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Review Article

Holistic approaches to polycystic ovary syndrome: a narrative review of non-pharmacological management

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ABSTRACT

Polycystic ovary syndrome (PCOS) is the most common condition-affecting women of reproductive age, with range of reproductive, metabolic, and psychological issues. Available treatments include both pharmacological and non-pharmacological treatments. While pharmacological treatments are effective but having adverse effects. whereas non-pharmacological safer and free from such risks. The aim of this study is to explore the role of non-pharmacological treatments in PCOS. A comprehensive literature search was conducted across PubMed, CINAHL, Web of Science, and Google scholar to identify relevant studies published between 2012 and 2025. The search included peer-reviewed articles in the English language with full-text.200 articles were screened, and data extracted based on study objectives, methodology, and key findings. Following the application of inclusion and exclusion criteria, 21 articles were retained for the review. This narrative review synthesizes evidence on Ayurveda, Yoga, Homoeopathy, diet, physical activity, acupuncture, and acupressure for PCOS management. Ayurveda formulations such as Rajahpravartini Vati, Ashokarishta, Kumaryasava, etc. regulate cycles and support fertility; Yoga improves insulin sensitivity, reduces stress, and enhances hormonal balance; Homoeopathy improve menstrual regularity and quality of life. Dietary modifications and exercise contribute to weight reduction and metabolic outcomes; while acupuncture and acupressure beneficiary for restoring menstrual cycles, lowering testosterone and LH levels. Non-pharmacological treatment is safe, holistic, and enhance reproductive, metabolic, and psychological outcomes, contributing to quality overall health in women with PCOS.

Keywords: Acupuncture, Acupressure, Ayurveda, Diet, Alternative and complementary therapy, Homoeopathy

INTRODUCTION

The most prevalent endocrine condition-affecting women of reproductive age is polycystic ovarian syndrome (PCOS), which affects 6–13% of them.[1] There is notable regional variation in PCOS prevalence. According to Rotterdam criteria, the estimated prevalence in India is 11.34%, indicating a significant public health burden.[2] the prevalence has been reported to reach 20% in some populations, including parts of Europe, underscoring the disorder's worldwide impact.[3] In addition to being the primary cause of anovulatory infertility, PCOS is linked to a variety of metabolic, psychological, and reproductive symptoms that occur throughout life.[4] Infertility, chronic anovulation, and irregular menstruation are examples of reproductive abnormalities. While metabolic changes include insulin resistance, obesity, dyslipidaemia, and an elevated risk of type 2 diabetes mellitus and cardiovascular disease, endocrine characteristics, such as hirsutism, acne, and alopecia, are usually linked to hyperandrogenism. The long-term effects are especially worrisome because PCOS is a multisystem disorder that increases the risk of

endometrial hyperplasia and carcinoma in women.[4] PCOS's aetiology is still complex, Evidence points to a combination of environmental, genetic, and epigenetic factors, with in utero androgen exposure potentially playing a role.[5] Research suggests that lifestyle choices, gut dysbiosis, obesity, and environmental contaminants all influence how diseases manifest.[6] In terms of pathophysiology, PCOS is characterised by hyperandrogenism, insulin resistance, and Hypothalamic-pituitary-ovarian (HPO) axis dysfunction, all of which contribute to a vicious cycle of hormonal imbalance. The dysfunction of ovarian theca cells leads to an excess of androgen, which disrupts the pulse of Gonadotropin releasing hormone (GnRH) and increases the production of Luteinizing hormone (LH), so affecting folliculogenesis and causing ovulatory failure.

In addition, hyperinsulinemia brought on by insulin resistance exacerbates hyperandrogenism by suppressing the liver's production of Sex hormone-binding globulin (SHBG) and encouraging androgen secretion. Furthermore, high levels of Anti-Müllerian hormone (AMH) PCOS complicate reproductive failure by interfering with follicular formation GnRH secretion.[7-4] Consensus-based criteria are used to diagnose PCOS because of the variety of its clinical manifestations. The 2003 Rotterdam criteria, which call for at least two of the following three characteristics, are the most commonly used.

