

What the Research Says About Complementary and Alternative Medicine for CKD and ESRD

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Disclosure


Presenter is an employee of Patient Care America

Slides are scientific and based on information and research evidence available during the time of the lecture

Non-biased and Non-Promotional

Examples of products used are for educational purpose only

Objectives

- Review reasons patients may seek out complementary and alternative medicine (CAM)
 - Explore effects of mindfulness and meditation practices in patients with CKD and ESRD
 - Discuss possible application of acupuncture for kidney health
 - Evaluate pros and cons of different herbal supplements researched for use in CKD and ESRD
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Trends in Patients with Kidney Disease

Complementary and Alternative Medications Consumed by Renal Patients in Southern Germany

Rainer Nawack, MD, PhD,* G Wolfgang Koch, MD,§ Roland :

Background: Complementary and alternative medicine (CAM) use among renal patients is scanty. Little data are available regarding the prevalence of CAM use in end-stage renal disease (ESRD).

Objective: To survey patients with ESRD.

Methods: Consecutive patients treated by nephrologists at 5 renal centers to report their CAM use.

Results: Fifty-seven percent of dialysis patients reported CAM use. Of 180 approached patients, 110 reported CAM use.

Conclusion: Forty-one different CAM products had been used. CAM consumption was positive in 40% of the documented CAM health status. Many renal patients had regularly used CAM, many renal patients had regularly used CAM, many renal patients had regularly used CAM.

Keywords: complementary and alternative medicine, end-stage renal disease, kidney disease, survey.

ORIGINAL RESEARCH

Complementary and Alternative Medicine Use Among Patients With Chronic Kidney Disease and Kidney Transplant Recipients

Noha A. Osman, MD,* Safaa M. Hassanain, DMS,* Maha M. Taha, MD,* and Mohamed M. NassAllah, MD*

Objective: To explore and compare complementary and alternative medicine (CAM) use among chronic kidney disease (CKD) and renal allograft recipients.

Design: Cross-sectional survey questionnaire.

Setting: Three outpatient nephrology clinics and dialysis centers.

Subjects: A total of 1005 subjects were included in this study (500 CKD patients and 500 transplant recipients).

Intervention: Face-to-face interview with CKD patients. Telephone interview with transplant recipients.

Main Outcome Measure: (1) Prevalence and types of CAM use. (2) Effect of CAM use on the patient's health status.

RESEARCH BRIEFS

A Survey of Herbal Product Use in a Dialysis Population in Northwest Ohio

James F. Kleshinski, MD,* Cynthia Crews, MEd, RD,† Elisabeth Fry, RD,‡ Brenda Stewart, RD,§ Chantal Reinhart, BSN, CNN,|| Judith Tolliver, MSSA,¶

Osman, N. A., Hassanein, S. M., Leil, M. M., & NasrAllah, M. M. (2015). Complementary and alternative medicine use among patients with chronic kidney disease and kidney transplant recipients. *Journal of Renal Nutrition*, 25(6), 466-471.

3 outpatient clinics, 1005 participants

522 (52%) reported CAM use

- 21% had reported to their physician

Top 3 reasons for use:

- Trust in the benefit
- Lower cost compared to meds
- Frustration with failed medical treatment

Nowack, R., Ballé, C., Birnkammer, F., Koch, W., Sessler, R., & Birck, R. (2009). Complementary and alternative medications consumed by renal patients in southern Germany. *Journal of Renal Nutrition*, 19(3), 211-219.

5 clinics, 164 participants

57% dialysis patients and 49% transplant patients reported use

- 50% reported to physician

Reasons for use not reported

Kleshinski, J. F., Crews, C., Fry, E., Stewart, B., Reinhart, C., Tolliver, J., & Khuder, S. (2003). A survey of herbal product use in a dialysis population in northwest Ohio. *Journal of Renal Nutrition*, 13(2), 93-97.

2 dialysis centers, 216 participants

31 (14%) reported use of herbal products (26 d/c'd use prior to study)

Limited specification



Why Patients Seek Out Complementary and Alternative Medicine (CAM)

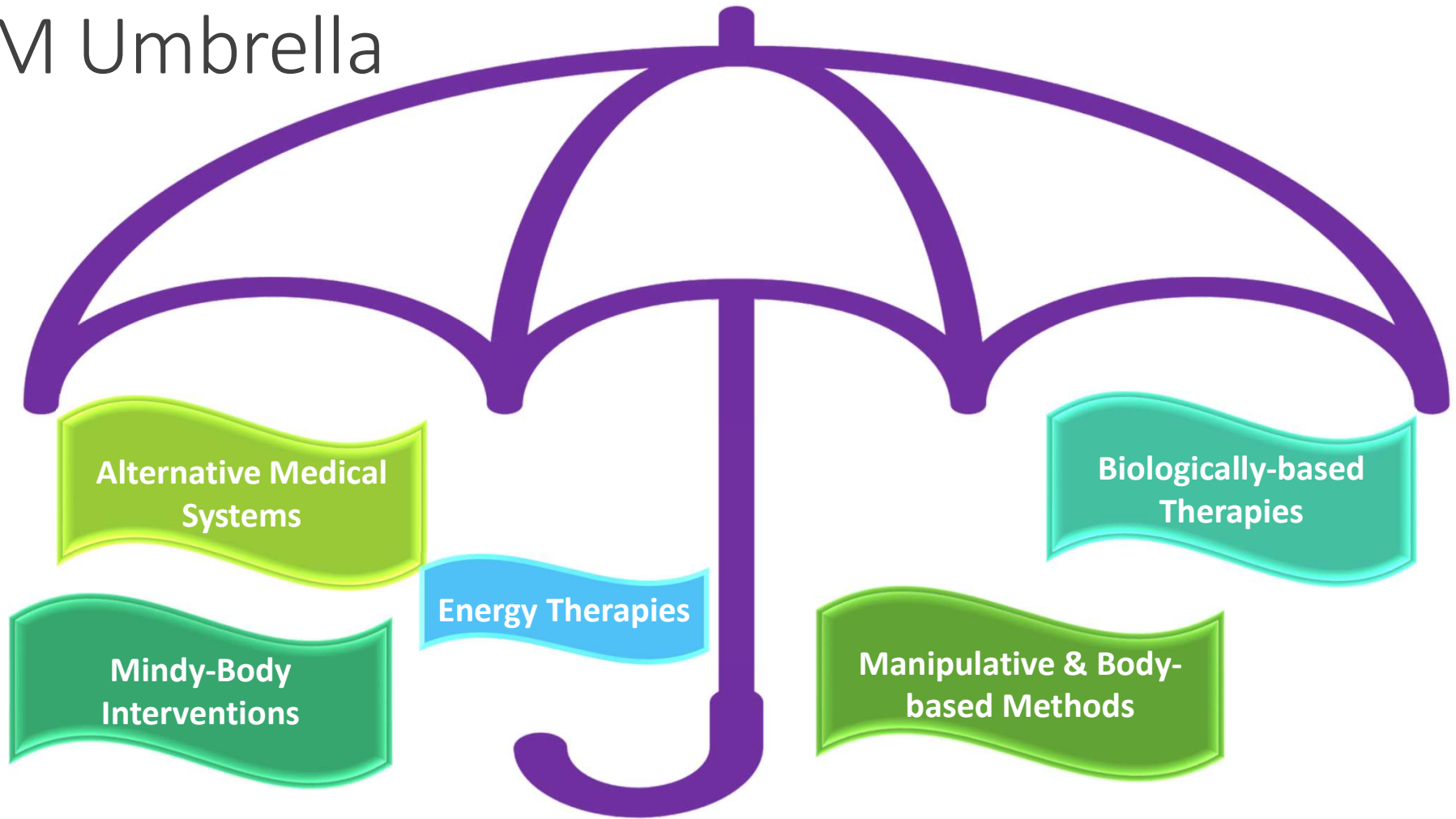
- Trust in the benefit
- Lower cost compared to medications
- Frustration with failed medical treatment
 - Recurrent symptoms with ineffective treatment outcomes

