

Beyond the Biological Realm: A Multidimensional Lens for PCOS Management with Naturopathy and Yoga – A Comprehensive Narrative Review



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ABSTRACT

Polycystic ovarian syndrome (PCOS) is a widely prevalent endocrine disorder. The multifaceted clinical presentation of PCOS requires a comprehensive approach, addressing not only the biological aspects but also holistic dimensions, encompassing psychological, emotional, social, and spiritual factors for optimal clinical outcomes. Current management primarily emphasizes the biological dimension, utilizing pharmaceutical interventions and some lifestyle modifications. Despite promising outcomes, the precise approach, rationale, and efficacy of naturopathy and yoga in PCOS management have not been thoroughly investigated. A comprehensive literature search was conducted using various databases to identify relevant studies. The evidence gathered was synthesized and organized around the following key themes: consultation, nutrition, fasting, herbs, elemental therapies, massage, yoga, acupuncture, and sustainable health principles. While this review provides insights that could enhance the understanding of the naturopathic approach in PCOS management, it emphasizes the need for future clinical trials and systematic reviews to validate these findings.

Key Words Polycystic ovarian syndrome, women, Female disorders, complementary and alternative medicine

INTRODUCTION

Polycystic ovarian syndrome (PCOS) is a common endocrine disorder with a prevalence of up to 22% and is typically diagnosed using Rotterdam's criteria, which include the presence of more than two features of oligo/anovulation, biochemical or clinical hyperandrogenism, and polycystic ovaries.^{1,2} The predisposing risk factors for PCOS include a combination of biological, psychological, and lifestyle factors. Also, exposure to environmental toxins such as persistent organic pollutants (POPs) and heavy metals has been associated with disrupting endocrine hormones and leading to various gynecological disorders, including PCOS.³

Pathophysiologically, PCOS is characterized by insulin resistance, hyperinsulinemia, hyperandrogenism, low-grade inflammation, and adiposity, all of which are involved in reciprocal

causal relationships.^{4,5} Further, PCOS is associated with various complications: metabolic (diabetes and cardiovascular disorders), reproductive (infertility, menstrual and pregnancy-related complications), and psychological (anxiety, depression, eating disorders, and low self-esteem).^{5,6} All these multifaceted factors impact the quality of life of the affected women.

The diversity in the clinical presentation of PCOS warrants addressing not only the biological but also the holistic dimensions—biological, psychological, emotional, social, and spiritual—for better clinical outcomes.⁷ Despite the diverse clinical presentation, current management predominantly focuses on the biological dimension. This involves using oral contraceptives and anti-androgenic drugs for menstrual issues, metformin for insulin sensitivity, ovulation-inducing medications for infertility, and anti-obesity drugs combined with lifestyle changes.^{5,8}

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Naturopathy and yoga offer a non-pharmacological complex medicinal system that uses a multidimensional individualized approach to healing commonly prescribed for the management of an array of lifestyle disorders.^{9,10} Reports suggest that integrated naturopathy and yoga interventions, such as counseling, hydrotherapy, fasting, nutrition, exercises, herbal medicines, and sleep hygiene, have the potential to help improve health outcomes and quality of life among women.^{7,11,12} Nevertheless, the precise approach, rationale, and effectiveness of naturopathy and yoga in addressing PCOS have not been thoroughly examined. Hence, this review seeks to explore the existing approach to, evidence for, and effectiveness of prescribing naturopathy and yoga for PCOS management. This will contribute to expanding the scope of naturopathy and enrich understanding among the clinicians.

METHODS

Data Source and Search Strategy

The search was done using the electronic databases PubMed, Scopus, Embase, Web of Science, and Google Scholar in September 2023 without date restrictions. The key words “PCOS,” “PCOD,” and “Stein Leventhal Syndrome” were combined with following theme-specific terms:

- “Naturopathy,” “Naturopathic Medicine,” “Naturopath”
- “Nutrition,” “Diet,” “Healthy eating”
- “Fasting,” “Calorie restriction,” “Intermittent fasting,” “Alternate day fasting,” “Medically supervised fasting”
- “Herbs,” “Herbal extracts,” “Herbal medicine,” “Phytotherapy”
- “Hydrotherapy,” “Water therapy,” “Sun therapy,” “Heliotherapy,” “Balneotherapy,” “Mud therapy,” “Air therapy,” “Elemental therapy”
- “Yoga,” “Mindfulness,” “Breathing exercise,” “Postures,” “Pranayama”
- “Acupuncture,” “Acupressure,” “TCM”
- “Massage,” “Manipulation”

