ejpmr, 2024, 11(4), 427-432

SJIF Impact Factor 7.065

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

UNRAVELLING AYURVEDIC APPROACH FOR MANAGEMENT OF POLYCYSTIC OVARY SYNDROME (PCOS)

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Article Received on 29/02/2024 **Article Revised on 20/03/2024** **Article Accepted on 09/04/2024**

ABSTRACT

Polycystic Ovarian Syndrome (PCOS) is a reproductive and endocrine health condition and is highly prevalent among Indian women of reproductive age group. This disorder accounts for 25% of all infertility cases with 73% of women suffering from PCOS experiencing infertility due to anovulation. Oral contraceptives, progestins, anti-androgens and ovulation induction agents remain conventional therapies in allopathy for managing PCOS. These therapies are focused only on symptomatic treatment and not on improving the underlying pathogenesis of PCOS. Ayurveda can be considered as an alternative treatment with various options of herbal ingredients for managing every symptom of PCOS and targeting its underlying pathogenesis without any side effects. A thorough literature through Pubmed, Cochrane database and Pubmed Central identified numerous articles on clinical evidence of herbal extracts in PCOS management. These included Nastapushpantaka rasa, Rajahapravartini Vati, Kuberaksha vati, Kachnar gugal, Satapushpa Shatavari and few others. Polypop is an herbal formulation consisting of a combination of herbal extracts. Tab Polypop, a herbal formulation has shown pregnancy rates (49.2% of women with PCOS and infertility issues) which are similar to that of clomiphene citrate and metformin therapy. This combination of herbal formulation is safe and has proved synergism with clinical effectiveness in targeting pathogenesis of PCOS.

KEYWORDS: *Infertility, Herbal, PCOS, Satapushpa Shatavari, Women, Infertility.*

1. INTRODUCTION

Polycystic Ovarian Syndrome (PCOS) is a reproductive and endocrine health condition and is highly prevalent among Indian women of reproductive age group. The global prevalence of PCOS ranges from 6 to 26%, while in India it ranges from 3.7 to 22.5%.[1] Notably, the incidence of PCOS is reported to be rising in India day by day.[2] Based on a large-scale survey conducted across India in the year 2020, nearly 16% of young women between the age group of 20-29 years exhibited a high prevalence of PCOS as compared to other age groups of Indian women.[3] However, the clinical spectrum of PCOS is multifaceted with prevalence observed in adolescents and postmenopausal women too.[1]

Manifestations of PCOS are varied including menstrual irregularities ranging from amenorrhoea to dysfunctional uterine bleeding, hirsutism, acne and anovulatory infertility. The nature of PCOS adversely impacts the fertility and reproductive health of the affected women; which further leads to alarming health implications to female health. This disorder accounts for 25% of all infertility cases with 73% of women suffering from PCOS experiencing infertility due to anovulation. In women of reproductive age, the PCOS disorder upsurges the risk of miscarriage and complications in pregnancy including gestational diabetes.[4]

The first line of therapy for PCOS revolves around hormone-based treatments which are accompanied by serious side effects. Oral contraceptives, progestins, anti-androgens and ovulation induction agents remain conventional therapies in allopathy for managing PCOS.[5] Although, these hormone-based therapies achieve superior clinical outcomes in a short duration; however, they gradually lead to permanent metabolic damage to the female's body. Moreover, hormone-based therapy further adversely interferes with the normal functioning of the female endocrine system. Notably, the hormones that are usually released naturally by the body, now are adversely impacted by the interference of artificial hormone therapy. In essence, contemporary therapies for PCOS are focused only on symptomatic treatment and not on improving the underlying pathogenesis of PCOS. Hence, there is a pressing need to identify and develop drugs of plant origin, which are effective than existing allopathic drugs.[6]

Ayurveda can be considered as an alternative treatment with various options of herbal ingredients for managing every symptom of PCOS and targeting its underlying pathogenesis without any side effects.[7] This narrative review provides an update on PCOS pathogenesis and summarizes the clinical role and available evidence of herbal extracts on the management of PCOS and related complications from the viewpoint of Ayurveda.

