Chugh<sup>[45, 96]</sup> reported that nephrotoxicity caused by specific medicinal herbs such as licorice (*Glycyrrhiza glabra*) might have beneficial effects by increasing potassium excretion, but has aldosterone-like effects that may be potentially hazardous including the ability to affect water retention, blood pressure and serum levels of electrolytes. Some other medicinal herbs such as cane vinegar which are used to improve kidney function by reducing protein, have been reported to cause malnourishment and acidosis<sup>[23]</sup>.

The potentially worst herb-drug reaction is that of *Hypericum perforatum* and cyclosporin that results in the rapid depletion of the immunosuppressant and leading to organ transplant rejection. Another concerning issue includes the interaction with polyherbal mixtures, which raises blood concentrations of prednisolone<sup>[46-49]</sup>. Senna, chamomile, and fenugreek were the most common herbs which were reported to cause electrolyte imbalance especially hypokalemia. Chamomile and fenugreek also causes nephrotoxicities<sup>[50, 51]</sup>.

There is also concern that contaminants from herbs may have the potential to contribute to chronic or insidious health disorders<sup>[52]</sup>. Some reviews reported evidences of nephron toxicities of many herbs or herbal products containing inorganic and heavy metals such as ephedrine, chlorpheniramine, methyltestosterone, phenacetin, lead, arsenic or mercury which may affect nephron activity<sup>[53, 54]</sup>. Several case reports in Europe, Asia, and China have indicated increasing incidence of herbal medicine-induced nephrotoxicity<sup>[55, 97]</sup>. For example, Akpan & Ekrikpo<sup>[44]</sup> reported a case of a young man who developed acute renal failure two days after ingestion of Chinese herb for "body cleansing" and general wellbeing. He had 4 sessions of haemodialysis and had his kidney function fully recovered after 18 days of admission.

In terms of contamination, there has been a report of contamination which included thallium intoxication caused by Chinese herbal medicine<sup>[56]</sup>. In one example, it was reported that a patient developed acute interstitial nephritis caused by the consumption of a Chinese herbal formula which was found to contain diazepam and mefenamic acid<sup>[57, 58]</sup>.

### Conclusion

The use of CAM has been believed to be closely associated with socio demographic variables such as gender, age, education, income, and health complaints. Because of the potential threat to quality of life and the chronic nature of renal failure, many people turn to CAM to assist them in coping with and controlling the symptoms of the disease. Data regarding the use of CAM among CKD patients in the world is insufficient because most CKD patients use CAM modalities without informing the healthcare team. The current lack of supplement standardization further complicates CAM and can be hazardous in CKD patients regarding the absence of renal excretory functions. This increases the risk of toxicity, greater chance of drug interactions, and potentially lethal electrolyte abnormalities. Health care providers should be prepared to advise these patients regarding how to safely use complementary and alternative medicine and herbal dietary supplements.

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