Polycystic ovarian morphology on ultrasound; clinical or biochemical hyperandrogenism; and oligo- or anovulation.[8] Clinical phenotypes can differ significantly; women may present as obese PCOS or lean PCOS (BMI≤25 kg/m^2), each of which has unique metabolic and reproductive implications. This diversity emphasises the necessity of tailored management strategies.[9]

Managing PCOS is equally complex due to its chronic nature and involvement of several systems. Pharmacological therapy, lifestyle improvements, and complementary therapies are examples of contemporary therapeutic techniques. Particularly for women who are overweight or obese, lifestyle changes such as weight loss, exercise, and nutritional interventions are considered first-line therapy since they have been shown to improve ovulatory function, insulin sensitivity, and reproductive outcomes.

Pharmacological options include metformin to improve insulin sensitivity and ovulatory outcomes, clomiphene citrate or letrozole to induce ovulation, and oral contraceptives to control menstruation and hyperandrogenism. But these treatments are constrained by adverse effects, contraindications, and inconsistent effectiveness; despite ovulation induction, up to 30% of women do not become pregnant.[5] These constraints have led to increased interest in complementary and alternative therapies. Acupuncture has shown promise in restoring menstrual cycles and improving ovulatory function, while dietary supplements such as inositol and vitamin D are being studied for their potential to improve metabolic and reproductive results. Particularly attractive are no pharmacological therapies since they are safe, patient-centered, and target the underlying lifestyle factors associated with PCOS pathogenesis.[10,5,6]Even though the amount of research on PCOS is increasing, the majority of the evidence is still fragmented and frequently concentrates on discrete factors like diet, exercise, or individual complementary therapies rather than offering a comprehensive view.

In addressing the complex nature of PCOS, this leads to a substantial knowledge gap regarding the synergistic potential of non-pharmacological approaches, such as diet, exercise, yoga, acupuncture, Ayurveda, and homoeopathy. This review is novel because it presents a thorough, patient centred framework for managing PCOS by combining evidence from indigenous AYUSH practices with evidence from global complementary medicine. This review addresses a significant research gap and identifies culturally appropriate, sustainable, and accessible approaches that could revolutionise long-term care for women with PCOS by fusing traditional systems with contemporary scientific findings.

Inclusion criteria and exclusion criteria

The inclusion criteria comprised English-language, peer-reviewed publications published between 2012 and 2025. Studies were considered eligible if they reported clinical outcomes including menstrual regulation, hormonal profiles, anthropometric measures, ovarian morphology, metabolic indicators, or quality of life. Additionally, research focusing on non-pharmacological approaches was included, provided that full-text articles were available for review.

Search strategy and study selection process

A comprehensive search of peer-reviewed literature was conducted using databases such as PubMed, Scopus, Web of Science, and Google scholar. Key word used for search strategy like Polycystic ovary syndrome," "acupuncture," "acupressure," "Ayurveda," "Yoga," "homoeopathy," "complementary and alternative medicine," and "lifestyle interventions. which covered years 2012 through 2025 non-pharmacological:

A lot of records were found in the first search. After eliminating duplicates, titles and abstracts were screened to eliminate studies that were not relevant. After that, the full texts of any items that might be eligible were carefully examined. Studies were chosen based on predetermined inclusion and exclusion criteria (Figure 1).

Data extraction

Relevant data were systematically extracted from each included the study using the structured data extraction,

framework. The following information were collected: The data extracted from each study included bibliographic details, study characteristics, intervention details, outcome measures, and key findings.