An imbalance in hormonal levels impacts follicular growth during the ovarian cycle causing the affected follicles to remain in the ovary. These retained follicles form into a cyst and with each ovarian cycle a new cyst is formed leading to multiple ovarian cysts. Notably, an ayurvedic approach perceives dosha indications as accountable for the PCOS disorder.

PCOS Pathogenesis: An Ayurveda Perspective

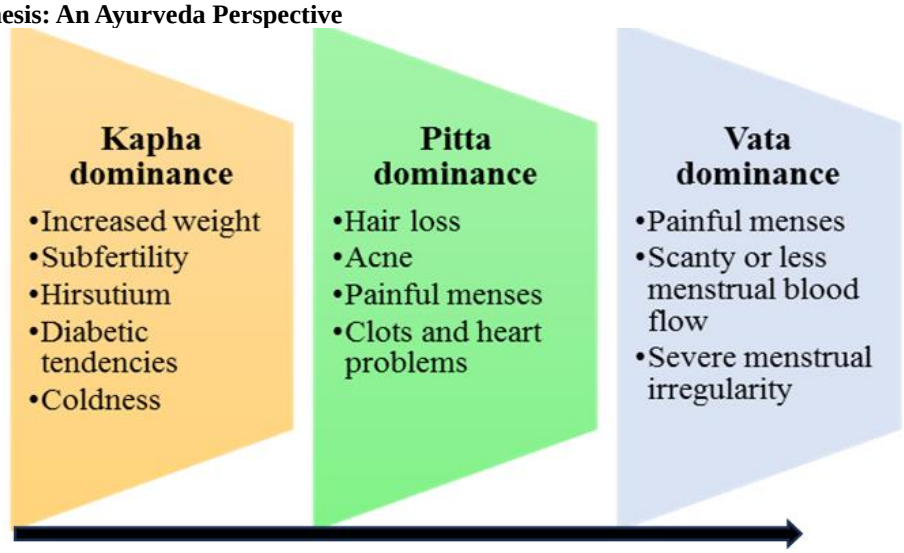

Figure 1: Dosha-Related PCOS Symptoms.

Ayurveda classifies PCOS as a Kapha disorder and connects the exhibiting clinical features of the disorder with the dominant dosha in control for the disorder. PCOS results in female hormone imbalance and an increase in Kapha dosha causes multiple cysts in ovaries, obesity, hirsutism etc.[5,6]

According to Ayurveda, PCOS pathology is a pelvic cavity obstruction in the (Apana Kshetra) causing disorders in the Vata flow. This in turn leads to a buildup of Kapha and Pitta. The PCOS symptoms can also be designated with the same contribution of Dosha, Dhatu and Upadhatu Kapha dominance, Pitta dominance and Vata dominance (Figure 1). Kapha-reducing, insulin enhancing and hormone-rebalancing drugs help to relieve symptoms of PCOS. In essence, the Ayurvedic approach is to clear the pelvis obstruction, normalize metabolism and assist in cleansing and regulating the menstrual system (Arthava Dhatu).[5]

Clinical Role of Herbal Extracts in PCOS Management: An Ayurvedic Approach

The multifaceted clinical features of PCOS make its management very challenging. Notably, Ayurveda is encompassed with a wide range of phytosterols to correct the hormone imbalance, strengthen ovarian functions and normalize the menstrual cycle.[7] Herbal extracts are plant phytosterols with immense potential for synergistic interactions in managing PCOS and combating events that contribute to cyst development in PCOS (Table 1).

Table 1: Clinical role of phytosterols in PCOS management.

Herbal extracts (Phytosterols)	Clinical role in PCOS management
Nastapushpantaka rasa[8]	Corrects secretion of luteinizing hormone and follicular secreting hormone. Marked change in PCO morphology in the ovary.
Rajahapravartini Vati[9]	Effective on overall symptoms of dysmenorrhea including pain and menstrual pattern. Allows painless flow of Artava.
Kuberaksha vati[10]	Acts to normalize vata dosha specially the apana vayu. Helps in the regularization of the menstrual cycle. Due to this, PCO-like picture in both ovaries may be normalized after treatment.
Kachnar gugal[11]	Helps to remove blockage in the channels and works on polycystic ovaries due to kaphanasak and granthi har properties.
Gandharv Haritaki[12]	Helps to pacify Apana vayu.
Shatavari[8]	Corrects Artava kshaya and causes normalcy in the menstrual cycle.
Shatpuspha[8]	Clinically proven as folliculogenesis and aids in ovulation.