Eligibility Criteria

The review included case reports, case series, reviews, quasi-experimental studies, controlled trials, systematic reviews and meta-analyses related to the effectiveness of different modalities within naturopathy. Research protocols, commentaries, book chapters, conference proceedings, and non-English-language publications were excluded. Titles and abstracts of all potential studies were screened to eliminate duplicate and ineligible studies. The studies were then categorized into (1) systematic reviews/meta-analyses, (2) narrative reviews, (3) clinical trials, and (4) others.

Data Extraction

Two reviewers independently evaluated the relevance and completeness of selected references, resolving any discrepancies through discussion among the authors. Evaluation of risk of bias and robustness of study was not conducted, and no automation tools were used. The data extracted from the articles included the

study objectives, interventions, findings, therapeutic actions, and mechanisms of action. The data collected were then synthesized under the following key themes: consultation, nutrition, fasting, herbs, elemental therapies, massage, yoga, acupuncture, and sustainable health principles.

RESULTS

Consultation

The first component of the naturopathic approach is a holistic consultation, in which a naturopath spends considerable time with the patient based on the principle of *tolle causam* (treat the cause).¹³ This entails identifying the root cause, whether based in internal factors (emotions, beliefs, motivation, stress) or external influences (sleep, exercise, diet, exposure to environmental toxins, sun exposure, social relationships).¹⁴ Once the root cause is understood, the naturopath employs additional principles, such as *tolle totum* (treat the whole person) and *docere* (doctor as a teacher), in which both the doctor and the patient collaborate to understand the patient, develop treatment strategies, set goals, and foster health independence.¹³

The body has an innate tendency to heal (*vis medicatrix naturae*), and naturopathy helps to promote the healing process by removing the obstacles to health and providing a favourable internal and external environment to heal. Hence, treatment strategies are focused on activating eliminative channels (excretories, such as the intestines, skin, lungs, and bladder),¹⁵ or facilitating comprehensive healing through various conservative therapies and education on sustainable health principles. The holistic consultation establishes a foundation for planning treatment strategies in the management of PCOS (see Figure 1).

Nutrition

“Food as medicine” stands as a core principle in naturopathy. Naturopaths advocate consuming live, whole foods such as sprouts, whole grains, and a wide variety of vegetables, fruits, nuts, and seeds. A naturopathic diet has a low glycemic index and is a rich source of fibre, healthy fats, proteins, vitamins, minerals, and phytonutrients. A systemic review and meta-analysis has shown the impact of low glycemic index on reducing insulin resistance, improving lipid profiles, and reducing abdominal adiposity and testosterone levels in women with PCOS.^{16,17} Low glycemic load meals also have been proven to be effective in reducing ghrelin and increasing glucagon in women with PCOS.¹⁸

A diet abundant in saturated fats exacerbates inflammation and worsens insulin resistance,¹⁹ whereas eating healthy fats such as omega-3 and monounsaturated fatty acids (MUFAs), which are abundant in nuts and seeds, has been shown to have a beneficial effect on PCOS. A study on the influence of dietary alpha-linolenic acid found in flax seed oil revealed its potential function in improving sex hormones, enhancing gut and vaginal microbiomes, and reducing inflammation, indicating its potential role in PCOS management.²⁰ The naturopathic diet, rich in fibre, promotes insulin sensitivity, modulates intestinal microbial diversity, enhances metabolic health, uplifts mood, reduces inflammation,