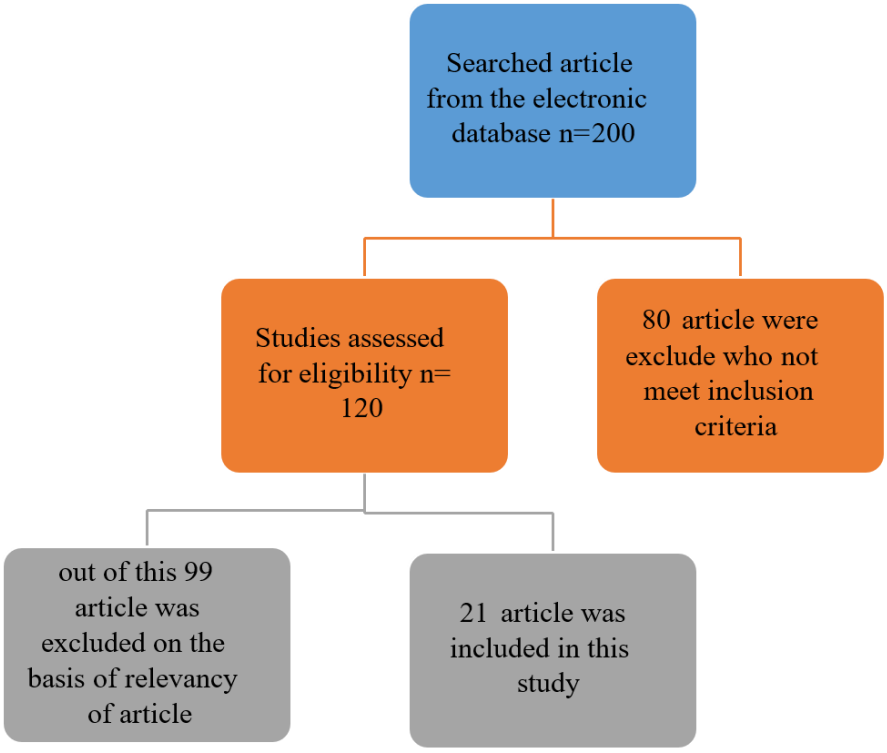

Figure 1: Database and article selection process of PCOS.

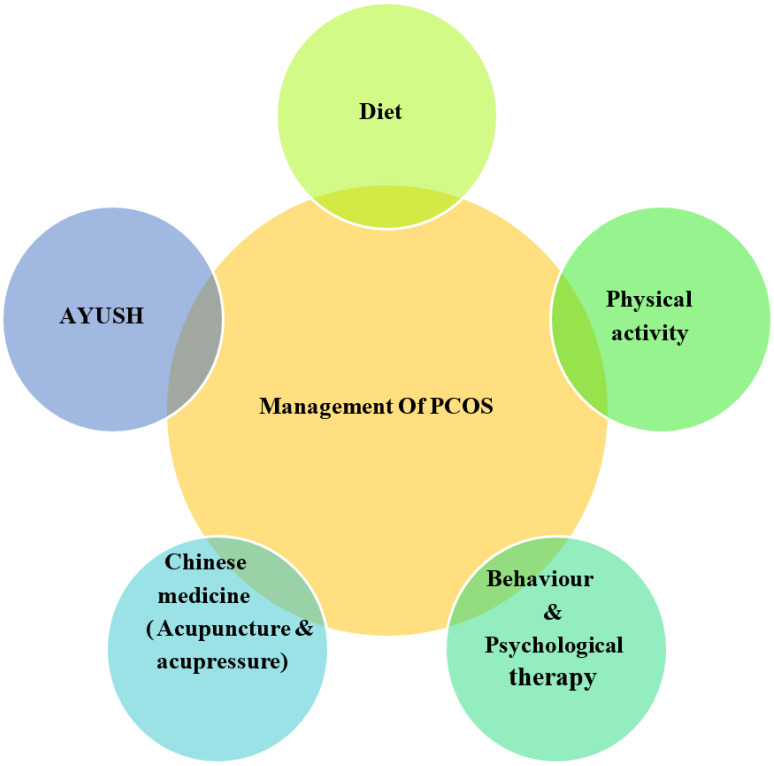

Figure 2: Non-pharmacological treatment of PCOS.

Data synthesis

The extracted data were analysed and synthesized to identify common themes related management of PCOS. A thematic analysis approach was used to categorize the findings into major domains. The interventions were categorized into three main groups: dietary and exercise interventions, behavioural and psychological therapies, and complementary and alternative therapies, including Traditional Chinese Medicine and AYUSH systems (Figure 2).