Why Patients Seek out CAM

MURTAUGH ET AL FOUND A WEIGHTED MEAN PREVALENCE IN PATIENTS ON DIALYSIS FOR THE FOLLOWING SYMPTOMS:

- Fatigue/tiredness 71%
- Pruritus 55%
- Constipation 53%
- Anorexia 49%
- Pain 47%
- Sleep disturbance 44%
- Anxiety 38%
- Nausea 33%
- Depression 27%
- Dyspnea 35%
- Restless legs 30%

CAM Umbrella



The CAM Umbrella

Alternative medical systems -Acupuncture, Homeopathy, Ayurveda, Siddha, and 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, chiropractic, or osteopathy

Energy therapies - energy healing, Reiki



Meditation



Mind-body – Meditation

Used to treat or help manage:

- High blood pressure
- Anxiety
- Pain
- Depression
- Sleep disturbance

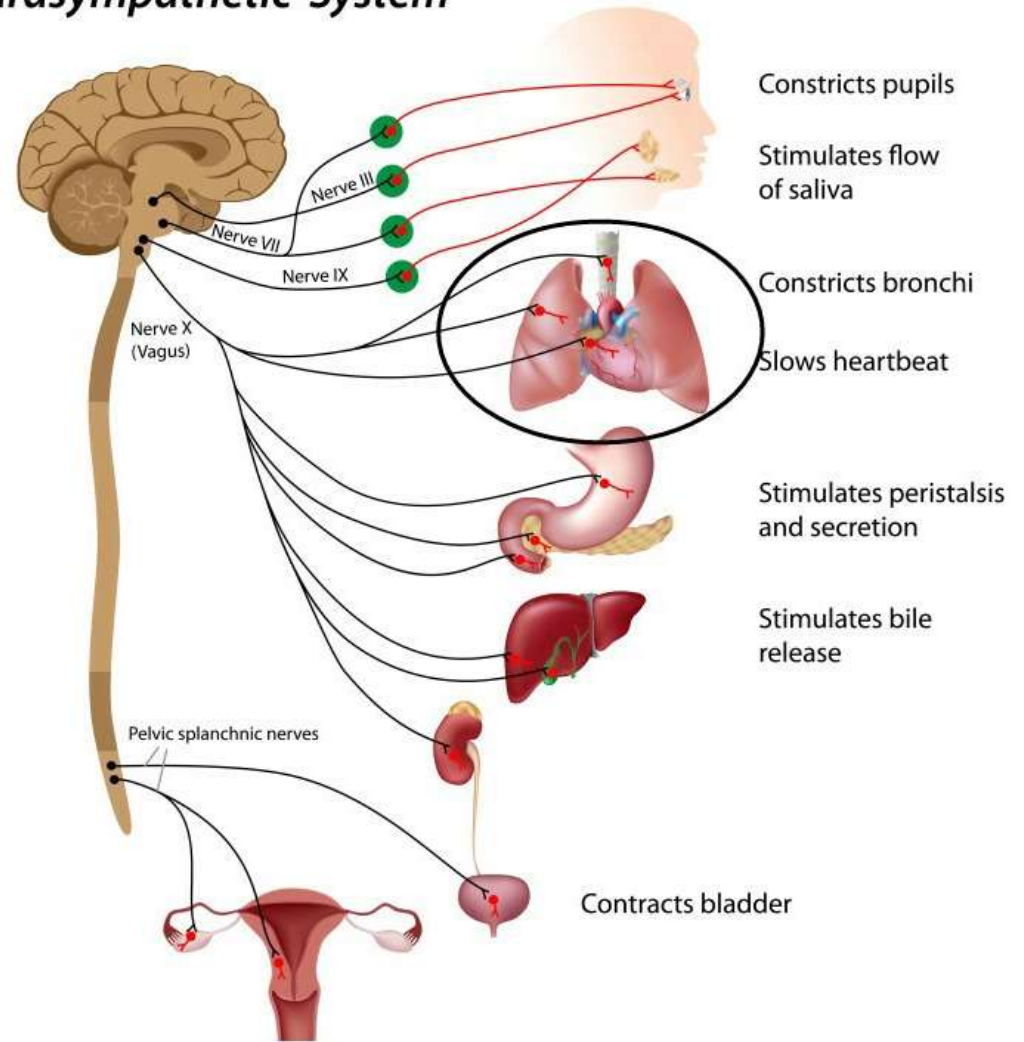


Meditation

Stimulates the
Parasympathetic Nervous
System = Rest and Digest

- ∅ Slows heart rate
- ∅ Decreases respiration
- ∅ Stimulates peristalsis and saliva and bile release
- ∅ Allows the body to relax

Parasympathetic System



Meditation

To Meditate: to think deeply or focus one's mind for a period of time, in silence or with the aid of chanting, for religious or spiritual purposes or as a method of relaxation.

