

REVIEW ARTICLE

Traditional Rhythms for Modern Health: Seed Cycling in the Management of Women's Wellness

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ABSTRACT

The present review assesses Seed Cycling as traditional Bhartiya practice of dietary intervention for better management of menstrual irregularity and dysmenorrhea in the contemporary scenario with hormonal imbalances (Estrogen, Progesterone, LH and FSH) increasing because of environmental lifestyle stressors, this research proposes a rhythmic nutritional management strategy. During the follicular period, it is recommended that consume pumpkin seeds and flax seeds. Similarly, during the luteal stage, it is recommended that include sunflower and sesame seeds into diet to help maintain hormonal balance. These seeds contain lignan, phytoestrogen, antioxidants, omega-3, protein, carbs, and a variety of vital minerals such as calcium, manganese, iron, zinc, and copper which reduce inflammation and support hormone production. This methodical seed rotation acts as a non-invasive link between traditional nutritional knowledge and modern reproductive health care. The review concludes that seed cycling represents a feasible, review-based management strategy for restoring hormonal homeostasis and optimizing holistic wellness among women.

KEYWORDS

- Menstrual cycle • Modern health care • Seed cycling • Hormonal Imbalance
- Traditional therapy

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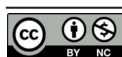
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INTRODUCTION

Menstruation: The female reproductive system, in contrast to the male reproductive system undergoes regular cyclical changes called the menstrual cycle, which is a periodical preparation of the body to ovulation and potential pregnancy. The most apparent aspect of the female reproductive system is menstruation or the cyclic vaginal bleeding. It is coupled with a series of well-coordinated hormone changes. Menarche, or the beginning of menstruation, tends to take place at puberty with an average age of 12.4 years.¹ Adolescence is an aspect of maturity. It is a transitional phase of physical and psychological growth between childhood, and adulthood. The stage of adolescence is between 13 and 21 years. Girls need to anticipate the onset of

their menstrual cycle at about 12 years old. Onset of menstruation is regarded to be a landmark in growth and development of an adolescent girl.² Onset age and the menstrual cycles pattern differ on varying factors. This is because after menarche most adolescent girls experience issues of irregular menstruation, excessive bleeding and dysmenorrhea among many others.³ Hormonal changes influence many other processes in the body which are not related to reproduction like the regulation of nutrition. Although the reverse effect of progesterone when the levels of estrogen are high, it is believed that estrogen reduces the appetite. All the environmental, psychological, physiological, social, and cultural factors interact in a complex manner to influence the intake of diet.⁴