Ethical consideration

As this is a narrative review based on previously published literature, no ethical approval was required. However, Proper citation and acknowledgment of sources were ensured to maintain academic integrity.

DIETARY INTERVENTIONS

The primary approach to managing PCOS remains dietary modifications, targeting insulin resistance, weight control, and hormonal imbalances. Very low-carbohydrate or ketogenic diets (VLCKD/KD) limit daily carbohydrate consumption to 20–35 games, excluding fibre. These diets focus on low-carb veggies, healthy fats, proteins, and a few selected fruits. It has been demonstrated that these diets can help reduce body weight, BMI, waist size, fat mass, HOMAIR, LH, testosterone, and fasting insulin. Additionally, they can concurrently increase levels of SHBG, oestrogen, and progesterone. This leads to improvements in irregular menstruation, hirsutism, and acne. Short-term trials support these metabolic and hormonal benefits, but long-term adherence and safety remain uncertain. [11-14]

Table 1: Dietary intervention for PCOS.

Sr.no.	Author(s), year	Study design	Key findings
1	Greenwell et al, (2024)[11]	RCT	Compares very low-carbohydrate diet vs. Dash diet in PCOS; aims to assess metabolic and hormonal outcomes.
2	Gautam et al, (2025)[12]	Systematic Review (19) RCTs, n=727)	Short-term ketogenic diet improved PCOS hormonal imbalances by improving SHBG and lowering testosterone.
3	Khalid et al, (2023)[13]	Review Article	Short-term ketogenic diet improved PCOS hormonal imbalances by improving SHBG and lowering testosterone.
4	Paoli et al, (2020)[14]	Pre-test – Post-test Design (12 weeks)	12-week pre-test-post-test design KD in overweight PCOS women: ↓ weight (-9.4 kg), ↓ BMI (-3.35), ↓ triglycerides, LDL, cholesterol, insulin, homa-IR, ↑ HDL, oestradiol, progesterone, and SHBG.
5	Barrea et al, (2023)[15]	Review Article	Diets based on pulses or legumes help reduce insulin resistance; a ketogenic diet helps manage PCOS; and fat quality (MUFA/PUFA) is crucial for metabolic regulation.
6	Juhász et al, (2024)[16]	Systematic review and Network meta-analysis (19 RCTs)	The dash diet was the most effective in lowering triglycerides (SUCRA ~80–90%), insulin, fasting glucose, and insulin resistance.

Plant-based protein, fibre, micronutrients, and complex carbohydrates with a low glycaemic index (GI) are all found in pulse-based diets high in legumes like lentils, beans, peas, and chickpeas. These properties help improve satiety, stabilize glucose metabolism, and reduce insulin resistance, offering a sustainable alternative dietary approach for women with PCOS.[15] It has been demonstrated that the DASH diet (Dietary approaches to stop hypertension), which prioritises fruits, vegetables, whole grains, lean meats, and a lower sodium intake, works better than other dietary patterns at lowering triglycerides, insulin resistance, fasting glucose, and insulin levels. Network meta-analyses consistently rank DASH highly for metabolic control in PCOS.[16] Diets with a low glycaemic index are especially helpful for lowering cardio metabolic risk factors and improving insulin sensitivity. In women with PCOS, low-GI diets considerably lower triglycerides, total cholesterol, LDL, HOMA-IR, fasting insulin, waist circumference, and total testosterone when compared to high-GI diets.[12] (Table 1).

PHYSICAL ACTIVITY

There are several health advantages to exercise, particularly when combined with a balanced diet. Menstrual regularity is improved with even a small weight decrease (≥5%). In comparison to diet or exercise alone, combination therapy (diet+exercise) improves fasting insulin, BMI, waist circumference, SHBG, and free androgen index.[17]

Table 2: Physical activity.