Types of meditation include:

- Focused attention
- Body scan
- Noting
- Visualization
- Loving kindness
- Skillful compassion
- Resting awareness
- Compassion

Shi et. al – Meditation and Blood Pressure: A Meta-analysis of RCTs

19 RCTs on systolic blood pressure (SBP)

- Average of the mean change of SBP:
 - Control Group +7.3mmHg
 - Intervention Group -5.4mmHg

17 RCTs on diastolic blood pressure (DBP)

- Average of the mean change of DBP:
 - Control Group -1mmHg
 - Intervention Group -3.6mmHg

A 3mmHg reduction in SBP is estimated to reduce stroke mortality by 8% and coronary heart disease mortality by 5%

Study	Group	SBP			DBP		
		Baseline mean (SD)	Final mean (SD)	Mean change (mmHg)	Baseline mean (SD)	Final mean (SD)	Mean change (mmHg)
Bagga and Ganddhi, 1983 [21]	Control	119.6 (3.2)	120.0 (3.3)	0.4 (2.7)	78.3 (4.1)	79.3 (2.6)	1 (2.8)
	Intervention	117.6 (7.5)	110.4 (4.9)	-7.3 (5.8)	77.6 (4.1)	73.7 (4.1)	-3.9 (5.2)
Alexander et al., 1989 [22]	Control	NA	135.3	0 (12.8)	NA	NA	NA
	Intervention	NA	125.4	-9.9 (11.5)	NA	NA	NA
Schneider et al., 1995 [19]	Control	150.4 (14.3)	NA	-0.2 (12.3)	91.7 (9.2)	NA	0.8 (9.9)
	Intervention	145.4 (12.3)	NA	-10.9 (12.6)	93.7 (9.3)	NA	-5.6 (6.6)
Alexander et al., 1996 [20]	Control	NA	NA	-1.5 (2.7)	NA	NA	0.6 (1.4)
	Intervention (MBSR)	NA	NA	-10.4 (1.6)	NA	NA	-5.7 (1.2)
Wenneberg et al., 1997 [23]	Control	128.8 (6.2)	NA	-1.3 (8)	70.6 (3.8)	NA	0.5 (7.6)
	Intervention	128.8 (6.7)	NA	1.4 (7.1)	70.6 (4.9)	NA	-4.8 (9)
Castillo-Richmond et al., 2000 [24]	Control	149.7 (13.7)	NA	-6.7 (12.8)	87.6 (10.2)	NA	-5.9 (8.6)
	Intervention	145.5 (13.2)	NA	-7.8 (10.3)	83.4 (9.9)	NA	-3.5 (7.6)
Barnes et al., 2001 [26]	Control	118.8 (8.2)	121.4 (11.2)	2.6 (8.1)	59.7 (5.8)	60.8 (7.9)	1.2 (5.8)
	Intervention	124.7 (9.1)	119.9 (9.1)	-4.8 (8.3)	61.6 (7.1)	58.1 (8.5)	-3.5 (9.9)
Barnes et al., 2004 [32]	Control	130.6 (7.8)	130.5 (8.5)	-0.1 (6.7)	75.8 (5.7)	75.9 (8.1)	0.1 (5.9)
	Intervention	129.2 (7.8)	125.7 (8.5)	-3.6 (7.5)	75.3 (6.4)	71.7 (8.1)	-3.7 (9.2)
Barnes et al., 2004 [27]	Control	NA	NA	-0.9 (1)	NA	NA	-1.5 (0.9)
	Intervention (MBSR)	NA	NA	-4.7 (1.6)	NA	NA	-1.8 (1.4)
Schneider et al., 2005 [28]	Control	144.4 (17.2)	NA	-0.9 (17.2)	95.7 (3.6)	NA	-2.6 (6.4)
	Intervention	142.1 (13.5)	NA	-3.1 (13.5)	95.1 (4.1)	NA	-5.7 (6)
Paul-Labrador et al. 2006 [29]	Control	127.4 (15.5)	130.5 (16.1)	2.8 (2.1)	76.2 (9.2)	76.5 (9.9)	NA
	Intervention	126.4 (14.4)	123.5 (14.9)	-3.4 (2.0)	73.8 (9.7)	73.4 (8.4)	NA
Barnes et al., 2008 [33]	Control	127.6 (7.3)	126.4 (8.4)	-0.9 (1.0)	76.0 (5.7)	75.4 (6.7)	-0.4 (0.9)
	Intervention (MBSR)	124.7 (8.6)	120.5 (9.1)	-4.7 (1.6)	73.3 (8.1)	71.0 (7.9)	-2.9 (1.3)
Manikonda et al., 2008 [34]	Control	147 (7.9)	150 (11.5)	0 (10.2)	100 (8.4)	94 (7.1)	-2 (7.4)
	Intervention (CMBT)	151 (10.2)	136 (10.5)	-11 (6.6)	96 (7.7)	84 (6.6)	-13 (8.9)
Nidich et al. 2009 [30]	Control	117.9 (13.7)	NA	0.4 (1.1)	76.6 (8.7)	NA	0.5 (0.8)
	Intervention	116.7 (12.8)	NA	-2.0 (1.2)	74.7 (8.4)	NA	-1.2 (0.9)
Gregoski et al., 2011 [35]	Control	121.4 (6.5)	NA	-0.4 (0.9)	69.3 (5.6)	NA	-0.6 (0.1)
	Intervention (MBSR)	119.4 (6.4)	NA	-3.7 (0.5)	68.1 (5.7)	NA	-1.8 (0.1)
Schneider et al., 2012 [31]	Control	131.5 (18.0)	NA	4.9 (1.2)	76.8 (11.4)	NA	-1.9 (0.6)
	Intervention	133.0 (18.7)	NA	0.02 (1.3)	77.5 (12.3)	NA	-3.4 (0.7)
Hughes et al., 2013 [36]	Control	NA	125.3 (7.4)	-0.7 (1.6)	NA	79.4 (8)	1.2 (1.2)
	Intervention (MBSR)	NA	128.1 (9.1)	-4.9 (1.7)	NA	75.4 (5.1)	-1.9 (1.1)
Parswani et al., 2013 [37]	Control	125.3 (32.5)	135.5 (8.7)	10.2 (37.3)	85.5 (5.7)	83.9 (5.3)	-1.6 (6.7)
	Intervention	135.7 (13.4)	124.5 (9.0)	-11.2 (9.2)	84.2 (5.5)	81.6 (5.2)	-2.6 (6.0)
Blom et al., 2014 [38]	Control	134 (7.4)	NA	-0.4 (7.8)	82 (5.3)	NA	-0.4 (4.6)
	Intervention (MBSR)	135 (8.4)	NA	-0.4 (6.7)	82 (6.2)	NA	0.04 (4.9)

Shi, Lu; Zhang, Donglan; Wang, Liang; Zhuang, Junyang; Cook, Rebecca; Chen, Liwei Meditation and blood pressure, Journal of Hypertension: April 2017 - Volume 35 - Issue 4 - p 696-706 doi: 10.1097/HJH.0000000000001217

Meditation for Chronic Kidney Disease

Park et. al found:

- A single session of guided mindfulness meditation (MM) lowers blood pressure BP and HR acutely in hypertensive patients with CKD Stage III
- CKD patients had a significantly greater reduction in muscle sympathetic nerve activity (MSNA) acutely during MM, suggesting that MM may modulate central sympathetic output, resulting in lower BP
- Participants had a lower respiratory rate (RR) during MM compared with the control intervention
- During controlled breathing (CB), in which RR was lowered without concomitant meditation, BP and MSNA were not lower compared with the control intervention, suggesting that CB alone is not sufficient to acutely modulate central SNS output.