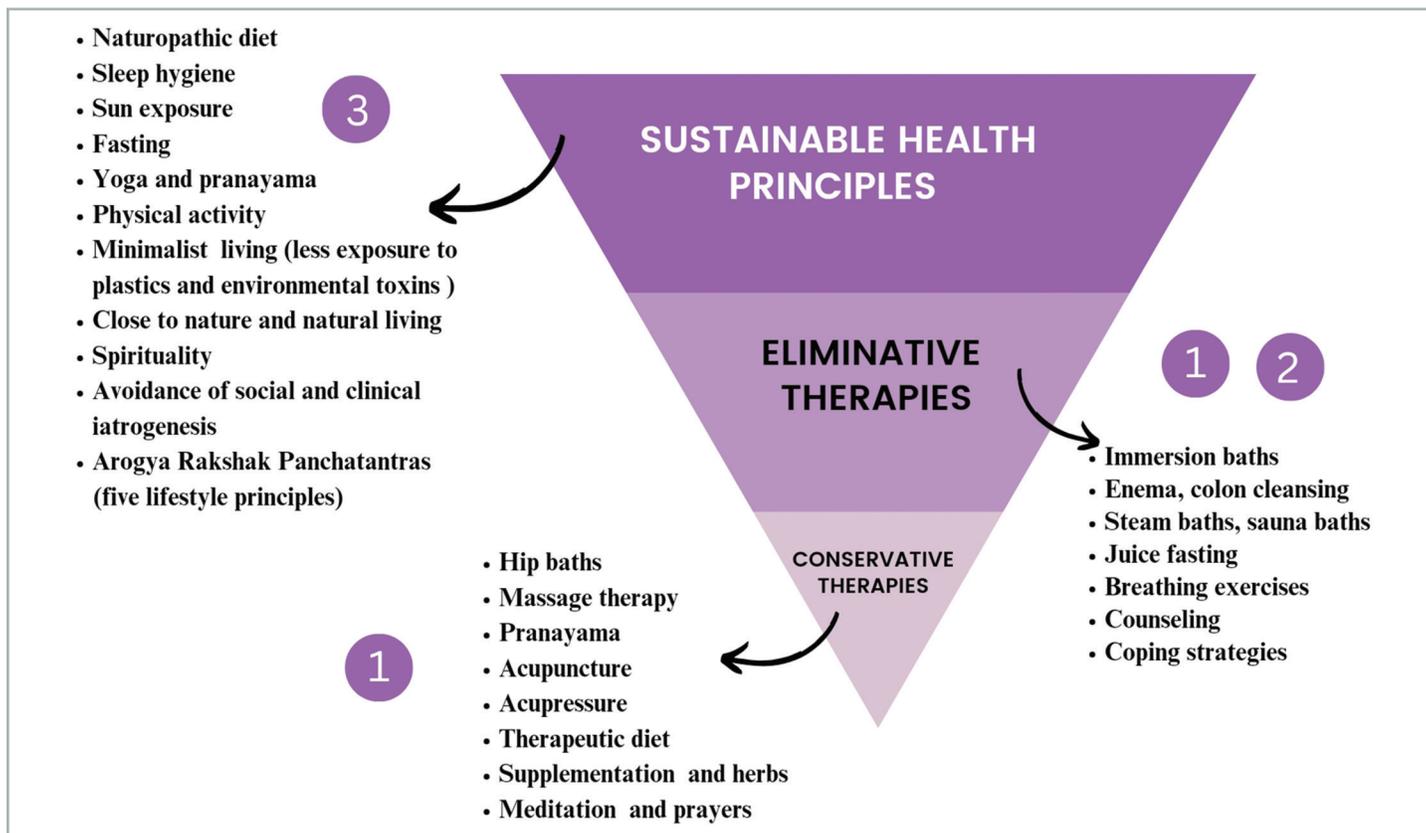


FIGURE 1 Naturopathic Approach for the Management of PCOS

and supports weight loss, collectively contributing to favourable outcomes in PCOS.^{21,22}

Fasting

Fasting is one of the first-line treatments used by naturopaths for treating a variety of disorders, including PCOS.¹¹ Methods of fasting such as time-restricted feeding, alternate-day fasting, modified alternate-day fasting (5:2), prolonged fasting, and calorie restriction are tailored by a naturopath based on the needs of the patient. Fasting has the potential to enhance autophagy, restore bodily homeostasis, facilitate weight reduction, boost insulin sensitivity, diminish oxidative stress, decrease inflammation, harmonize circadian rhythmicity, regulate metabolism, and enhance gut health. These multifaceted benefits align with factors favourable to PCOS-related outcomes.²³⁻²⁵

Recent studies suggest fasting to attenuate female health issues, such as hormonal imbalances, cancers, and menstrual disorders.^{11,26,27} A pre-post study on the effect of time-restricted feeding on women with PCOS showed significant improvements in hormonal profiles (sex hormone binding globulin and androgens), and a reduction in weight, inflammation, and insulin resistance.²⁸ However, the effect of prolonged fasting on PCOS outcomes has yet to be investigated.