	Regularises menstrual cycle, corrects secretion of luteinising hormone and follicular stimulating hormone. Effective in PCOS management as it initiates decreasing body weight and normalises the menstrual cycle.
Punarnava[13]	Helps in urinary tract infection, heavy menstruation, fibroids, and clotting in women and manage obesity.
Krishna Jeerak[5]	Corrects the hormonal influence. Helps to destroy cysts on ovaries and stimulate follicular maturity.
PROCESSED IN	
Darvyadi kwath[14]	Clinically proven anti-inflammatory, analgesic, antispasmodic and hemostatic action. Regulates the normal function of Apanavata.
Dashmool kwath[12]	Helps to normalize the vitiated Apana vayu and thus regularize menses.
Varuna Kashay[15]	Reduces the size arrest further growth of cysts in the ovaries.

2. MATERIALS AND METHODS

Clinical Evidence of Herbal Extracts in PCOS Management

A randomised controlled trial with a combination of Satapushpa Shatavari powder (SSP) demonstrated a significant improvement in the regularization of the menstrual cycle in women with PCOS. Further in the same study, there were a higher number of women with PCOS who conceived after treatment with SSP. Numerous clinical trials are quoted throughout the literature showcasing the excellent results in terms of regularization of the menstrual cycle, reduction in symptoms like hirsutism and body weight of SSP in women with PCOS.[16-18] An unpublished clinical study assessed the efficacy and safety of Polypop herbal formulation in Indian women of reproductive age group. Polypop is an herbal formulation consisting of a combination of all herbal extracts mentioned in Table 1 for the management of PCOS. A total cohort of 153 women were prescribed Polypop herbal formulation primarily for menstrual regularization, infertility and complaints like acne, hirsutism, alopecia etc. Out of 153 women, 123 were Ultrasound (USG) diagnosed cases of PCOS. The baseline characteristics of the entire cohort are mentioned in Table 2. Two groups were defined based on menstrual cycles [group A comprising women with irregular menses (n = 101) and group B comprising women with regular menses (n = 52)]. The patients were administered 2 tablets of Polypop twice a day for 3 months (3 cycles). Table 3 details the results for the entire cohort.

Table 2: Baseline Patient Characteristics.

Parameters	Group A (Irregular)	Group B (Regular)
Cohort size	101	52
Demographics		
Age (Median)	26.23	25.92
Range	14 to 45	13 to 50
Married	76	33
Unmarried	25	19
Complaints		
Menses Irregularity	35	0
Primary Infertility	48	17
Secondary Infertility	18	8
Other complaints	0	27
Clinical evaluation		
Body weight	61.78 Kgs	57.87 Kgs
PCOD diagnosed with USG	77	45
Acne	43	15
Hirsutism	66	35
Alopecia	63	31

3. RESULTS AND DISCUSSION

Table 3: Outcomes of Tab Polypop at the end of 3 months concerning various complaints.

	Before treatment (N)	Successful outcome after treatment (n)	Outcomes (%)
USG-diagnosed PCOS (n=123)	Infertility complaints(69)	Pregnancy achieved in 34 patients	49.2%
Total cohort	Infertility (92)	Pregnancy achieved in 32 patients	34.9%
Menstrual cycle	Irregular menses (101)	Regularization of menses in 53 patients	52.7%
Other complaints	Acne (58)	Reduction in acne in 42 patients	72.4%
	Hirsutism (101)	Reduction in hirsutism in 65 patients	64.4%
	Alopecia (94)	Reduction in alopecia patch in 77 patients	81.9%

In USG-diagnosed PCOS women, pregnancy was achieved in 49.2% of patients while menstrual regularization was seen in 52.4%. patients (Fig 2). The analyses of each group and the results are depicted in Tables 4 and 5. The study outcomes showed a 74% improvement in menses complaints, 27% improvement in primary infertility and 50% improvement in secondary infertility in group A patients (Table 4). In group B, 35% of patients showed improvement in primary infertility, 37% of patients showed improvement in secondary infertility and 81.9% of patients showed improvement in UTI and dysmenorrhea (Table 5).