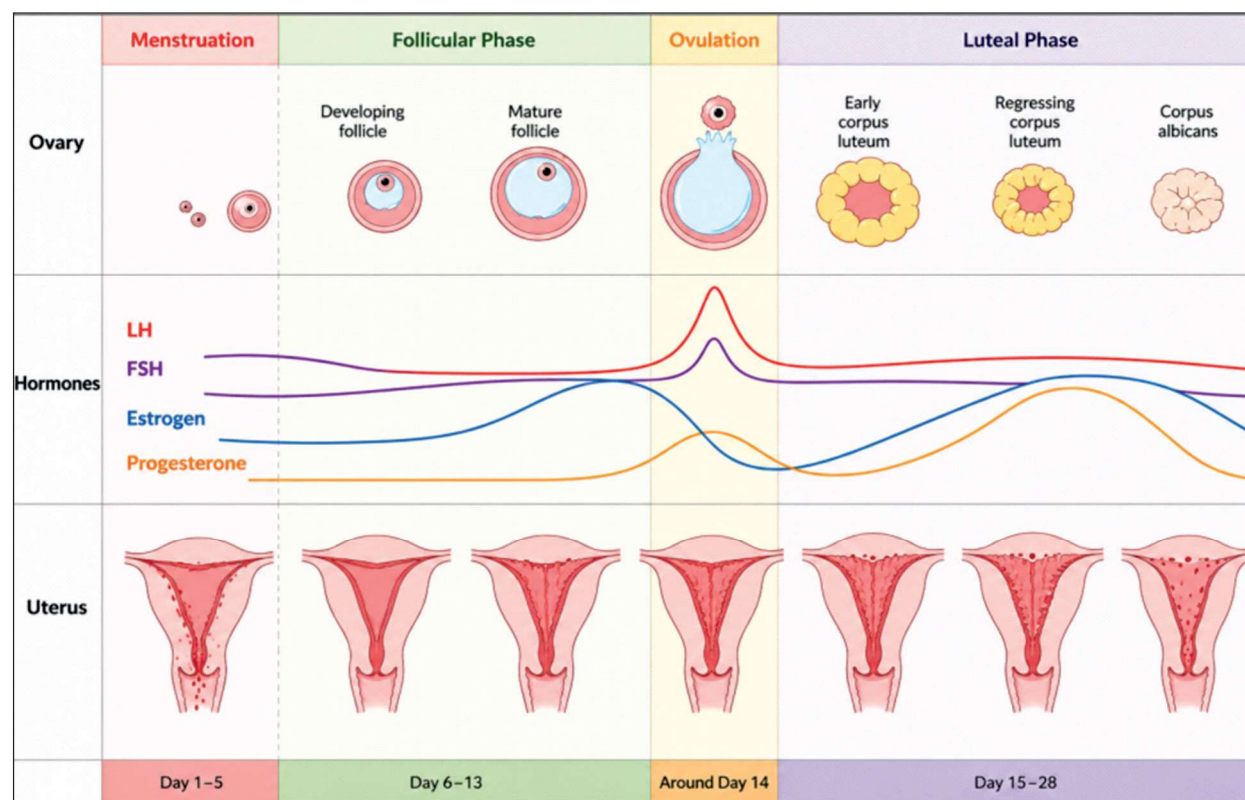


Figure 1: Different Phases of Menstrual Cycle

The lifestyle factors affecting the varying patterns in menstrual cycles have, however, not been studied extensively in India. Thus, we examined the shifts in menarche age amongst teenagers in India. The prevalence of common menstrual disorders and the general menstrual patterns were also evaluated. Traditionally, on average the age at menarche has been found to be dropping by four months

every decade.⁵ Menstrual cycle is maintained through the work of the hypothalamus, pituitary, ovaries and endometrium. Pulsatile release of gonadotrophin-releasing hormone by hypothalamus prompts the production of the follicle-stimulating hormone (FSH) and luteinizing hormone (LH) by the anterior pituitary that leads to the development of ovarian follicles and synthesis of the

ovarian steroids. The follicle that is recruited undergoes preparation towards ovulation during follicular phase. The luteal phase starts after the LH surge and ovulation. The proliferative and secretory phases of the endometrium correspond to follicular and luteal phases and develops in the proliferative phase and is sustained in the secretory phase to be ready to implanting the fertilized embryo. Menses These phases are the early follicular/proliferative phase and a shedding of the endometrium.⁶

Follicular phase events:

The follicular phase is stimulated by FSH, which in turn makes a group of primordial follicles grow into Graafian follicles. It also stimulates the ovary to secrete 17-B estradiol and inhibiting B. Studies indicate that most of

the estrogen gets produced by the dominant follicle. As well, FSH induces the mature follicle to begin LH receptor formation preparing it to ovulate.⁷

OVULATION

Ovulation takes place on day 14 of a typical 28-day cycle, 14 days prior to the onset of menstruation. Estradiol increases both during and after the follicular stage.⁷

The Luteal and Secretory Phases:

The next phase of menstrual cycle is luteal and secretory, which are both indicative of the role of corpus luteum in ovary as well as secretory role of mature endometrium in the uterus, which begins after ovulation and ends when menstruation is initiated. This phase is predominated by progesterone.⁷

Phases	Days of menstrual cycle	Seeds
Follicular Phase	Day 1-14	Flaxseeds and Pumpkin Seeds
Luteal Phase	Day 15-28	Sunflower and sesame seeds