Meditation for Hemodialysis

Amini et al and Yang et. al both found:

- Meditation and mindfulness practices can reduce symptoms of depression and anxiety in chronic HD patients.
- Amini et al suggests the increased activation of the prefrontal cortex – involved in regulation of emotions – during meditation is the reason for improved anxiety, depression, fatigue, and quality of life that can be observed.

1 session of meditation can acutely reduce BP and help the body relax

Regular meditation practice of even short sessions (10-15 minutes/day) can result in improved mood, reduced pain, improve cognitive function, better controlled BP, etc.

Meditation

PROS

- Inexpensive
- Can be done in a short amount of time
- Many different forms allows for personalization
- Can be modified easily

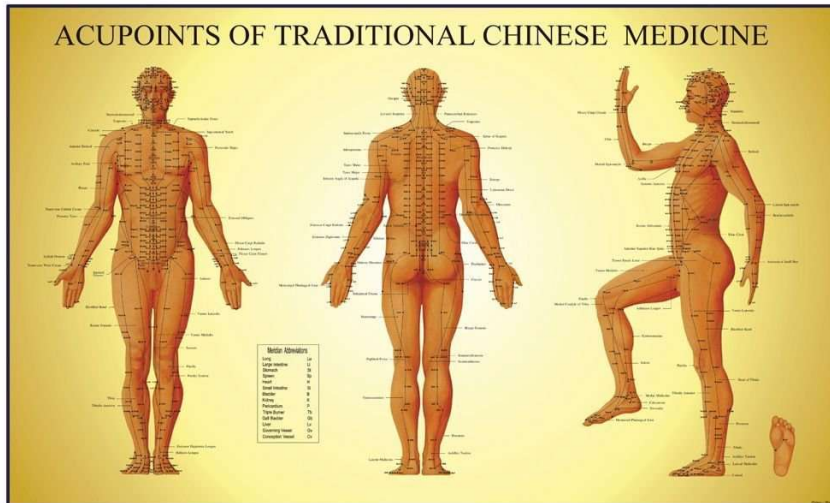
CONS

- Difficult to build consistency
- Breathwork is harder for patients with COPD or sinus issues.
- Stigma of meditation
 - Hokey, hippie practice
 - For super fit, healthy people that do yoga and run everywhere
 - For spiritual or religious people only
 - It takes a lot of time to practice before it's effective

Acupuncture



Alternative Medical Systems - Acupuncture



Acupuncture originated in Traditional Chinese Medicine which explains acupuncture as a technique for balancing the flow of energy in the body.

Western medicine defines acupuncture as a process of inserting very fine needles at specific points on the body to stimulate nerves, muscle, and connective tissue.

Alternative Medical Systems - Acupuncture

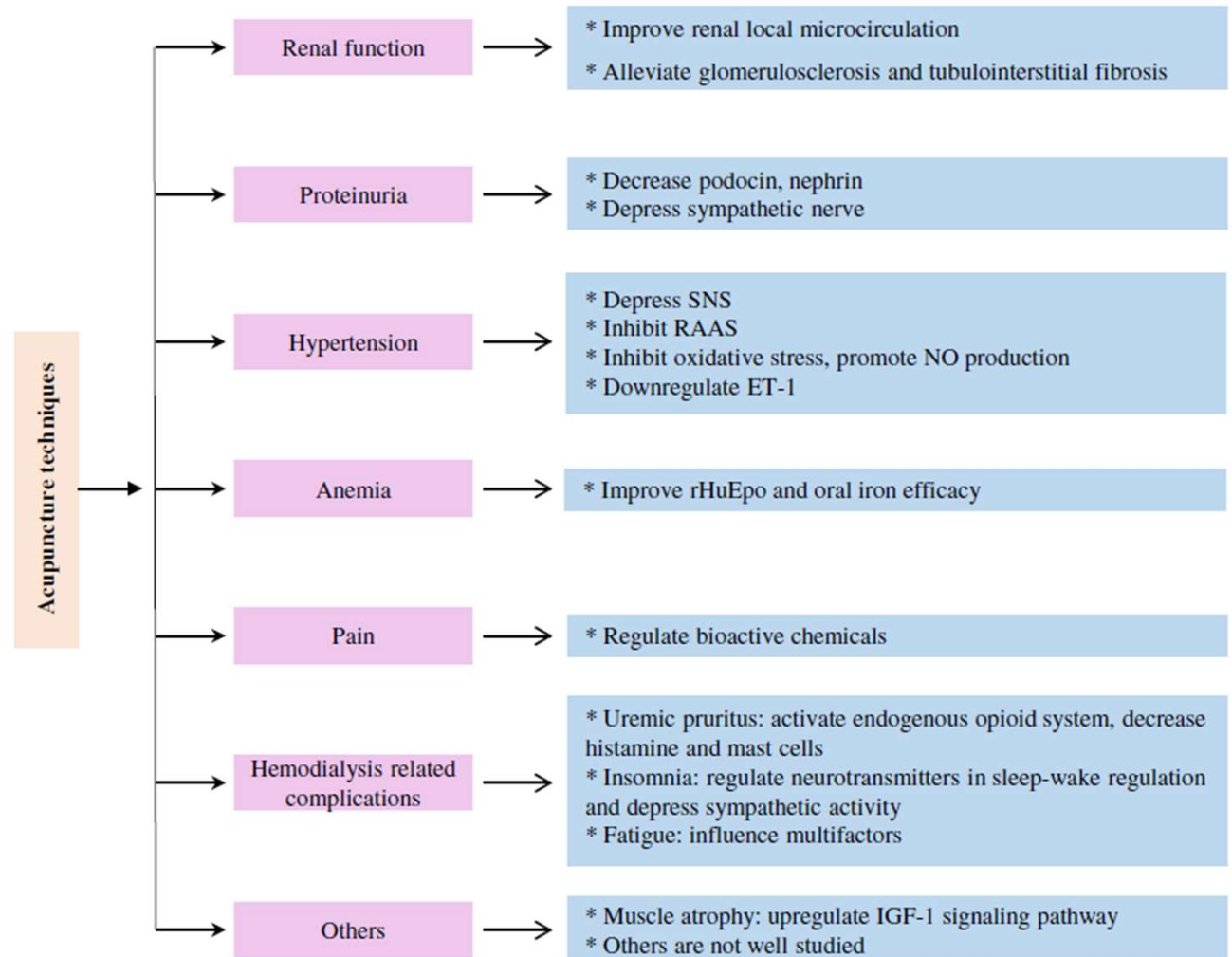
Different types of acupuncture beyond the traditional method:

