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Contraception in Perimenopause: An Evidence-based Review

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Review Article

Abstract

Introduction: The perimenopause is a complicated stage in a woman's life with medical implications such as progressive hormonal changes, fluctuating ovarian activity, and the gradual cessation of menstruation. Although the fertility range declines significantly during the perimenopausal period, as a result of possible ovulation until the final menstrual period, women may lead to unintended pregnancies. Such pregnancies can be categorised as high risk, as they may be associated with hypertensive disorders, gestational diabetes, miscarriage, and chromosomal abnormalities such as Down syndrome.

Methods: This narrative review was conducted through a desk-based analysis of published and grey literature related to contraception in perimenopause. Sources included peer-reviewed journal articles, policy documents, reports, and relevant legal and institutional texts. The review synthesised evidence to identify key themes, gaps, and implications for sexual and reproductive health in the Sri Lankan and South Asian context.

Results: Perimenopausal women often experience a range of symptoms such as vasomotor disturbances, abnormal uterine bleeding, mood changes, sleep disruptions, and alterations in sexual function that may considerably affect their quality of life. Hormonal contraception during this period offers a unique dual benefit: effective pregnancy prevention and therapeutic management of many perimenopausal symptoms. This review provides a broad and complete discussion of the use of contraception during the perimenopausal period. It further examines the physiological background of perimenopause, the rationale for contraception, and the vast array of available methods. Each method used in this particular review is evaluated based on its effectiveness, safety, suitability for symptom relief, and potential non-contraceptive health benefits, such as cancer risk reduction and bone density preservation. Coexisting health conditions, transition to menopause hormone therapy, and the unique needs of women with premature ovarian insufficiency are addressed as special considerations.

Conclusion: Contraception in perimenopause is vital to prevent unintended pregnancies and offers added health benefits. Individualised method selection and effective counselling are key to ensuring safety, autonomy, and improved quality of life for women during this transition.

Key Words: Perimenopause, Contraception, Unintended Pregnancy, Hormonal Therapy, Sexual and Reproductive Health

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Introduction

Menopause is the permanent cessation of monthly menstrual cycles due to physiological insufficiency of ovarian follicles, and it represents a major milestone in the reproductive life of women. The diagnosis of the menopause is retrospective, after 12 months of amenorrhoea following the last menstrual period. According to currently available data, the mean age of menopause is considered to be 50.4 years [1]. The timing of menopause can vary significantly among different individuals. Early menopause that occurs during the age of 40 to 45 is considered as *Premature Menopause*, while if it occurs before 40 years is called *Premature Ovarian Insufficiency (POI)* [2].

Menopause is not an instantaneous event; rather, the physiological events occur over the years known as *perimenopause* or *menopausal transition*. This period is characterised by fluctuations of body hormone levels; estrogens and progestins; disrupting regular ovarian functions. These hormonal fluctuations affect menstrual patterns and contribute to a wide range of symptoms. Some of those symptoms can begin years before the final menstrual period. Many women experience vasomotor symptoms such as hot flashes and night sweats, psychological disturbances like mood swings and anxiety, sleep difficulties, and genitourinary changes including vaginal dryness and discomfort during intercourse [3]. The clinical management must be individualised according to the variability in symptom type and intensity. As ovulation can occur occasionally during this transition, unplanned pregnancies can still happen despite the reduction in fertility. This creates a dual challenge of preventing pregnancies that may carry significant risks due to maternal age and alleviating the distressing symptoms that can impair daily functioning.

Hormonal contraception offers a unique advantage in this period. It can regulate cycles, reduce heavy bleeding, control vasomotor symptoms, and provide long-term health benefits such as lowering the risk of ovarian and endometrial cancers beyond reproductive conception [4]. However, the decision of using contraception during perimenopause must balance these benefits against potential risks, including cardiovascular events and hormone-sensitive cancers.

This review explores these considerations in depth, offering a structured overview of the physiological changes of perimenopause, the rationale for contraceptive use, available options, and strategies for individualised care.

Methods

This review is based on current clinical evidence and expert consensus regarding contraceptive use in the menopausal transition. The analysis reflects an integration of high-quality data from reproductive endocrinology, gynaecology, and public health research.