Sr.no	Author	Study design	Key findings
7.	Kim et al (2022)[17]	Systematic review and meta-analysis	≥5% weight loss; improved fasting insulin, BMI, waist circumference, SHBG, and free androgen index with diet and exercise enhanced regularity of menstruation.
8	Patten et al, (2020)[18]	Systematic review and meta-analysis	More than moderate intensity, vigorous-intensity exercise (≥120 min/week) increased waist circumference, homa-IR, and Vo_2 peak.
9	FOGSI (federation of Obstetric and Gynaecological Societies of India), (2024)[19]	Clinical practice guideline	Guidelines for clinical practice ≥150 minutes of moderate or ≥75 minutes of vigorous exercise per week for maintenance; greater weight loss goals; twice-weekly strength training.
10	Samadi et al (2019)[20]	Randomized Controlled trial	Aquatic high-intensity interval training raised FSH, free testosterone, and SHBG while decreasing BMI and fat mass.
11	Abdolahian et al, (2020)[21]	Systematic review and meta-analysis (7 RCTs)	To improving reproductive and hormonal parameters and regulating menstrual cycles, aerobic+resistance training decreased waist circumference and BMI.
12	Turan et al, (2020)[22]	Prospective randomized controlled study	Anthropometric, cardiovascular, and metabolic parameters were improved in non-overweight PCOS patients after eight weeks of structured exercise.

Table 3: Psychological and behavioural interventions in PCOS.

Sr.no	Author(s) and year	Study design	Key findings
13	Salajegheh et al, (2023)[23]	Randomized Controlled trial	one-month follow-up, the randomised controlled trial MBSR continued to lower overall and domain-specific concerns.
14	Majidzadeh et al, (2023)[24]	Randomized Controlled trial	CBT enhanced life quality and decreased anxiety and depression.
15	Jiskoot et al, (2020)[25]	Randomized Controlled trial	A CBT-based lifestyle program sustained weight loss; results were improved by SMS feedback.
16	Zaremobini et al, (2022)[26]	Randomized Controlled trial	Lifestyle counselling in the 2022 randomised controlled trial 5A addressed obstacles to changing one's lifestyle and improved psychological symptoms.

Exercise training has been associated with improvements in insulin resistance, body composition, and cardiorespiratory fitness in PCOS. Vigorous-intensity exercise (≥120 min/week) has the most impact on waist circumference, HOMA-IR, and VO_2 peak.[18] Clinical recommendations state that for weight maintenance and greater weight loss objectives, strength training should be performed at least twice a week in addition to 150 minutes of moderate-intensity activity or 75 minutes of vigorous-intensity exercise per week.[19] Hormonal markers are improved and BMI and fat mass are decreased with high-intensity interval training.[20] When combined, aerobic and resistance training help women with PCOS achieve better metabolic, hormonal, and reproductive results.[21] Anthropometric, cardiovascular, and metabolic parameters are improved in non-overweight women with PCOS even after brief periods of structured exercise.[22] (Table 2).

PSYCHOLOGICAL AND BEHAVIOURAL INTERVENTIONS IN PCOS

Behaviour and psychological techniques are crucial to the comprehensive treatment of polycystic ovary syndrome. In addition to promoting general emotional well-being, mindfulness-based techniques like Mindfulness-based stress reduction (MBSR) are successful in easing concerns about mental health, interpersonal difficulties, physical issues, fertility, and sexuality.[23] It is commonly acknowledged that women with PCOS benefit from Cognitive behavioural therapy (CBT), which lowers anxiety and depression while also improving quality of life.[24] CBT further promotes long-term behavioural change and sustainable weight loss when paired with lifestyle interventions, especially when combined with individualised feedback and support networks.[25]

Models of structured lifestyle counselling, like the 5A's framework (assess advice, agree, assist, arrange), offer a useful and customised way to deal with obstacles, establish reasonable objectives, and promote constructive lifestyle change. These methods increase the overall efficacy of

PCOS management by strengthening adherence to dietary and physical activity guidelines and boosting psychological resilience (Table 3).

ACUPUNCTURE AND ACUPRESSURE

In the treatment of polycystic ovary syndrome, complementary therapies like acupuncture and acupressure have shown promise as adjunctive measures.

Table 4: Acupuncture and acupressure.