The monthly menstrual cycle is one of the many physiological cycles, which is essential to life. The heartbeat can be taken as a bright illustration of rhythms as has the daily cycle of sleep and wake. Less obvious are the physiological processes in the body, including the rhythmicity of the sex hormones which govern the menstrual cycle and other that govern growth and metabolism. Nevertheless, the chronic conditions of women, such as diabetes, inflammatory bowel disease, bloating, sleeping badly, and as well as premenstrual syndrome PMS or PMDD aggravate during this period. Moreover, the luteal phase has a heightened use of nitrogen and a drop in amino acid levels. Women with PMS and PMDD are known to have increased appetite, cravings and overconsumption of calories that is attributed to cyclic changes in serotonin during this period. These biochemical changes suggest that the change in sex hormones in different phases can influence nutrient use. It might be contended that the luteal stage of menstrual cycle is a physiologically stressed state that enhances individual differences in the response of people to environmental deformities such as food intake. These dissimilar reactions can be anticipated to cause future chronic health issues.⁸

Seed Cycling

Seed Cycling is a technique that helps you to support the two parts of your menstrual cycle, your follicular phase and your luteal phase by affecting the important hormones. Other major hormones that control the menstrual cycle are progesterone and estrogen. Behind seed cycling is the notion that particular seeds can help with your follicular phase and others benefit with the luteal phase. The rotation of these seeds during the menstrual cycle can be beneficial to aid hormone activity.⁹ These seeds are loaded with various healthy nutrients, which are lignan, phytoestrogen, antioxidants, lipids, especially omega-3 and omega-6, proteins, carbohydrates, and fiber, as well as, essential minerals calcium, sodium, manganese, iron, zinc, and copper. These seeds also contain lignan, phytoestrogen, antioxidants, omega-3 and omega-6 fatty acids, protein and carbohydrates among other beneficial nutrients. Some of the essential minerals include calcium, sodium, manganese, iron, zinc, copper and fiber.¹⁰

