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REVIEW ARTICLE

Navigating the Storm: Understanding and Managing Depression During Menopause in Women

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Abstract

Depression has a prevalence of about 280-300 million individuals globally and is more prevalent in women than in men. Hormonal changes, vasomotor changes and psychosocial factors are linked with the high risk of depression during menopausal transition. Oestrogen also acts upon serotonergic, dopaminergic and noradrenergic processes, which are involved in mood regulation, indicating a biological association between menopause and depression. Aim of this review was to examine the mechanisms underlying menopause-related depression and summarise existing management strategies. A literature review was based on published articles and clinical guidelines was conducted to investigate the relationship between menopause, hormonal changes and depression and the assessment of treatment options. Studies indicate a close relationship between menopausal transition and symptoms of depression. Factors that increase the risk of experiencing vasomotor symptoms, a negative attitude to menopause, surgical menopause and a previous history of depression are some of the risk factors. Several diagnostic tools are common, such as the Beck Depression Inventory and the Hamilton depression rating scale. There is evidence of the usefulness of menopausal hormone therapy (MHT) in the treatment of both menopausal and depressive symptoms. Adjunctive measures, such as antidepressants, phytoestrogens, B vitamins, vitamin D, magnesium and polyunsaturated fatty acids, have also been shown to have other advantages in the treatment of mood disturbances and psychosocial discomfort. Menopause-related depression is a growing issue in the population that has causes with multifactorial predictors. A combined management approach of MHT, nutritional supplements and psychosocial interventions is needed to enhance the quality of life and the psychological well-being of perimenopausal and postmenopausal women.

Key words: Menopause; Emotions; Mental health; Perimenopause; Hormones; Phytoestrogens.

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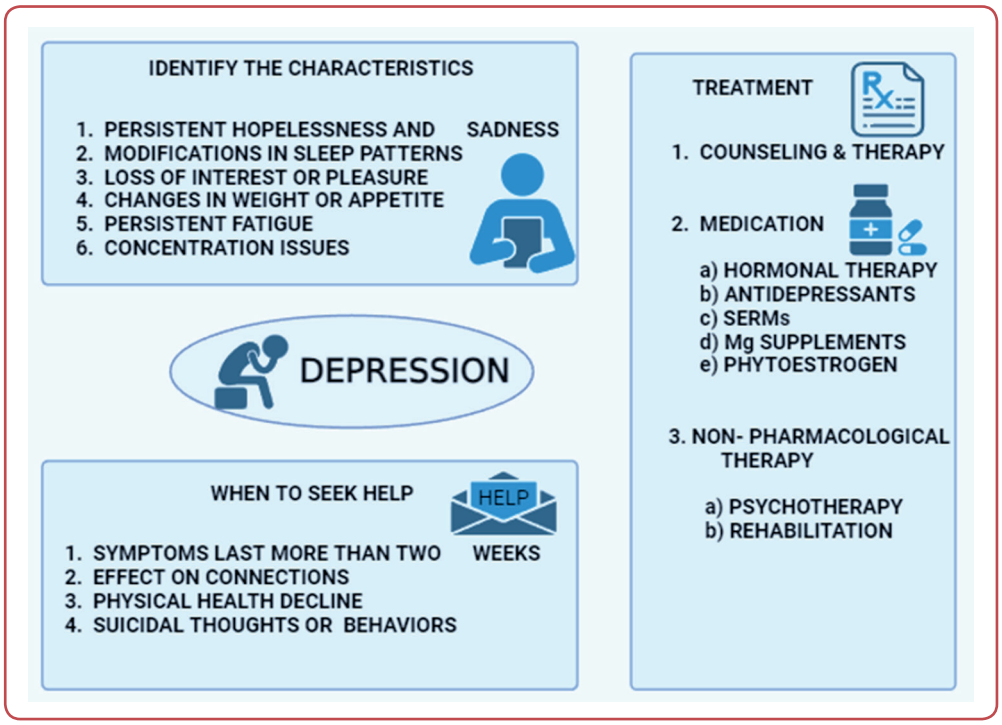

Graphical abstract

Introduction

Menopause, a natural and inevitable stage in a woman's life, marks the end of reproductive capacity and the cessation of menstruation. Although it is a normal aspect of aging, menopause is frequently accompanied by significant physical and psychological changes.[1] The most significant issue women may encounter postmenopause is an elevated risk of depression. Menopause represents the culmination of the female reproductive cycle. It typically occurs between 45 and 55 years of age.[2] In India, the average age of menopause ranges between 41.9 and 49.4 years.[3] As per the World Health Organization (WHO), amenorrhea for twelve months is considered natural menopause.[2] Women have up to a 50 % higher risk of experiencing depression during this stage.[4] The WHO estimates that depression affects approximately 280 million people worldwide.[4]