Sr.no	Author and year	Study design	Key findings
17	Nekooi, et Al, (2022)[27]	Double-blind RCT (n=96, Iran)	Acupressure at REN3, REN4, LIV3, SP6, and SP10 decreased testosterone levels, decreased clinical symptoms, and enhanced health-related quality of life.
18	Fan, et al, (2016)[28]	Systematic review and meta-analysis of RCTs	Acupuncture decreased BMI and LH and enhanced menstrual cycle recovery, although the studies' methodological quality was constrained.
19	Wu, et al, (2020)[29]	Systematic review and meta-analysis of RCTs	In women with PCOS, acupuncture decreased LH and testosterone levels and aided in menstrual recovery.
20	Zheng, et al, (2013)[30]	Randomized Controlled trial	With few adverse effects, abdominal acupuncture plus metformin enhanced endocrine/metabolic function, waist-to-hip ratio, BMI, and menstrual frequency.
21	Stener-Victorin, et al, (2013)[31]	Review article	Acupuncture helped PCOS patients' health-Related quality of life and decreased their anxiety and depression scores.

Table 5: AYUSH.

Sr.no	Author and year	Study design	Key findings
1	Nidhi et al, (2012)[32]	Randomized Controlled Trial	9 weeks of yoga (asanas, pranayama, and meditation) in a randomised controlled trial significantly decreased testosterone, LH, and anti-müllerian hormones; menstrual cycles were restored; hirsutism and acne were decreased; ovarian morphology and anthropometric measurements were improved
2	Tiwari et al, (2020)[33]	Prospective Follow-up Study (6 months)	Combining yoga with dietary and lifestyle changes resulted in weight loss, regular menstruation, and ovarian morphology returning to normal.
3	Sharma et al, (2018)[34]	Clinical trial	Clinical trial panchakarma (Vamana karma with Ikshwaaku beeja yoga+sShatapushpadi ghanavati) improved menstrual irregularities, BMI, fasting blood sugar, ovarian follicles, and hirsutism ($p<0.05$).
4	Anitha et al, (2021)[35]	Narrative review / Clinical evidence	With few adverse effects, the use of ayurvedic formulations (Rajahpravartini vati, Ashokarishta, Kumaryasava, Phalaghrita, and Kanchanar guggulu) improved reproductive health, increased fertility, and regulated menstrual cycles.
5	Dewan et al, (2021)[36]	Observational study (case based)	Study customised homoeopathic remedies (Calcarea carbonica, lycopodium) decreased ovarian cysts, demonstrated positive hormonal changes, and enhanced quality of life (PCOSQ scores).
6	Nim et al, (2021)[37]	Systematic review of 28 studies (RCTs, observational, case reports)	Although homoeopathy demonstrated promising therapeutic results in the treatment of PCOS, it also emphasised the need for more extensive, thorough RCTs.

Women with PCOS have demonstrated improved health-related quality of life, decreased clinical symptoms, and decreased testosterone levels when acupressure is applied at specific meridian points (Ren3, Ren4, Liv3, Sp6, and Sp10), suggesting that acupressure may be a safe and non-invasive treatment option.[27] Menstrual control, body mass index (BMI) reduction, and Luteinizing hormone (LH) and testosterone levels have all been shown to be positively impacted by acupuncture.[28-29] Abdominal acupuncture in particular has been shown to enhance endocrine function, waist-to-hip ratio, BMI, and menstrual frequency.[30] Acupuncture may improve psychological well-being in addition to metabolic and reproductive outcomes. Improved health-related quality of life and modest declines in anxiety and depression scores point to a wider effect on PCOS-affected women's mental health.[31]

Together, the data points to acupuncture and acupressure as complementary approaches that could improve traditional therapy by addressing the psychological, hormonal, metabolic, and reproductive aspects of PCOS (Table 4).

AYUSH

Ayurveda, yoga, and homoeopathy are examples of complementary therapies that offer safe and long-lasting methods for treating PCOS by addressing its psychological and physical components.