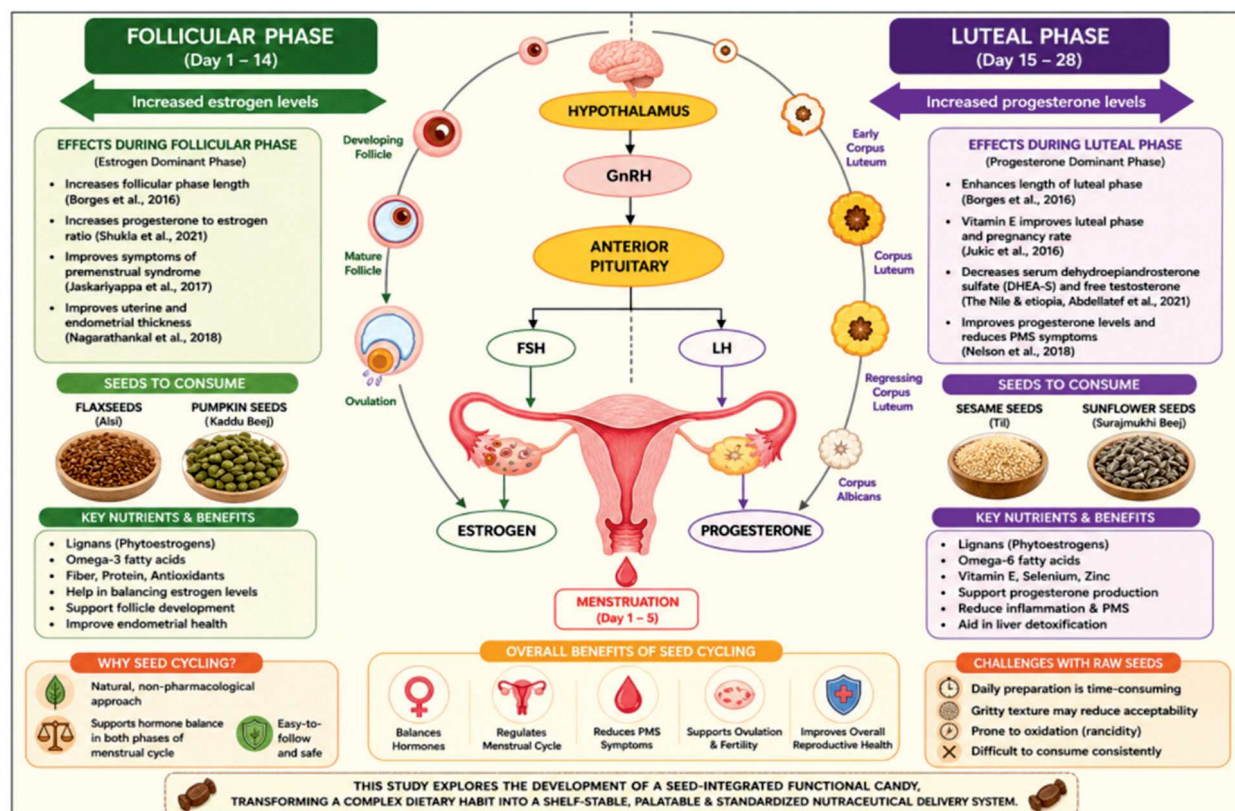


Figure 2: Role of Seed Cycling diet in menstrual health

FLAXSEED

Flax is an annual herb cultivated in both tropical and temperate climates. *Linum usitatissimum* (flaxseed) is a valuable functional ingredient with several biological properties. It is one of the richest sources of lignans and phytoestrogens. Flaxseed is commonly used as a food supplement due to its numerous health benefits.¹² As such, when on a seed cycling plan, it is recommended that flaxseed be part of the diet during the first fourteen days of the menstrual cycle.¹³

Role of flaxseed

It prolongs the luteal phase, stimulates ovulation, and reduces the symptoms of premenstrual syndrome (PMS) typical behaviour such as cramps, breast discomfort (mastalgia) during the menstrual cycle, and irregular menstrual cycles because of its special lignin content.¹⁴ In the past 10 years (2015-2025), ten studies were chosen for this research to examine the therapeutic effects of seed cycling and each seed for PCOS and PMS. Most interventions involved the use of flax, pumpkin, sunflower and sesame seeds in either a single or a seed cycling protocol and lasted

for 2-6 months. The outcomes of menstrual regularity, hormonal balance, anthropometric indices, metabolic parameters and symptom relief were reviewed in the research. It is stated that flax seed and its products are anti-inflammatory. ALA, which contains plenty of flax seeds, has been proved to cause a reduction of interleukin-1 and tumor necrosis factor and is useful in reducing inflammation.¹⁵

Pumpkin seed

Besides such minerals as zinc, magnesium, copper, manganese, iron, and phosphorus, pumpkin seeds are also a good source of phytoestrogens.¹⁶ The effect of pumpkin seeds on the sperm quality, quantity, motility, menstrual regularity, ovulation, hormonal balance and reproductive health outcomes, both in women and men has been encouragingly observed. How pumpkin seeds reveal that they are abundant sources of vital nutrients, anti-oxidants and bioactive compounds.¹⁷

Role of Pumpkin: Pumpkin seeds are rich in zinc that is required to grow the corpus luteum in the uterus. This is important as it involves progesterone production and uterine

thickening that prepares the uterus to potential implantation.¹⁸ The effects of phytoestrogens and phytoestrogens diets imply that the effects of this group may be beneficial in the prevention and treatment phytoestrogens of vasomotor menopausal symptoms (sweats, hot. Unluckily, little conclusive evidence of such outcomes has been so far which is why most clinical trials resulted in no or negligible outcome, thus requiring further in-depth scientific investigations.¹⁹ As per the research, 15 percent of the Recommended Dietary Allowance (RDA) should be put in every ounce. There are case studies which have associated Zinc with reduced menstrual cramps. Research shows that surplus in the number of prostaglandins leads to cramps and zinc is thought to slow down the metabolic rate of prostaglandins.

Sunflower Seed

Sunflower seeds contain high levels of calcium, iron, magnesium, phosphorus, potassium, sodium, zinc, copper, manganese, selenium and vitamin E.

Role of Sunflower seed – Another important nutrient found in sunflower seeds, vitamin E, has been shown in some human studies to help cut down PMS. Compared the effects of vitamin E, vitamin B6, calcium and omega 3 in the treatment of premenstrual syndrome in a 2013 study. They determined that there were statistically significant differences among the groups in both physical and mental symptoms. In one study, women who were unable to conceive were given vitamin E, and it was seen that the level of the hormone promoting early pregnancy, progesterone, was higher in these women. Based on a review, the seeds of sunflower contain essential fatty acids which our body requires. Vitamin E is an antioxidant important to encourage fertility. In addition, they possess particular nutrients and antioxidants which help the PCOS. A study on vitamin E and its similarities to the hormones that affect the menstrual cycle, estrogen and progesterone, was published in 1972. It should go without saying that sesame seeds are recommended as part of the seed cycling diet because they are a good source of omega-3, omega-6, and vitamin E.