- **Electroacupuncture** = pass an electrical current between 2 inserted needles
- **Moxibustion** = introduces heat to acupoints by burning moxa (a cone or stick of mugwort) at those sites.
- **Acupressure** = stimulating acupoints with hands or fingers
- **Laser irradiation** = stimulation of traditional acupoints with low-intensity, non-thermal laser irradiation.



Xiong et al Acupuncture application in CKD and its potential mechanisms:

- Several potential mechanisms for supporting kidney function and improving co-morbidity management.
- Inconsistent practices and application of techniques makes it difficult to study true effectiveness.
- Does not appear to alter pharmacokinetics and is generally recognized as safe.



Acupuncture

PROS

- Early research shows many potential health benefits including for those with CKD.
- Working with a well-trained, licensed acupuncturist allows for personalized treatment.
- No medication interactions.

CONS

- Can be time consuming and moderately expensive
 - Usually, weekly appointments for 30-60 minutes to start with \$20 copay each session (if covered by insurance).
- Not recommended for people with a fear of needles. Could try acupressure.
- People with pacemakers should not do electroacupuncture.

Biologically-Based Therapies

Biologically-Based Therapies


Guided Decision Making

Check for any medication interactions or contraindications for people with CKD/ESRD

- [NKF Herbal Supplements and Kidney Disease](#)
- Natural Medicine Database

Be cautious of combination supplements – they may contain other herbs or ingredients that should be avoided.

Pay attention to labels.

- “Proprietary Blend” often means you will not learn how much of each ingredients is present.
 - Check the ingredient list, they should be listed by descending order of predominance by weight.
- 

Biologically-Based Therapies

Guided Decision Making

Choose brands that use third-party testing which should look for:

- The supplement contains what's stated on the label and in the amounts listed
- Products are standardized from batch to batch.
- The supplement is free of harmful levels of contaminants or other potential drug contaminants.
- The product doesn't contain any undeclared ingredients.

Examples of trusted brands – Nordics Naturals, Thorne, Pure Encapsulations, Metagenics, Nature Made

- Some brands do not submit all products for third-party testing, it is recommended to check each individual supplement for appropriate labeling.

Newmaster, S. G., Grguric, M., Shanmughanandhan, D., Ramalingam, S., & Ragupathy, S. (2013). DNA barcoding detects contamination and substitution in North American herbal products. *BMC medicine*, 11(1), 222.

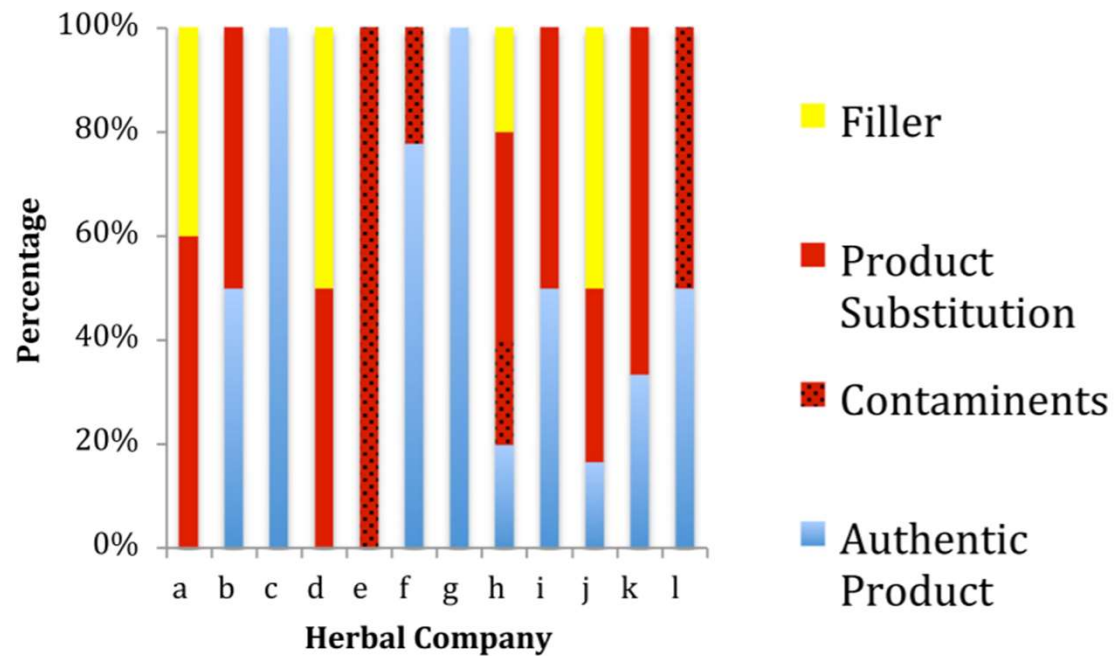


Figure 3 DNA barcode results from blind testing of the 44 herbal products representing 12 companies.

Get to Know Your Independent Testers

- UL tests potency and purity of raw ingredients and finished products provided directly by the manufacturer or selected onsite.
- Testing completed at least once per year.
- Also provides quality inspections to support Good Manufacturing Practice.



- USP tests for purity, potency, accuracy, and disintegration on products purchased in stores.
- Testing happens 1-6 times per year.
- They also provide audits of manufacturing process to ensure safety and sanitation in accordance with Good Manufacturing Process.