The scope of this analysis includes:

1. **Physiological context** – understanding the hormonal and reproductive changes that occur in perimenopause.
2. **Clinical rationale** – identifying why contraception remains relevant and often necessary during this stage.
3. **Contraceptive methods** – detailing the full spectrum of hormonal and non-hormonal options, including their mechanisms, advantages, limitations, and potential risks.
4. **Special populations and considerations** – addressing scenarios such as comorbidities, high cardiovascular risk, migraine history, and premature ovarian insufficiency.

5. **Transition planning** – outlining strategies for safely discontinuing contraception and moving to menopause hormone therapy when appropriate.

The intention is to summarise available evidence and to present it in a way that supports individualised patient counselling, recognising that perimenopausal women present with diverse reproductive goals, symptom burdens, and health profiles.

Rationale for Perimenopausal Contraception

Fertility naturally diminishes with age, but it does not end abruptly at the onset of perimenopause. This stage requires examining the interplay between reproductive biology, maternal health risks, and social trends, while understanding why contraception is used.

Possible Ovulation during Perimenopause

From the mid-30s onwards, the number of ovarian follicles decreases sharply, and egg quality declines due to accumulated chromosomal changes [5]. Despite these changes, ovulatory cycles often persist, albeit irregularly, well into the 40s. In early perimenopause, ovulation may still occur in 60-80% of cycles; in late perimenopause, it may drop to around 20–40%, but it is not absent [6].

Unpredictability of ovulation is an inevitable challenge during this period. Even though women may go several months without menstruation, unexpected ovulation can occur. Fertility awareness-based methods, which rely on predicting the fertile window, become unreliable in the face of such irregularity. This unpredictability explains why unplanned pregnancies still occur in women in their mid-to-late 40s.

Maternal Risks Associated with Elderly Pregnancy

Pregnancy during perimenopause carries significant medical risks [7].

As maternal age increases:

- **Miscarriage rates** rise sharply, often due to chromosomal abnormalities in the oocytes [7].
- **Hypertensive disorders** such as preeclampsia and gestational hypertension become more common [7].
- **Gestational diabetes** risk increases due to age-related insulin resistance [7].
- **Thromboembolic events** are more likely, particularly postpartum [7].
- **Operative deliveries** such as caesarean sections are more frequent due to labour complications.

Advanced maternal age is associated with higher rates of growth restriction, preterm birth, and chromosomal disorders, including trisomy 21 for the fetus [8]. These risks contribute to higher perinatal morbidity and mortality compared with pregnancies in younger women. In addition, recovery from childbirth, especially after complicated deliveries, tends to be slower in older mothers, impacting both physical and emotional health [9].

Risk Reduction and Contraception

In this context, contraception is a preventive health measure. Preventing unintended pregnancies in perimenopausal women can reduce the incidence of high-risk obstetric outcomes and protect long-term health.

Certain contraceptives address perimenopausal symptoms directly. Combined hormonal contraceptives (CHCs) can smooth out the hormonal fluctuations that contribute to

vasomotor symptoms, menstrual migraines, and abnormal bleeding [10]. Meanwhile, progestin-only methods can help to manage heavy menstrual bleeding even in women who cannot use estrogen. As a result, midlife health management can combine pregnancy prevention with symptom control and contraception.

Perimenopausal Symptoms versus Quality of Life

The perimenopause represents a shift in reproductive capability and a time of considerable change in a woman's physical, emotional, and sexual health. The gradual decline in ovarian activity leads to fluctuating levels of estrogen and progesterone, which can affect multiple organ systems. While some women navigate this period with minimal discomfort, others experience symptoms that severely disrupt daily life. Recognising the full spectrum of these changes is essential in guiding contraceptive choice and overall management.