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Role of Sesame seed

The nutrients in the sesame seeds are believed to be beneficial to the production of hormones and the function of the follicles, like sunflower and flax seeds. Like pumpkin seeds, it is thought that the higher zinc concentration will lead to a better development of the uterine corpus luteum, the source of the hormone progesterone, which promotes the thickening of the uterus in preparation for implantation. Sesame seeds, due to their high zinc content, act as hormone regulators and enhancers, promoting ovulation in women and thus relieving menstrual symptoms. According to some studies, Sesame Seed consumption did not increase estrogen, but it did reduce a type of androgen and increase sex hormone binding globulin. In theory, this could lower some women's health risks during menopause, such as cardiovascular disease and cancer. One small study of postmenopausal women who ate sesame seed powder discovered that eating the seeds increased the amount of one type of vitamin E circulating throughout the body.

Role of Sesame Seeds in Hormonal and Reproductive Health

Aspect	Description
Nutrient Composition	Rich in zinc, lignans, and vitamin E, which support hormonal balance and reproductive health
Hormone Production	Enhances hormone production and supports ovarian follicle function
Corpus Luteum Support	High zinc content aids in the development of the uterine corpus luteum, which produces progesterone
Progesterone Function	Progesterone helps in thickening the uterine lining for possible implantation
Ovulation Support	Acts as a hormone regulator, promoting ovulation in women
Menstrual Health	Helps in relieving menstrual symptoms due to hormonal regulation
Effect on Estrogen	Does not significantly increase estrogen levels
Effect on Androgens	Reduces certain androgens (male hormones)
Sex Hormone Binding Globulin (SHBG)	Increases SHBG levels, which helps regulate hormone availability
Menopausal Health Benefits	May reduce risks of cardiovascular disease and certain cancers in menopausal women
Vitamin E Activity	Increases circulating levels of vitamin E in the body (as observed in postmenopausal women consuming sesame seed powder)