Get to Know Your Independent Testers

- After being hired by manufacturers, Consumer Labs purchase supplements in stores.
- They test for identity, strength, purity, and disintegration.
- Testing done once every 12 to 24 months



- Products are provided to NSF International directly from the manufacturer
- They test products against label claims, provide a toxicology review, inspect facilities.
- Annual testing for microbiology, heavy metals, pesticides/herbicides, label content verification, and disintegration



Top Supplements in 2019

Echinacea

Ivy Leaf

Aloe Vera

Elderberry

Ginger

Flax seed

Turmeric

Garlic

Mushrooms

Green tea

Horehound

Milk Thistle

Cranberry

Wheatgrass

CBD

Ashwagandha

Top Supplements in 2019

Echinacea

Ivy Leaf

Aloe Vera

Elderberry

Ginger

Flax seed

Turmeric

Garlic

Mushrooms

Green tea

Horehound

Milk Thistle

Cranberry

Wheatgrass

CBD

Ashwagandha

Echinacea



Potential immunomodulating and anti-inflammatory benefits.

3 species primarily used to manage respiratory tract infections and other inflammatory conditions:

- E. Purpurea (most researched)
- E. Angustifolia
- E. Pallida



Echinacea

Consumed orally – tea, tincture/extract, pill

Researched Doses For Cold Treatment:

- 5ml extract 2x/day for 10 days
- 20 drops extract in water every 2 hours on the 1st day of cold symptoms followed by tid for up to 10 days
- 5-6 cups tea on first day of cold symptoms, reduce by 1 cup for day for the following 5 days.

Possible Interactions:

- May slow down the rate of caffeine metabolism
- May slow down or change the rate of metabolism of certain medication in the body or liver
- May interact with medications that reduce immune function

Echinacea

PROS

- Mixed research results, some do indicate benefit for:
 - Reducing duration and severity of the common cold
 - Reducing risk of contracting common cold by 10-20% when used prophylactically
- No indication of kidney toxicity or contribution to damage

CONS

- Commonly combined with other herbs which may be damaging to kidneys.
- No standardization or clarity on dose, species, or form with most benefit
- No data on long term prophylactic use
- Unclear drug interactions
- Consumed as a tea, it could contribute to excess fluid intake for dialysis patients.

Elderberry

Elderberries are rich in anthocyanins which have been shown to:

- Boost immune function
- Exhibit anti-viral effects

Commonly used as a home remedy for upper respiratory infections





Elderberry

Consumed orally – pill, gummy, lozenge, syrup, tincture

Researched Doses for Flu Treatment:

- 15ml liquid 4x/day or 175mg 2x/day

Possible interactions:

medications that reduce immune function – prednisone, corticosteroids, etc.

Elderberry

PROS

- Antioxidants like anthocyanins can convey protective health benefits including for the kidneys.
- Meta-analyses shows that using elderberry therapeutically at the onset of upper respiratory symptoms reduces overall symptom duration
 - More effective for flu than for common cold

CONS

- Consumption of uncooked/unprocessed elderberries has resulted in cyanide poisoning
- Commonly combined with other herbs/ingredients which may be damaging to kidneys.
- No standardization or clarity on dose or form with most benefit
- Unclear drug interactions
- No research specific to the CKD/ESRD patient population

Green Tea

Flavonoids and catechins found in green tea have shown anti-inflammatory, anti-oxidative, and anti-carcinogenic activity.

Potential benefits include:

- Slow progression of renal failure
- Inhibit atherosclerosis and inflammation
- Protect against oxidative damage

Cosola, C., Sabatino, A., Di Bari, I., Fiaccadori, E., & Gesualdo, L. (2018). Nutrients, nutraceuticals, and xenobiotics affecting renal health. *Nutrients*, 10(7), 808.





Green Tea

Consumed orally – tea, capsules

Topical ointment

Researched Doses:

- For high cholesterol 150-2500mg catechins via tea or pill for up to 24 weeks.
- For elevated BP 3g tea bag in 150ml water up to 3x/day 2 hours after eating for up to 4 weeks

Possible interactions:

- Some antibiotics as well as birth control and depression/anxiety medications will slow down the removal rate of caffeine in green tea
- Should not be consumed with medications that can cause liver damage
- May slow blood clotting

Green Tea

PROS

- Shown to reduce serum uric acid levels and uric acid clearance
 - Modest reduction
 - Large studies find conflicting results
- No reports of kidney damage or contribution to worsening kidney function
- Green tea consumption associated with decreased incidents of kidney stones

CONS

- Not researched specifically for ESRD
 - Tea consumption may contribute to excess fluid intake
- Tea blends may contain ingredients harmful to kidney function.
- Several medication interactions

Curcumin

The biologically active polyphenolic compound in turmeric.

Potential applications for:

- CKD and AKI
- Transplant



Cosola, C., Sabatino, A., Di Bari, I., Fiaccadori, E., & Gesualdo, L. (2018). Nutrients, nutraceuticals, and xenobiotics affecting renal health. *Nutrients*, 10(7), 808.



Curcumin

Consumed orally – pills, tinctures, drinks

Researched Doses:

- For high cholesterol 1.4g extract divided in 2 doses per day for 3 months
- For pruritus 1500mg divided in 3 doses daily for 8 weeks
- For osteoarthritis 500mg 4x/day for 4-6 weeks

Possible interactions

- May change the rate of breakdown for medications metabolized in the liver
- May increase effectiveness of blood sugar lowering drugs
- May slow blood clotting
- Might increase absorption and availability of tacrolimus

Curcumin

PROS

- Shows a positive impact on inflammation and oxidative stress by modulating several different pathways that can contribute to kidney damage.
- Relatively inexpensive and recognized as safe.

CONS

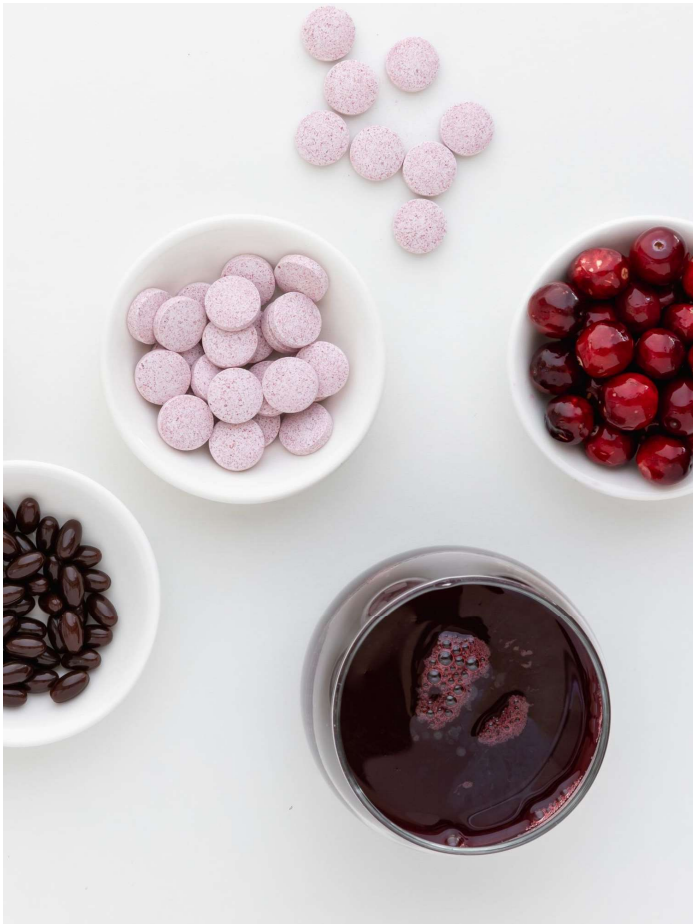
- Poor bioavailability
- Turmeric is a source of both potassium and phosphorous
- Mainly tested in rat models with a few small studies on people with CKD and/or common comorbidities.