Herbs

Turmeric (*Curcuma longa*), licorice (*Glycyrrhiza glabra*), spearmint (*Mentha spicata*), basil (*Ocimum basilicum*), ashwagandha

(*Withania somnifera*), and cinnamon (*Cinnamomum verum*) are commonly used in naturopathy for PCOS. Turmeric is known for enhancing ovulatory functions, while licorice and spearmint can reduce androgenic activity. Licorice and cinnamon are also used to reduce insulin resistance, which is one of the primary predisposing factor for PCOS.²⁹⁻³¹ Ashwagandha, which has adaptogenic and anxiolytic properties, aids in lowering cortisol levels, providing potential benefits for individuals with PCOS.³² Aloe vera (*Aloe barbadensis*) and fenugreek (*Trigonella foenum-graecum*) are known for their potent antioxidant properties and have demonstrated benefits in reducing insulin resistance, while also supporting ovarian tissue health and folliculogenesis.³³ Fennel (*Foeniculum vulgare*) contains a compound known as anethole, which possesses estrogenic properties and aids in the treatment of PCOS.³⁴ Chamomile (*Matricaria chamomilla*) contains flavonoid compounds and exhibits anti-inflammatory effects.³⁴ Ginseng (*Panax ginseng*) and black cohosh (*Actaea racemosa*) possess estrogen-like properties and can reduce luteinizing hormone (LH) levels.^{33,34} Flax seeds (*Linum usitatissimum*), rich in lignans, have antiandrogenic functions.³⁵

Elemental Therapies

Indian naturopathy practice is influenced by ancient Indian philosophy, particularly the Sankhya philosophy, as well as the ancient Indian text *Garbhopanishad*.^{36,37} These sources posit that the universe and the human body are composed of panchamahabhootas (five basic elements): Prithvi (earth), Jal (water), Tej (fire),

Vayu (air), and Aakash (space). Naturopaths incorporate this concept, employing elemental-based therapies to restore balance and promote health. Water-based treatments (hydrotherapy), such as cold hip baths, induce thermic and circulatory reactions, improving pelvic functioning.³⁸ Enema encourages the eliminative function of the liver and intestines, thereby supporting healing. Sauna baths trigger hormetic reactions, activating enzymatic pathways and balancing metabolic health.³⁸ Hormesis refers to a phenomenon in which a small or intermittent exposure to mild stressors, such as heat, cold, radiation, calorie restriction, fasting, or exercise, elicits an adaptive response in the body. This adaptive response includes the expression of stress resistance genes, synthesis of antioxidants, and production of heat shock proteins, which ultimately enhance tissue resilience, making it better able to withstand future stressors.^{39,40} Fire-based therapy (sun exposure), has been linked to benefits such as resetting the circadian rhythm, restoring hormonal balance, and vitamin D synthesis.⁴¹ Studies have shown the role of Vitamin D in treating PCOS as reducing insulin resistance, androgen levels, glucose levels, inflammatory biomarkers, and lipid levels.^{42,43}

Various earth-based therapies, including balneotherapy, grounding (connection to nature), and mud baths, have been shown to lower inflammatory biomarkers and stress markers, as well as enhancing the expression of antioxidant heat shock proteins, thus improving well-being.^{44,45} Air-based therapies include breathing exercises and medical ozone therapy, both of which reduce oxidative stress in the body.^{46,47} Fasting is typically administered as an ether-based therapy. As previously discussed, supervised fasting aids in PCOS healing by inducing beneficial metabolic changes.

Yoga, Yogic Breath Regulation, and Mindfulness

Yoga, a mind-body practice incorporating asanas (postures), pranayama (yogic breath regulation), relaxation techniques, and meditation, is frequently recommended in naturopathy settings. A meta-analysis and systematic review have shown the potential effectiveness of yoga in reducing clinical hyperandrogenism, addressing menstrual abnormalities, and improving fasting glucose and insulin levels.⁴⁸ Another systematic review demonstrated the usefulness of several yoga components in improving body composition and areas of psychological health in women with PCOS.⁴⁹