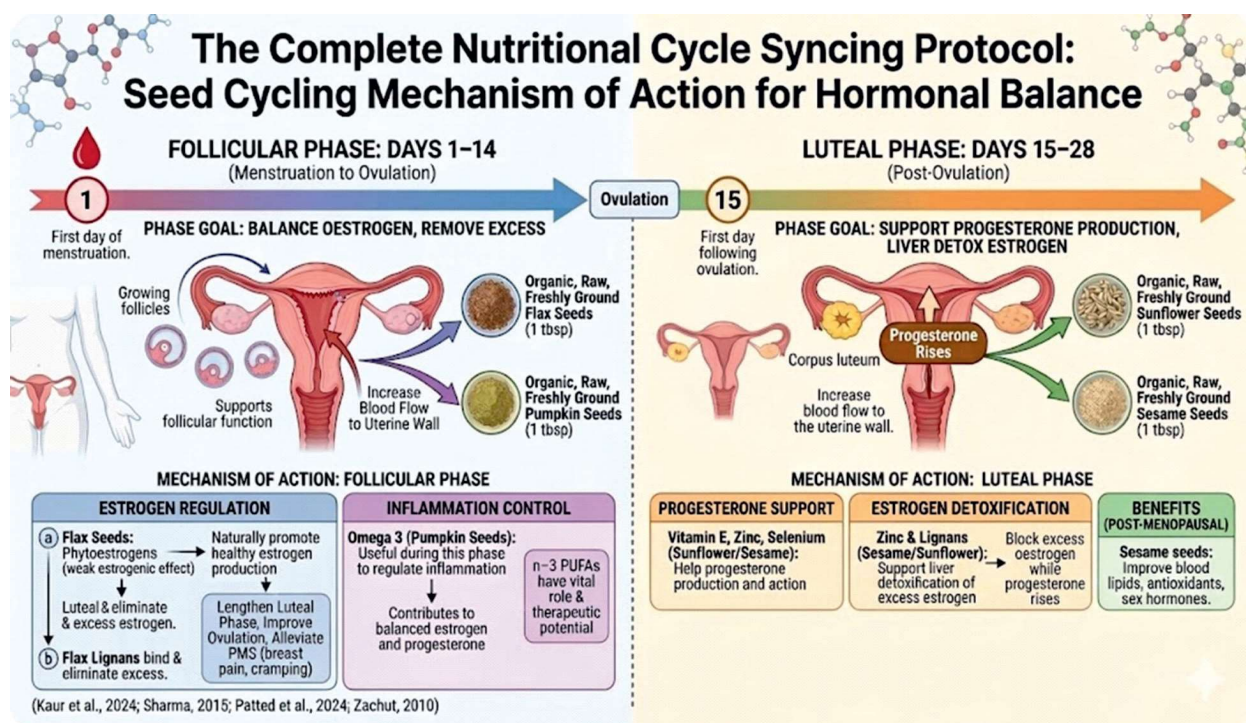
Mechanism of Action

Pumpkin seeds have anti-inflammatory, anti-hyperlipidemic, anti-inflammatory, and insulin-sensitizing properties. The most abundant source of lignan in mammals is flaxseed, which also possesses estrogenic agonist or antagonist qualities. Zinc and omega-3 fatty acids, which are abundant in flax and pumpkin seeds, also aid in the production of progesterone hormone for luteal and control the follicular phase. These seeds support follicular function and increase blood flow to the uterine wall. Progesterone synthesis is aided by consuming sesame and sunflower seeds during the luteal phase of the ovarian cycle. They contain zinc and lignin, which aid in preventing the overproduction of estrogen. Furthermore, sunflower seeds are rich in vitamin E and selenium, which improve progesterone synthesis and action.²⁰

In Follicular Phase: Day 1–14 is the first day of menstruation. This is when you want to consume. One tablespoon of organic, raw, freshly ground flax seeds. 1 tablespoon organic, raw, and freshly ground pumpkin seeds. The goal of this phase is to balance oestrogen levels and efficiently remove excess. Pumpkin and

flax seeds are consumed to help balance our oestrogen levels and prevent excess oestrogen. Flax seeds are phytoestrogens, or plant-based compounds that have a weak oestrogenic effect in the body and naturally promote healthy oestrogen production. They contain lignans, which can help to bind and eliminate excess oestrogen.

According to research, flax seeds can help to lengthen the luteal phase, improve ovulation, and alleviate common PMS symptoms like breast pain and cramping.²¹ Omega 3, found in pumpkin seeds, can also be useful during this phase to regulate inflammation, which contributes to balanced oestrogen and progesterone. Omega-3 polyunsaturated fatty acids demonstrate their vital role in a regular diet as well as their amazing. Therapeutic potential against a range of diseases. By elucidating their mechanisms of action and highlighting their applicability in formulation and development, this study contributes to the growing body of evidence that supports the use of n-3 PUFAs in preventative and therapeutic approaches intended to improve human health and well-being.²²



In Luteal Phase – Day 15–28 Day 15 is the first day following ovulation. This is when you want to consume: 1 tablespoon organic, raw,

freshly ground sunflower seeds 1 tablespoon organic, raw, freshly ground sesame seeds During the second phase of your cycle (luteal

phase), sesame seeds and sunflower seeds are consumed. They are rich sources of vitamin E, zinc, and selenium, which help progesterone production, and supports the liver detoxify excess oestrogen. They also contain lignans that help block excess oestrogen while progesterone rises. Sesame seeds are beneficial to post-menopausal women by improving blood lipids, antioxidants, and sex hormones.²³

Therapeutic Role of Seed cycling

A traditional method for preserving hormonal balance in females of reproductive age is the seed cycling approach. Flax, pumpkin, sunflower, and sesame seeds are rich in antioxidants, omega 3 and omega 6 fatty acids, protein, carbs, fiber, zinc, potassium, phosphorus, and magnesium. They also contain high amounts of other trace minerals, such as calcium, sodium, manganese, iron, zinc, and copper, which support normal progesterone levels in females. Progesterone levels in females are accurate, and the fluctuating levels of FSH and LH, which signify PCOS, are also corrected. Additionally, seed cycling raises blood levels of prolactin and TSH, which are linked to weight gain in female PCOS patients.²⁴