Cranberry

Polyphenols and proanthocyanidins found in cranberry may help reduce risk of UTIs by:

- Interfering with bacterial adhesion to the epithelial cells of the urinary tract.
- Attenuating the uropathogen reservoir in the GI tract
- Suppressing inflammatory cascade





Cranberry

Taken orally – pill, tablet, or juice

Researched Dose for UTIs:

- 200-500mg cranberry pill/tablet 1-2x/day
- 120-300ml cranberry juice/day

Possible Interactions:

- May slow down rate of breakdown of Lipitor, Procardia, Voltaren as well as breakdown of drugs metabolized in the liver.
- May slow blood clotting.

Cranberry

PROS

- Potentially reduces need for frequent use of antibiotics.
- Research shows potential benefit of reduced risk for generally healthy women with uncomplicated, recurrent UTIs.

CONS

- Optimal dose and formulation are not clear.
- Supplementation has shown to increase urinary oxalate excretion thus it is not recommended for those at risk of urolithiasis.
- No benefit seen in those with compromised health status or complicated UTIs.

Cannabis

Federally illegal

Schedule 1 Drug

- High risk of abuse or harm, limited or no medicinal value, illegal to possess

Rohrbacher-Farr Amendment

- Bars the Department of Justice from spending any funds to keep states from implementing their own laws about the “use, distribution, possession, or cultivation of medical marijuana.”

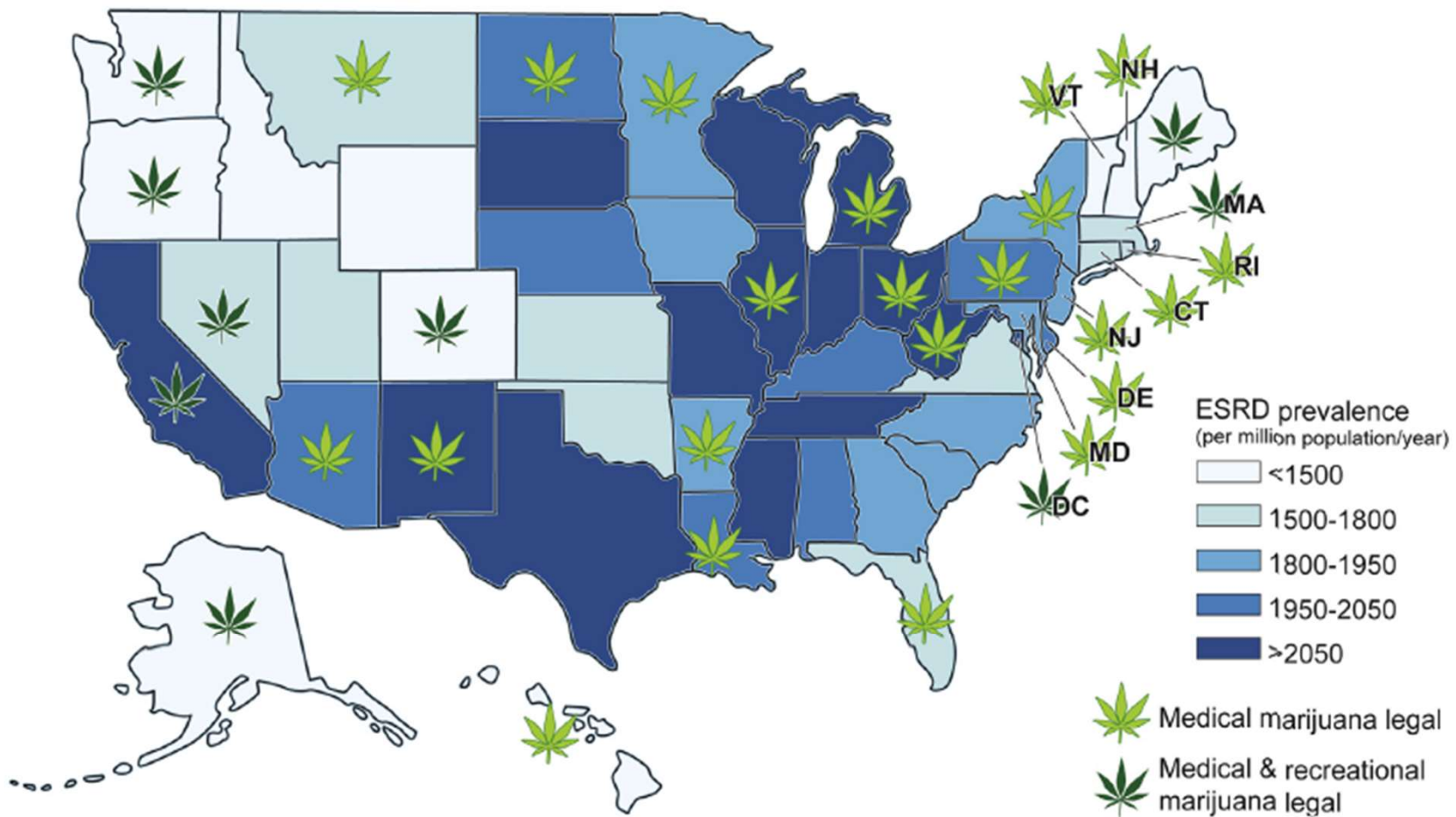


Figure 1. Map of the United States shows states with legalized use of medical or recreational marijuana, superimposed on the prevalence of end-stage renal disease (ESRD) by state. Reproduced with permission from Mount Sinai Health System.

Rein, J. L., & Wyatt, C. M. (2018). Marijuana and cannabinoids in ESRD and earlier stages of CKD. *American Journal of Kidney Diseases*, 71(2), 267-274.