Perimenopausal Contraceptive Options

The choice of contraception is guided by more than pregnancy prevention for women in the menopausal transition. Many methods have the potential to relieve troublesome perimenopausal symptoms, reduce menstrual blood loss, and even offer long-term health benefits [11]. The ideal option must balance *effectiveness, safety, symptom management, and patient preference*, while considering any *comorbidities* or *contraindications.*

Combined Hormonal Contraceptives (CHCs)

CHCs are available in three main delivery forms, which are oral pills, transdermal patches, and vaginal rings that contain both an estrogen component and a progestin. Their contraceptive action relies on inhibition of ovulation, suppression of the mid-cycle luteinising hormone (LH) surge, and stabilisation of the endometrium to reduce breakthrough bleeding. They also increase the viscosity of cervical mucus, making it more difficult for sperm to penetrate.

Benefits of CHCs in Perimenopause

- **Cycle Regulation:** CHCs create predictable withdrawal bleeding, eliminating the uncertainty of irregular cycles [12].
- **Reduction of Bleeding:** Many CHC regimens reduce the volume and duration of menstrual bleeding, lowering the risk of anaemia [12].
- **Vasomotor Symptom Relief:** By stabilising estrogen levels, CHCs can lessen the frequency and intensity of hot flashes and night sweats [13].
- **Menstrual Migraine Control:** Continuous or extended-cycle CHC regimens may prevent the estrogen-withdrawal headaches that occur in some women [11].
- **Long-Term Cancer Protection:** CHCs reduce the lifetime risk of ovarian and endometrial cancer, with benefits that persist long after discontinuation. A comprehensive study involving over 250,000 women found that CHC use was associated with a 28% reduced risk of ovarian cancer, with this reduction remaining significant up to 35 years after discontinuation [14,15]. Similarly, a large cohort study reported that CHC use reduced the risk of endometrial cancer by 50%, with the protective effect lasting for at least 20 years after stopping use [14,15].

New CHC Preparations

Traditional CHCs use ethinylestradiol as the estrogen, but newer options replace it with natural estrogens such as *estradiol valerate, 17β-estradiol,* and *estetrol*. These are associated with less impact on liver protein synthesis and clotting factors, potentially reducing the risk of venous thromboembolism (VTE), a significant safety concern in older women [16]. Progestin selection also matters; levonorgestrel-containing CHCs are generally considered lower risk for VTE compared with some newer progestins.

Progestin-Only Contraceptives (POCs)

Progestin-only methods deliver hormones without estrogen, making them a safer alternative for women at higher risk of estrogen-related complications. Unlike combined hormonal contraceptives (CHCs), which contain estrogen and are associated with an increased risk of ischemic stroke in women with migraines with aura, POPs do not elevate this risk. They work primarily by thickening cervical mucus, altering the endometrial lining to inhibit implantation, and suppressing ovulation.

Oral Progestin-Only Pills (POPs)

POPs must be taken daily at the same time, without a hormone-free interval. They are well tolerated, suitable for smokers over 35, and can be started immediately postpartum. However, they may cause irregular spotting, which some women find bothersome. In perimenopause, POPs are a reasonable choice for those with cardiovascular risk factors or migraines with aura.

Injectable Progestins

Depot medroxyprogesterone acwetate (DMPA) provides protection for 12 weeks per injection. It is highly effective but can cause irregular bleeding in the first months and is linked to bone mineral density loss with long-term use. It is an important consideration for midlife women who are already at risk of osteoporosis. DMPA may also cause weight gain.

Subdermal Implants

Implants release low doses of progestin over 3-5 years, offering convenient, long-acting contraception. They are reversible and do not contain estrogen, making them suitable for women with cardiovascular concerns. However, irregular bleeding patterns are common and may persist throughout use.

Levonorgestrel-Releasing Intrauterine System (LNG-IUS)

The LNG-IUS is a particularly valuable option in perimenopause. It delivers progestin directly to the uterus, providing up to 5 years of contraception and a significant reduction in menstrual blood loss. Many women achieve amenorrhea, which can be especially welcome for those with heavy bleeding. Additionally, it can serve as the progestin component of menopause hormone therapy when systemic estrogen is prescribed.

Long-Acting Reversible Contraceptives (LARCs)

LARCs include the LNG-IUS, copper IUD, and subdermal implants. They require minimal maintenance after insertion, making them highly effective and cost-efficient over time.

Copper Intrauterine Device (Cu-IUD)

The Cu-IUD is hormone-free and effective for up to 10 years. It is a good option for women who cannot or prefer not to use hormonal methods. However, it may increase menstrual bleeding and cramping, making it less ideal for those already struggling with heavy periods in perimenopause.