Polycystic Ovarian Disease (PCOD) or Polycystic Ovary Syndrome: The most prevalent and underdiagnosed endocrine disorders affecting women of reproductive age are polycystic ovarian syndrome (PCOS) and polycystic ovarian disease (PCOD). This condition affects Indian women, according to the current situation. The cysts that form in women's ovaries are the source of the syndrome's name, but this is not a common symptom. PCOD is essentially a medical condition where a woman's ovary produces either immature or partially mature eggs. PCOS is a more serious medical condition than PCOD because it causes women's ovaries to produce a lot of male hormones, increasing the risk of ovarian cancer or excessive cyst formation.²⁵ Between 8% and 13% of women of reproductive age suffer from PCOS, one of the most prevalent endocrine disorders. PCOS is a prevalent and complex condition that presents significant difficulties for both diagnosis and treatment.²⁶ Teenage girls and young women are increasingly affected by polycystic ovarian syndrome (PCOS), which throws off hormonal balance and results in irregular menstrual cycles, acne, and excessive hair growth. These

problems frequently continue into adulthood and have an effect on fertility. A comprehensive strategy that addresses both the physical and emotional aspects of PCOS is necessary for effective management. Understanding the interdependence of girls' health and the effects of PCOS highlights the necessity of providing them with individualized care and comprehensive support throughout their health journeys.

The WHO estimates that in 2012, PCOS affected over 116 million women worldwide, or about 3.4% of all women. The rising incidence of PCOS is associated with medication, lifestyle modifications, and occasionally surgical procedures, underscoring the necessity for policymakers and healthcare professionals to pay attention in order to improve quality of life.²⁷

Potential Benefits in Women's Reproductive Health- Interventions that have been promising in the reproductive health of women are the seed-based interventions (sesame and flaxseed supplementation). A study by Mohammadian *et al.* (2015) showed that sesame seed supplementation significantly reduced the occurrence of dysmenorrhea and decreased medication usage in women with premenstrual syndrome PMS and, notably, no adverse effects have been observed across the studies of the topic, though the safety of the supplement use is not yet well-investigated.²⁸

CONCLUSION

Seed cycling has gaining popularity and acceptance among some consumers as a natural method to regulate hormones and address menstrual cycle-related issues. Seed cycling is a dietary practice that involves consuming specific seeds during different phases of the menstrual cycle to support hormone balance.²⁹ Ten studies were selected for this research, between 2015 and 2025, to explore the therapeutic efficacy of seed cycling and each seed on the treatment of PCOS and PMS. The interventions usually included use of flax, pumpkin, sunflower, and sesame seeds as a single seed or as a seed cycling protocol, for 2-6 months. The research was reviewed for the outcomes of menstrual regularity, hormonal balance, anthropometric indices, metabolic parameters and symptom relief. While there is potential for seed cycling as a natural dietary strategy for hormonal balance in PCOS,

current evidence is insufficient to establish seed cycling as an independent treatment.³⁰ There is a need to focus on improving health education on puberty and menstruation that may further improve the treatment-seeking for menstrual problems among adolescent girls.³¹ The beneficial effects of seed cycling may result from decreased levels of insulin, oestrogen, testosterone, and LH, which promote follicular maturation and have anti-inflammatory properties that reduce ovarian volume. Given the improvement in menstrual cycle and ovarian function, flax seeds seem to be a potential alternative source for PCOS medication development in the future.

Future research should focus on the biological mechanisms through which seed cycling influences hormonal and metabolic parameters in PCOS. Comparing seed cycling with other dietary interventions can also reveal the most effective ways to manage PCOS symptoms. By assessing the participants' psychological well-being and quality of life, a more thorough understanding of how dietary interventions affect PCOS will be feasible. It is crucial to guarantee diverse participant demographics in order to examine the effects of seed cycling across different age and ethnic groups. Finally, evaluating seed cycling's cost-effectiveness as a PCOS treatment option will have an impact on medical practice and policy.

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