Cannabis

Table 1. Potential Benefits of Medical Marijuana Use for Symptoms of Advanced CKD and ESRD

	Rationale for Use	Comments
Chronic pain	Evidence for treating chronic pain ²⁸	Legalization of medical marijuana has been associated with decreases in opioid-related hospitalizations ³⁴ and overdose deaths ³⁵
Nausea	Substantial evidence for treating chemotherapy-induced nausea and vomiting ²⁸ ; FDA-approved to treat chemotherapy-induced nausea and vomiting	Evidence limited to chemotherapy-induced nausea and vomiting
Anorexia and cachexia	Anecdotal evidence of appetite stimulation; FDA-approved to treat anorexia associated with AIDS	Limited evidence base mostly focused on AIDS population
Pruritus	Preclinical evidence suggests a role of CB1 in the central nervous system response to itch ⁴² ; emollient containing endocannabinoids effectively treated uremic pruritus in a small trial ⁴³	Lack of effective treatments; could be studied as a secondary outcome in studies focused on other indications

Abbreviations: CKD, chronic kidney disease; ESRD, end-stage renal disease; FDA, US Food and Drug Administration.

Rein, J. L., & Wyatt, C. M. (2018). Marijuana and cannabinoids in ESRD and earlier stages of CKD. *American Journal of Kidney Diseases*, 71(2), 267-274.

Table 2. Adverse Effects and Precautions With Cannabis Use.

	Adverse effects	Precautions with cannabis use
Central nervous system	<p>Impaired cognition, drowsiness, dizziness, euphoria^{9,10}</p> <p>Cannabis use disorder⁹⁴ Anxiety and panic attacks⁹¹ Psychosis, hallucinations^{9,10}</p>	<ul style="list-style-type: none"> • Driving under the influence of cannabis increases the risk of motor vehicle accidents. All patients should be advised not to drive for a minimum of 3 to 4 h after smoking, 6 h after oral consumption, and 8 h if euphoria occurs.⁸⁷ Patients who drive to hemodialysis centers may need to consider an alternative mode of transportation if the above administrative precautions cannot be adhered to. • Avoid in late-stage predialysis CKD patients who may be at risk for uremic encephalopathy. • Avoid in patients with heavy alcohol consumption or receiving high-dose opioids, benzodiazepines, or sedatives due to potential for additive effects on cognitive impairment. • Avoid in patients with active substance abuse. • Avoid in patients with mood or anxiety disorder. • Avoid in patients with a history or strong family history of psychosis. • Avoid in patients aged 25 years or younger due to increase risk of long-term neuropsychological impairment and psychiatric illness in those with genetic vulnerabilities.⁸⁸⁻⁹⁰
Cardiovascular	<p>Increased mortality post-myocardial infarction¹⁰⁰ Orthostatic hypotension¹⁰³</p>	<ul style="list-style-type: none"> • Avoid smoked cannabis in patients with cardiovascular disease. • Consider initiating at a low dose with gradual titration. Tolerance may develop with repeated administration in 1 to 2 days.¹⁰³ • Avoid smoked cannabis in patients with respiratory disease.
Respiratory	<p>Chronic bronchitis, COPD, lung cancer⁹⁵⁻⁹⁷</p>	<ul style="list-style-type: none"> • Avoid smoked cannabis in patients with respiratory disease.
Gastrointestinal	<p>Cannabinoid hyperemesis syndrome¹¹⁵</p>	<ul style="list-style-type: none"> • Associated with chronic cannabinoid use and has been associated with prerenal acute kidney injury.¹⁰⁸⁻¹¹⁴

Note. CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease.

Cannabidiol

CANNABIDIOL (CBD) IS A NON-INTOXICATING PHYTOCANNABINOID THAT ACTIVATES THE ENDOCANNABINOID SYSTEM WITHOUT PSYCHOTROPIC EFFECTS. CBD CAN BE EXTRACTED FROM HEMP OR CANNABIS

Side Effects of THC

- Increased heart rate
- Coordination problems
- Dry mouth
- Red eyes
- Slower reaction times
- Memory loss
- Anxiety

Side Effects of CBD

- Appetite changes
- Fatigue
- Weight loss
- Dizziness
- Diarrhea

CBD

Consumed orally – gummy, lozenge, tincture, vaporizers, food items

Topical ointments, lotions, bath bombs, and oils

Research Doses:

- For pain in post-kidney transplant patients - 50-150mg CBD 2x/day for 3 weeks.
- Other studies uses 100-800mg/day

Possible Interactions:

- Diazepam, clobazam, warfarin
- Raised liver function tests when administered with valproate and clobazam

Cannabidiol


PROS

- 1 CBD product is FDA approved – Epidiolex.
 - Only recommended for epilepsy
- Does not have the same side effects as THC
- Consumer Labs tests some CBD products
- Excreted in feces with minor renal clearance

CONS

- Marijuana and derivatives are federally illegal
- Non-FDA approved CBD products rarely contain concentrations of CBD that are on the label.
 - Only 31% with accurate labeling in 84 products
 - Some contain synthetic cannabinoids
 - All contain small amounts of THC
- Multiple drug interactions
- May contribute to liver damage
- Very limited studies

Key Take-Aways

- ✓ Use of complementary and alternative medicine is common even in the CKD/ESRD population. Patients and healthcare providers should be encouraged to specifically discuss CAM use.
 - ✓ Complementary medicines like acupuncture and meditation have a low risk of side effects and can support improved patient outcomes.
 - ✓ Some herbal supplements may be used safely in CKD/ESRD; however, extreme caution should be applied, and each supplement should be evaluated on a case-by-case basis.
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Recommended Reading

Cosola et al – [Nutrients, Nutraceuticals, and Xenobiotics Affecting Renal Health](#)

Leonberg-Yoo et al - [Use of Dietary Supplements in Living Kidney Donors: A Critical Review](#)

Thomas et al – [Brief Mindfulness Meditation for Depression and Anxiety Symptoms in Patients Undergoing Hemodialysis](#)

Dutta et al – [Effect of Yoga Therapy on Fasting Lipid Profile in Chronic Kidney Disease: A Comparative Study](#)

Resources

National Center for Complementary and Integrative Health -
<https://www.nccih.nih.gov/>

Natural Medicine Database – requires subscription

- Some Dietetic Practice Groups through AND offer access

NIH Dietary Supplement Fact Sheets -
<https://ods.od.nih.gov/factsheets/list-all/>

Free Mindfulness-Based Stress Reduction guide and resources -
<https://palousemindfulness.com/>

[Pcacorp.com/blog/](https://pcacorp.com/blog/)



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Thank You!

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