Globally, 3.8 % of the population suffers from depression, including 5 % of adults (4 % of men and 6 % of women) and 5.7 % of older adults. Possible explanations for this elevated risk include differences in coping mechanisms, susceptibility to hormonal fluctuations and variations in genetic and social health factors.[5] Depression can negatively affect occupational functioning, social relationships and financial stability and may increase the risk of self-harm or suicide. Depression poses significant risks to both physical health and mental well-being. Individuals with coexisting depression have higher rates of morbidity and mortality from conditions such as cancer and ischemic heart disease. Considering the heightened vulnerability and consequences of depression in the menopause transition, the particular objectives of this review were (i) to understand the neurobiological mechanisms of the interrelation between menopause and depression, (ii) to determine key risk factors and (iii) to discuss evidence-based management approaches of enhancing the mental health outcomes of perimenopausal and postmenopausal women.

Methods

The relationship between menopause and depression and the management strategies, was proposed through a narrative review approach. Electronic databases like *PubMed, Scopus* and *Google Scholar* were searched using a combination of keywords such as menopause, perimenopause,

depression, hormonal changes, oestrogen therapy, menopausal hormone therapy, mental health, phytoestrogens and management strategies.

The search was restricted to articles published since 2000 to September 2025. Only English language peer-reviewed publications were considered. The inclusion criteria of eligible studies were limited to randomised controlled trials, observational studies, systematic reviews, meta-analyses and applicable clinical guidelines. Non-English articles, case reports, conference abstracts and all studies that were not directly related to menopause or depression were excluded.

Depression and menopause

Menopause is widely acknowledged to be accompanied by a variety of hormonal changes, a reduction in ovarian function, sleep difficulties and vasomotor symptoms. Perimenopause is the phase of life during which the body undergoes physiological changes in preparation for menopause.[6] The connection between mood problems and these menopausal changes in women's lives is noteworthy.[7] Depression impacts how female reproductive hormone control is regulated.[8] Therefore, it is important to examine the connection between menopause and depression. In perimenopause, women without a history of depression were more likely to experience depressive symptoms than premenopausal women.[9] In a meta-analysis by Yadav et al, 47.47 % of Indian perimenopausal and postmenopausal women had depression.[10] Alblooshi et al performed a systematic review of twenty-two studies and concluded that depression is frequent during the menopausal transition.[7] Another study made clear that females entering perimenopause had a higher chance of developing depressive symptoms and major depressive disorder (MDD).[11] A 36-month study of 332 depressed women and 644 non-depressed women found that women