Barrier Methods and Permanent Options

Barrier Methods

Male and female condoms, diaphragms, and cervical caps offer immediate, non-hormonal contraception but have lower efficacy than hormonal or LARC options. They are best suited for women with infrequent sexual activity or those avoiding hormones for medical or personal reasons. Condoms additionally provide protection against sexually transmitted infections (STIs), which is relevant as some women in midlife enter new sexual relationships.

Sterilisation

Tubal ligation offers permanent contraception, while vasectomy for the male partner is a simpler and safer alternative. Sterilisation may be appropriate for couples certain that they do not want future pregnancies. However, given the low fertility of late perimenopause, some clinicians encourage consideration of long-acting reversible methods instead of irreversible procedures.

Selection of a Method

Choosing a contraceptive method for a perimenopausal woman is a nuanced process. It is not simply about identifying the most effective method; it also requires aligning with the woman's medical profile, symptom burden, lifestyle, and long-term health goals.

Symptom Profile versus Contraception

A woman's dominant symptoms during perimenopause often influence her choice of contraception.

- **Heavy menstrual bleeding:** The LNG-IUS or combined hormonal contraceptives (CHCs) can markedly reduce menstrual blood loss and even induce amenorrhea [17].
- **Vasomotor symptoms:** CHCs may alleviate hot flashes and night sweats by stabilising estrogen levels, particularly in extended-cycle regimens [18].
- **Menstrual migraines:** Continuous CHC use can prevent estrogen-withdrawal headaches, though this is contraindicated in migraine with aura [19].

By targeting symptom relief alongside contraception, healthcare providers can deliver *dual-purpose treatment* that enhances adherence and satisfaction.

Non-Contraceptive Benefits

Midlife is a period of increasing risk for osteoporosis, cardiovascular disease, and certain cancers. Some contraceptives offer protective effects:

- **CHCs:** Long-term protection against endometrial and ovarian cancers, maintenance of bone mineral density, and improvement in acne and hirsutism [14,15,20].
- **LNG-IUS:** Endometrial protection and bleeding control, with potential use in menopause hormone therapy [17].

These additional benefits may tip the balance in favour of one method over another, particularly for women with a family history of certain conditions.

Comorbidities

Certain medical conditions dictate what methods are safe:

- **Cardiovascular risk factors** (hypertension, smoking, obesity, diabetes) may preclude estrogen-containing methods.
- **History of VTE or migraine with aura** rules out CHCs.
- **Unexplained abnormal bleeding** should be investigated before hormonal methods are initiated.

The World Health Organization (WHO) Medical Eligibility Criteria provides a valuable framework for determining safety in specific clinical scenarios.

Personal Factors

Personal factors often determine whether a method will be used consistently and correctly:

- **Daily adherence:** Some women prefer LARCs to avoid daily pill-taking.
- **Desire for predictable bleeding:** CHCs may be preferred by women who value menstrual regularity.
- **Infrequency of intercourse:** Barrier methods may suffice in some cases.

Counselling should weigh convenience and control against medical considerations to ensure the chosen method fits the woman's life.

Special Clinical Considerations

While general guidelines are helpful, certain clinical scenarios require a tailored approach to contraceptive selection during perimenopause.

Migraines

- **Migraine without aura:** CHCs may help by reducing estrogen fluctuations, especially in continuous dosing. An expert review from the Cleveland Clinic Journal of Medicine confirms that CHCs are not contraindicated in migraine without aura, and notes that continuous, ultra-low-dose formulations (≤20µg ethinyl estradiol) may help prevent menstrual migraine by avoiding the hormone-free interval that often triggers headaches [21].
- **Migraine with aura:** CHCs are contraindicated due to increased stroke risk; progestin-only methods are safer but do not treat estrogen-withdrawal headaches.

Abnormal Uterine Bleeding (AUB)

Hormonal methods, especially the LNG-IUS, can significantly reduce AUB and improve quality of life.

- CHCs also regulate cycles and reduce bleeding.
- Copper IUDs should be avoided in women with heavy bleeding as they may exacerbate symptoms.