Asana, pranayama, meditation, and relaxation techniques are all part of regular yoga practice, which lowers stress, balances hormones, and enhances metabolic processes. Organised programs have demonstrated improvements in ovarian morphology, decreased levels of Antimüllerian Hormone, LH, and testosterone, and improved management of acne and hirsutism, all of which contribute to improved physical and mental health.[32] Weight loss, regular menstruation, and ovarian function have all been associated with yoga in conjunction with naturopathy (diet and lifestyle changes).[33] Menstrual irregularities, BMI, fasting blood sugar, ovarian follicles, and hirsutism have all shown notable improvements with panchakarma therapies, especially Vamana Karma with Ikshwaaku beeja yoga followed by Shatapushpadi ghanavati.[34] Formulations from Ayurveda, including Rajahpravartini Vati, Ashokarishta, Kumaryasava, Phalaghrita, and Kanchanar Guggulu, promote fertility, cycle regulation, and general reproductive health while reducing the negative effects of traditional treatments.[35] Another complementary modality that has gained popularity is homoeopathy. With Calcarea carbonica and Lycopodium being the most commonly prescribed remedies, individualised treatment has demonstrated improvements in quality of life, a decrease in ovarian cysts, and favourable hormonal changes.[36] And it has a beneficial therapeutic effect nowadays.[37] (Table 5).

DISCUSSION

This article Represent a comprehensive review related to Non pharmacological management of PCOS. This review identifies three major themes included diet, physical activity, Alternative and complementary therapy (Chinese medicine, AYUSH) it is supported by the study non pharmacological management and pharmacological management of PCOS.[38-39] Lifestyle interventions, particularly dietary modifications and exercise, remain the cornerstone of management, as they improve insulin sensitivity, reduce BMI, and restore menstrual regularity.[40-41]Research indicates that structured programs that combine resistance or aerobic training with calorie-restricted or low-glycaemic index diets are more successful in enhancing metabolic and reproductive outcomes than either intervention alone. Furthermore, psychological treatments like mindfulness-based stress reduction and cognitive behavioural therapy not only reduce anxiety and depression but also encourage long-lasting lifestyle modifications, which indirectly improves PCOS-related outcomes.[42-43]

Although results are still mixed, complementary therapies like acupuncture and acupressure have also demonstrated encouraging results in lowering hyperandrogenism, restoring ovulatory function, and enhancing quality of life.[44-45] Additionally, AYUSH-based treatments offer a comprehensive and socially acceptable method. Menstrual regularity and hormonal balance have been shown to improve with Ayurvedic treatments, such as Panchakarma and herbal formulations.[46]

Yoga, on the other hand, has been demonstrated to alleviate stress, enhance insulin sensitivity, and control cycles, thereby addressing the psychological and metabolic components of PCOS.[47] Homoeopathy has been suggested as a non-invasive, customised, and safe method of treating ovarian dysfunction and its associated symptoms.[48]

Although efforts were made to include a wide range of peer-reviewed literature, it is still possible that publication bias will occur, especially since studies with positive results are more likely to be published than those reporting null findings. Other limitations include the English language focus, the heterogeneity of the included studies in terms of design, the short duration of the majority of interventions. Further research on Chinese medicine and AYUSH is advised, along with multilingual studies and grey literature.

CONCLUSION

PCOS is a complex disorder that requires a multimodal approach to therapy that extends beyond prescription drugs. This review highlights the potential of integrative approaches in addressing the metabolic, reproductive, and psychological aspects of PCOS. These strategies include complementary modalities such as yoga, acupuncture, acupressure, Ayurveda, and homoeopathy, as well as lifestyle changes based on diet and physical activity. While lifestyle modifications remain the basis, research is starting to demonstrate that Ayurvedic treatment,

customised homoeopathic medications, and mind-body approaches can enhance quality of life, alleviate symptoms, and restore hormonal balance. Together, these techniques demonstrate a shift towards patient-centered, comprehensive care that empowers PCOS-afflicted women to actively participate in their own healing. Future properly planned clinical trials and interdisciplinary collaborations are essential to build the evidence and integrate these therapies into routine reproductive health practice.

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