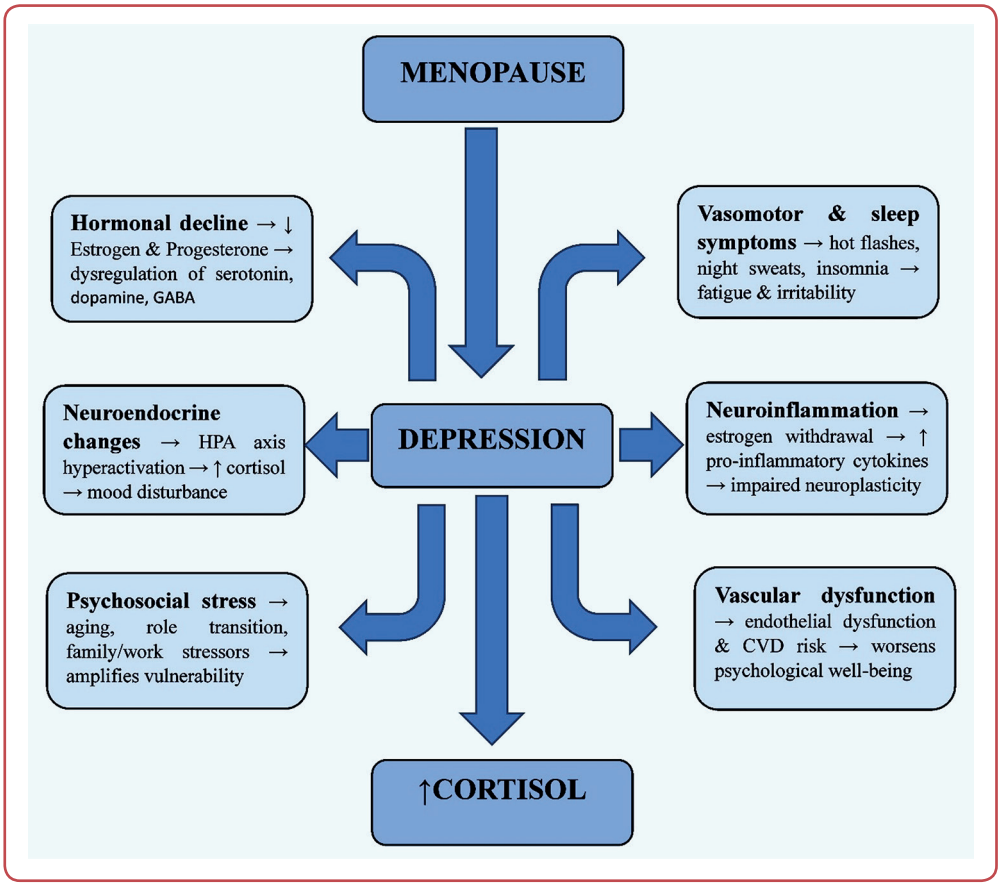

Figure 1: Pathway linking menopause to depression
HPA: hypothalamic-pituitary-adrenal; GABA: gamma-aminobutyric acid; CVD: cardiovascular disease;

with depression experienced early perimenopause. A study by Almedia et al concluded that women who have gone through menopause exhibit more depressive symptoms than women who have not.[12] Additionally, a relationship was found between the onset of perimenopause and the degree of depression. The rate of perimenopause entry was twice as high for women with chronic depression (Hamilton Rating Scale for Depression scores > 8) as it was for those without depression.[13] Women who had experienced depression also showed a similar trend of early menopause. The strongest correlation between depression and natural menopause occurred in women under 40. Additionally, women who had depression therapy for longer than three years had a fourfold higher chance of experiencing early menopause.[14] According to Canadian research including 13,216 women between the ages of 45 and 64, women who self-reported higher levels of depression on the Center for Epidemiologic Studies Short Depression Scale-10 (CESD-10) had an odds ratio of 1.45 for experiencing early menopause (95 % CI 1.07-1.97).[15] Campbell et al reported that early post-menopausal women have a higher risk of developing depression than late post-menopausal phase women.[16] A meta-analysis revealed that women who had early menopause (age < 40) were twice as likely to have depression as those who experienced menopause at an age > 40.[17] Furthermore, cognitive deterioration has also been linked to early surgical menopause (either hysterectomy or unilateral or bilateral oophorectomy). According to a survey, women who underwent surgical menopause at a younger age saw a quicker loss in their overall cognitive function than women who underwent the procedure at an older age. Furthermore, the effect of aging by six months was equivalent to one year of early surgical menopause. Additionally, a comparable correlation was observed with the shorter reproductive time (the period between menarche and menopause).[18] As per research by Ahlawat et al on 580 menopausal women, 41.8 % of postmenopausal women had mild to moderate depression. Low-income, illiterate and divorced women had higher rates of depression.[19] It is therefore clear that early perimenopause and early menopause are strongly associated with depression, as shown in Figure 1.

Association of risk factors with menopausal depression

Physiological and vasomotor symptoms

Menopause often coincides with other life transitions, such as raising children, changing careers, or caring for elderly parents. These psychological pressures may increase the risk of depression by inducing feelings of loss, identity shifts and heightened stress. Hormonal fluctuations and external stressors may further compromise mental well-being. Postmenopausal women commonly experience vasomotor, somatic, genitourinary (eg urinary incontinence, cystitis), sexual dysfunction, vaginal dryness, itching, neuropsychiatric symptoms and sleep disturbances.[20] Approximately 50–80 % of women experience vasomotor symptoms, regardless of severity or frequency.[21] Moderate to severe vasomotor symptoms are associated with increased depressive symptoms and sleep disturbances.[22] Worsley et al performed a systematic review and concluded that vasomotor symptoms are positively correlated to depression among women.[23]

Hormonal (effect of depression on hormones)

Hormonal disturbances are a common link between menopause and depression. The dramatic variations in hormones that occur after menopause are a major contributing cause to the development of depression. During menopause, important hormones generated by the ovaries, such as oestrogen, significantly decrease. Since oestrogen has been connected to mood regulation, an abrupt drop in oestrogen levels may cause neurotransmitter levels to shift, which might result in depressed symptoms. Hormone fluctuations can also impact mental health in general, energy levels and sleep habits. Luteinising hormone (LH) and follicle-stimulating hormone (FSH) are impacted during depression. Levels of LA increase during the depression. According to a study on postmenopausal depressed women have 33 % lower LH levels as compared to controls.[13] Along with altering neuronal opioids throughout menopause, steroid hormones impact serotonin and gamma-aminobutyric acid (GABA) transmission, which has been linked to anxiety, irritability and depression.[24] According to a study by Chu et al, women with elevated levels of FSH and oestradiol (E2) have a lower chance of developing depression.[25]

Non-hormonal (stress, health problems)

Body image and self-esteem: It can be affected by the physical changes brought on by menopause, such as weight increase, altered body composition and changes in skin elasticity. These worries may be made worse by society's emphasis on youth and beauty, which can heighten feelings of inadequacy and self-consciousness.[26] Lowered self-esteem and a poor body image might be warning signs for the emergence of depression symptoms.