Sexual Function

Contraceptives can affect sexual well-being in complex ways:

- Some CHCs may slightly reduce androgen levels, affecting libido, though this varies by formulation. A randomized trial comparing two different doses of the same CHC formulation (EE 30 µg/LNG 150 µg versus EE 20 µg/LNG 100 µg) found that the higher-dose group experienced significantly greater reductions in androgen measures (total testosterone down 54%, free androgen index down 67%), with sexual desire improved only in the lower-dose group [22].
- Methods that induce amenorrhea (e.g., LNG-IUS) can remove the anxiety of unexpected bleeding during intercourse.
- Adjunctive treatments such as vaginal estrogen can be used alongside contraception to address discomfort.

Bone Health

Bone loss accelerates in late perimenopause and early postmenopause.

- **CHCs:** May preserve bone mineral density by supplying estrogen [20].
- **DMPA:** Associated with bone loss and should be used with caution in women over 45 unless benefits outweigh risks. In its Committee Opinion (No. 602), the American College of Obstetricians

and Gynaecologists (ACOG) highlights that depot medroxyprogesterone acetate (DMPA) is linked to decreased bone mineral density (BMD) [23]. It emphasizes that the FDA's "black box" warning limits its use to 2 years, and that any continuation beyond this should be based on clinical judgment, balancing risks like bone loss against the consequences of unintended pregnancy [23].

Risk Assessment

Risk assessment is critical in perimenopausal contraceptive counselling. It must weigh the protective effects of contraception against potential harms, considering age-related changes in cardiovascular and cancer risk.

Cardiovascular Risk

Older age increases the baseline risk of myocardial infarction, stroke, and VTE.

- **CHCs** can increase these risks, especially in smokers, obese women, and those with hypertension.
- **Natural estrogen formulations** may pose lower VTE risk but still require careful patient selection [16].
- Women with high cardiovascular risk should be steered toward progestin-only or non-hormonal methods.

Thromboembolism

The risk of VTE rises with age and with estrogen-containing contraceptives. A Danish cohort study found that the incidence of VTE among women increases significantly with age, from 1.84 per 10,000 woman-years in those aged 15–19, up to 6.59 per 10,000 in women aged 45–49 [24]. A meta-analysis reported that oral contraceptive users face a more than threefold increased odds of VTE (OR = 3.13; 95% CI: 2.61–3.65), especially with third-generation formulations [25].

- Using the lowest effective estrogen dose, local application of estrogen, and safer progestins (e.g., levonorgestrel) can reduce risk.
- The LNG-IUS and copper IUD have no associated VTE risk [26].

Malignancies

- **Benefits:** CHCs reduce endometrial and ovarian cancer risk; LNG-IUS also offers endometrial protection.
- **Risks:** Slight increase in breast cancer risk during active CHC use, which diminishes after stopping. Current CHC users had a modestly increased relative risk of breast cancer (RR - 1.24) [27]. The risk gradually declined after stopping use: 1-4 years post-use RR - 1.16; 5-9 years post-use RR - 1.07; 10 or more years after discontinuation: Risk returned to baseline (RR - 1.0) [27].
- Hormonal contraception is contraindicated in women with a personal history of estrogen-sensitive cancers

Other Contraindications

Severe liver disease, unexplained vaginal bleeding, and uncontrolled hypertension are absolute contraindications for certain hormonal methods. A thorough history and physical examination are mandatory before prescribing.

Discontinuation of Contraception and Transition to Menopause Hormone Therapy (MHT)

Determining when to discontinue contraception during the perimenopause requires careful consideration, as ovulation may persist until menopause is reached. Stopping contraception too early exposes a woman to the risk of unintended pregnancy, while

continuing it unnecessarily can subject her to unneeded medication and its potential side effects.

Diagnosis of Menopause

In women who are not using hormonal contraception, menopause is diagnosed retrospectively after twelve consecutive months without menstruation. However, hormonal contraceptives, especially CHCs, suppress follicle-stimulating hormone (FSH) and luteinising hormone (LH), making laboratory confirmation unreliable while on treatment. In such cases, discontinuing CHCs for several weeks and observing for a return of menses, or switching temporarily to a non-hormonal method, may be necessary to confirm menopausal status.