Another study noted the possible role of Kapalabhati pranayama (rapid breathing) in autonomic balance, neurohormonal balance, and the promotion of metabolic health, particularly insulin homeostasis.⁵⁰ Yoga has been shown to reduce inflammatory biomarkers such as C-reactive protein (CRP) and cytokines such as interleukins, tumor necrosis factor (TNF- α), and interferon-gamma (INF- γ).⁵¹ A randomized controlled study found that mindfulness-based stress reduction approaches induced DNA methylation and improved physical, emotional, and psychological well-being.⁵²

Acupuncture and Acupressure

In acupuncture, fine needles are inserted into selected acu-points, whereas acupressure involves applying manual pressure or using

instruments on reflex points. Commonly used acupuncture points, such as Sanyinjiao (Spleen 6), Guanyuan (conception vessel 4), Zigong (Extra -CA 1), Zhongji (conception vessel 3), and Qihai (conception vessel 6), are administered to enhance the flow of energy (Chi).⁵³ According to research, the most likely mechanism of acupuncture is a decrease in cortisol levels and an increase in beta-endorphins.⁵⁴ Endorphin has been proven to affect gonadotrophin-releasing hormone (GnRH), causing ovulation in PCOS females.¹² A randomized controlled trial undertaken to study the efficacy of acupressure among 96 women with PCOS showed the potential significance of acupressure in lowering clinical symptoms and testosterone levels and improving quality of life.⁵⁵

Massage and Aromatherapy

Massage involves the manipulation of soft tissue using techniques such as touch, friction, kneading, percussion, and vibration. It can be performed with various oils, including essential oils for health and healing. While empirical research on the efficacy of massage in PCOS is limited, there is evidence suggesting that massage can contribute to improving sleep quality,⁵⁶ clearing inflammatory cytokines from the circulation, increasing expression of anti-inflammatory and regenerative pathways such as ERK1/2 and FAK,⁵⁷ reducing insulin resistance by activating the AMPK/SIRT1 pathway,⁵⁸ and lowering stress hormones.⁵⁹ Additionally, the use of essential oils, such as spearmint oil, lavender oil, bergamot oil, marjoram oil, and almond oil, helps improve mental health, which is beneficial in PCOS recovery.^{60,61}

Sustainable Health Principles

The subsequent phase in naturopathy involves educating individuals about health promotion principles such as salutogenesis, arogya rakshak panchatantras (five principles of health preservation), and the importance of returning to nature to support vitality for health and healing. Naturopaths prioritize follow-up visits to monitor long-term behaviour changes and ensure adherence to the planned care.

Salutogenesis is a health promotion approach that emphasizes constructing health by building health resources rather than focusing on disease pathogenesis.⁶² A naturopath constantly tries to educate the patient that PCOS or any disease is just a process or disturbance in the body that needs to be addressed to restore health. The intention is to teach patients and help them understand coping mechanisms while motivating them to undertake long-term behavioural changes. This includes prioritizing healthy habits such as proper nutrition, sufficient sleep, regular exercise, and effective stress management, all of which contribute to overall health and well-being.

“Arogya rakshak panchatantras” are the five principles of health preservation introduced by Indian naturopath Dr. V. Venkat Rao. These principles encompass holistic lifestyle regimens and consist of prayer twice a day, exercise for one hour daily, fasting once a week, hydration, and moderate eating.⁶³ As mentioned earlier, these concepts serve as a sustainable method for managing PCOS.

Return to nature is another sustainable principle that emphasizes following nature’s rhythms, such as synchronizing the