Table 4: Clinical outcomes of Polypop in women with irregular menses.

	No of Patients	No of positive Outcomes
Menses complaints	35	26
Primary Infertility	48	13
Secondary Infertility	18	9

Table 5: Clinical outcomes of Tab Polypop in women with regular menses.

	No of Patients	No of positive Outcomes
Primary Infertility	17	6
Secondary Infertility	8	3
Other complaints (UTI, Dysmenorrhea)	27	22

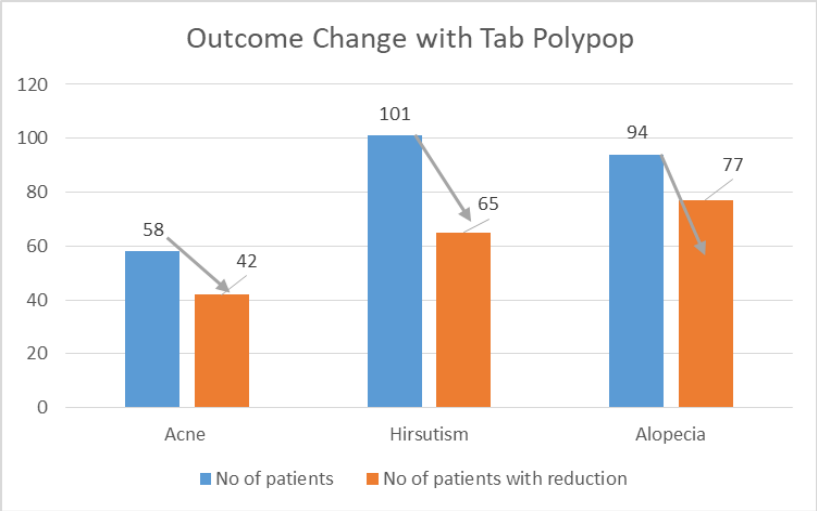

Figure 2: Clinical outcomes of Polypop in both the groups

DISCUSSION

Polycystic Ovarian Syndrome is a multifaceted and complex reproductive disorder consisting of clinical or biochemical hyperandrogenism with ovulatory dysfunction ruling out secondary causes for the same. It is reported to be the most common metabolic and

endocrine disorder in reproductive-age women. The reproductive issues with PCOS are varied and diverse starting with anovulatory cycles leading to subfertility. Post conception, women with PCOS are at increased risk of early pregnancy loss (EPL).[19]

Effective tackling of metabolic and reproductive issues relating to pregnancy forms the cornerstone of the management of PCOS. Clomiphene citrate (CC) and metformin are two effective drugs used to induce ovulation to achieve pregnancy in patients with PCOS. Research suggests that CC can trigger ovulation in patients with PCOS, resulting in an increase of up to 40% in pregnancies after three cycles of medication. Similarly, clinical pregnancy was reported in 45% of women with PCOS on metformin therapy.[20] Notably, Tab Polypop, a herbal formulation could also achieve similar pregnancy rates (49.2% of women with PCOS and infertility issues) to that of CC and metformin therapy.

4. CONCLUSION

Polycystic Ovarian Syndrome is a diverse reproductive disorder characterized by a variety of clinical manifestations and a major cause of infertility. Modern medications have shown excellent management for the treatment of PCOS, but substantial adverse drug reactions make their value for long-term cures questionable. Thus, the holistic approach of Ayurveda has emerged as the best alternative therapy with the supportive synergism of various herbal components. A combination of herbal drugs (Shatavari and Shatpushpi) leads to a reduction of ovarian volume correlating with the degree of reduction of PCOS, and related signs. There is prompt growth and development of ovarian follicles and normalization of the physiology of the ovary. This supportive synergism of various herbal extracts has been clinically proven not only for safely treating the symptoms but also has a strong ability to break down the pathogenesis of PCOS.

ACKNOWLEDGEMENTS

The study data was analyzed and evaluated at Insignia Communications, Mumbai and manuscript writing by Dr. Shwetal Sanghvi, Sr. Medical Director at Insignia Communications, Mumbai, Maharashtra, India.

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