For users of progestin-only methods, such as the LNG-IUS or progestin-only pills, it is possible to measure FSH levels to help determine menopause. If levels are consistently elevated and menstrual bleeding has ceased, contraception can usually be stopped.

Overlapping with Hormone Therapy

For women experiencing significant menopausal symptoms, healthcare providers may plan a seamless transition from contraception to MHT. This ensures continued symptom control while removing the need for pregnancy prevention once menopause is confirmed. The LNG-IUS can remain in place as part of an MHT regimen, providing endometrial protection while systemic estrogen is administered.

Age-Based Guidance

Some guidelines recommend discontinuing contraception around the average age of menopause (approximately 50–51 years) if menopause cannot be confirmed earlier. However, individual factors, such as symptom burden, cardiovascular risk, and the presence of other comorbidities, should guide decision-making.

Premature Ovarian Insufficiency (POI)

Overview and Health Risks

Premature ovarian insufficiency, defined as menopause before the age of 40, is a distinct clinical entity with significant long-term health consequences. Women with POI face an increased lifetime risk of osteoporosis, cardiovascular disease, and possibly cognitive decline, largely due to prolonged estrogen deficiency [28,29,30]. Psychosocial effects, including distress over infertility, are also common.

Hormone Therapy Requirements

For women with POI, hormone therapy is essential for symptom relief and for the prevention of long-term health complications. Estrogen replacement should continue at least until the average age of natural menopause. The dose used in younger women with POI is often higher than that required in older women undergoing the natural menopausal transition.

Contraceptive Needs in POI

Although spontaneous ovulation is rare in POI, it can still occur intermittently. Between 5% and 10% of women with POI may conceive naturally, often unexpectedly [31]. For those who do not desire pregnancy, contraception remains important. Combined hormonal contraceptives can be an effective option, offering both pregnancy prevention and symptom control. However, in very young women, CHCs alone may not provide the optimal hormonal environment for peak bone mass development; in such cases, tailored hormone replacement therapy may be preferable [32].

Individualised Decision-Making

The choice between CHCs and MHT for women with POI should be based on age, bone health needs, cardiovascular risk, and reproductive intentions. In all cases, patient education and shared decision-making are essential to ensure optimal health outcomes.

Conclusion

The perimenopause is a unique period in a woman's life, blending declining fertility with increasing symptom burden and rising health risks. Contraception during this phase is a strategic component of comprehensive midlife health care.

Combined hormonal contraceptives remain a versatile choice for many healthy women over 40, offering cycle regulation, relief from vasomotor symptoms, reduction of abnormal uterine bleeding, and long-term protection against certain cancers. Newer formulations containing natural estrogens may further improve the safety profile, particularly with respect to cardiovascular and thromboembolic risks. For women who cannot use estrogen, progestin-only methods, particularly the LNG-IUS, provide effective contraception and can also address heavy bleeding.

Selecting the right method requires careful assessment of symptoms, desired non-contraceptive benefits, medical comorbidities, and personal preferences. Risk factors such as cardiovascular disease, smoking, and a history of hormone-sensitive cancers must be weighed against potential benefits. Equally important is planning for the eventual discontinuation of contraception and, where appropriate, a smooth transition to menopause hormone therapy.

In the case of premature ovarian insufficiency, hormonal management is both a therapeutic necessity and a potential contraceptive measure, given the possibility of sporadic ovulation. Regardless of the context, an ongoing dialogue between patient and healthcare provider is vital. The aim should always be to provide individualised, evidence-based care that safeguards reproductive autonomy, minimises health risks, and enhances quality of life during this pivotal life stage.

Data Availability Statement

As this study is based entirely on previously published literature, publicly available legal documents, and other secondary sources, no new datasets were generated or analysed. All sources referenced in this review are cited in the manuscript and can be accessed through the relevant publishers, repositories, or official websites.

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Conflicts of Interest

The author declares that there are no conflicts of interest.

Ethical Approval

This study was conducted utilising secondary data and existing literature, with no involvement of human or animal subjects. As such, ethical approval is not deemed necessary.

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