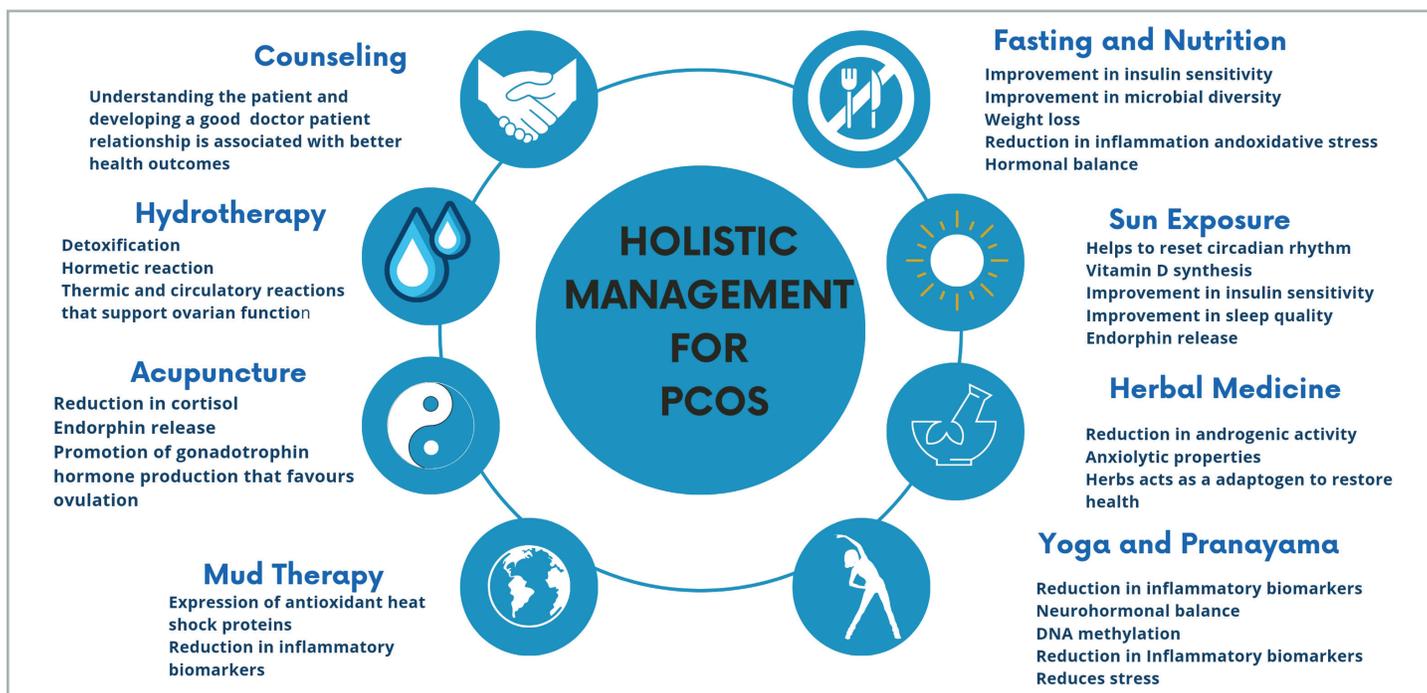


FIGURE 2 Plausible Mechanisms Behind the Effects of Naturopathy and Yoga in PCOS Management

circadian clock with nature's clock, maintaining sleep hygiene, time-restricted eating and eating only during the day, exposure to the sun, earth, and water, and emphasizing positive emotions through prayers and spirituality.

Evidence suggests women with PCOS are more likely to have poor sleep quality, daytime sleepiness, and sleep disorders such as obstructive sleep apnea.⁶⁴ This vicious cycle must be broken by adopting proper sleep hygiene, which is required for hormonal balance and healthy ovulation.⁶⁵ Eating late at night increases the risk of metabolic abnormalities such as obesity, high waist-hip circumference, high blood sugar, high blood pressure, and increased lipid and sugar levels, all of which aggravate PCOS symptoms.⁶⁶ In consultations, incorporating health principles is a cornerstone for naturopaths in providing long-term health independence for women with PCOS.

The comprehensive therapeutic evidence and plausible mechanisms behind naturopathic therapeutic approach is depicted in Figure 2.

CONCLUSION

This review summarizes approaches to using naturopathy and yoga for PCOS, the rationale behind their use, and the evidence to support doing so. Naturopathy offers a holistic approach to addressing the multidimensional aspects of PCOS. The naturopathic procedure typically starts with a thorough consultation to understand the individual's specific needs. Treatments may include dietary adjustments, fasting, herbal remedies, water and mud-based therapies, yoga, mindfulness practices, acupuncture, manipulative therapy, and education on sustainable lifestyle changes. The information presented here has the potential to

broaden the understanding and approach of naturopaths in the management of PCOS and foster research in this area. However, the present review did not assess the methodological robustness or quality of evidence of the studies included. Therefore, robust systematic reviews assessing the quality of the study and risk of bias and/or clinical trials are essential to substantiate the utility and generalizability of these therapies.

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CONFLICTS OF INTEREST DISCLOSURE

We have read and understood the *CAND Journal's* policy on conflicts of interest and declare that we have none.

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