Sleep disturbances: Women going through menopause usually have sleep disturbances, such as insomnia and nocturnal sweats.[27] Since mood problems and insufficient sleep are closely associated, sleep difficulties may have a domino effect on mental health. Menopausal hormone fluctuations, along with sleep disturbances, may foster an environment that is conducive to the onset or worsening of depression symptoms.[6]

Lifestyle factors: Certain lifestyle variables might influence menopausal depression risk. Substance misuse, poor diet and inactivity can all lead to problems with one's physical and emotional well-being.[6] On the other hand, maintaining an active lifestyle that includes regular physical activity, proper nutrition and stress reduction methods may help reduce the likelihood of developing depression.

Personal and family history: Women experiencing menopause with a familial or personal history of mental illness may exhibit increased susceptibility. Menopause-related hormonal changes may either precipitate or worsen preexisting vulnerabilities and genetics may contribute to an individual's susceptibility to depressive illnesses.[7] Understanding one's personal mental health and family history is crucial for identifying potential risk factors and taking preventive measures.

Protective aspects of oestrogen

The hormones known as oestrogens include oestradiol, oestrone and estriol. Although the ovaries are the primary organs responsible for producing these hormones, other tissues, including the adrenal glands and adipose tissue, may also synthesise them in lower amounts. There are many oestrogen receptors in the brain and studies indicate that these receptors are important for regulating neurotransmitter systems, neurogenesis, neural plasticity and basic brain function.[28] Neuroprotective benefits of oestrogen have been established, especially in the hippocampus and prefrontal cortex, brain areas linked to mood regulation and emotional processing.[29] It is believed that these protective benefits are mediated by many mechanisms, such as modulation of neuroinflammation, improvement of synaptic plasticity and promotion of neuronal survival.[29] The decline in oestrogen is often linked to (BDNF), brain-derived neurotropic peptide, which indicates the importance of the hormone for growth factors.[30] Neurotransmitter systems, such as those involving serotonin, dopamine and norepinephrine, which are essential for mood regulation, are significantly impacted by oestrogen. Research indicates that oestrogen may increase the action of these neurotransmitters, which could improve mood generally.[31] These neurotransmitter imbalances are frequently linked to depressive illnesses and oestrogen's effect on them may lessen the severity of depressed symptoms.[31] Oestrogen is recognised for being a dynamic hormone, particularly in women. Changes in mood and emotional health have been related to variations in oestrogen levels throughout menstruation, pregnancy and menopause.[8] For instance, a drop in oestrogen levels that occurs during the postpartum and premenstrual phases may contribute to the onset of mood disorders. The possible use of oestrogen as an adjuvant therapy for depression has been investigated in many clinical investigations, particularly when standard antidepressants may not be helpful. Some research suggests that oestrogen supplementation, either through hormone replacement therapy or selective oestrogen receptor modulators, may be beneficial in mitigating depressive symptoms, particularly in perimenopausal and postmenopausal women. Oestrogen may also control pro-inflammatory cytokines, restrict blood-brain barrier permeability and stop lymphocyte migration, all of which help to prevent inflammation linked to certain heart conditions.[32]

When to seek assistance

One of the most prevalent symptoms of depression is feeling overwhelmed, hopeless, or depressed all the time. If these emotions last for a

long time, one should think about getting treatment. Excessive or ineffective sleeping could be a sign of depression. Sleep disturbances can exacerbate a vicious cycle that deteriorates mental and physical health. Depression may be indicated by a decreased interest in or enjoyment of once-enjoyable activities. Hobbies, mingling and even spending time with loved ones might all fall under this category. Substantial variations in appetite that result in weight gain or loss may be a sign of a mental health problem. Although feeling tired is a typical menopausal symptom, persistent, inexplicable tiredness that makes it difficult to go about daily tasks might be a warning sign. Depression can affect cognitive processes, making it difficult to focus, decide what to do, or recall information. While mood swings are common throughout menopause, getting professional assistance is essential if symptoms last more than two weeks and have a major influence on day-to-day activities. Getting help is crucial if depressed symptoms interfere with one's ability to maintain relationships with friends, family, or coworkers. Depression can seriously influence one's physical well-being. It is essential to speak with a healthcare provider if there is a discernible reduction in general well-being. It's important to handle suicidal thoughts and behaviours as an emergency.

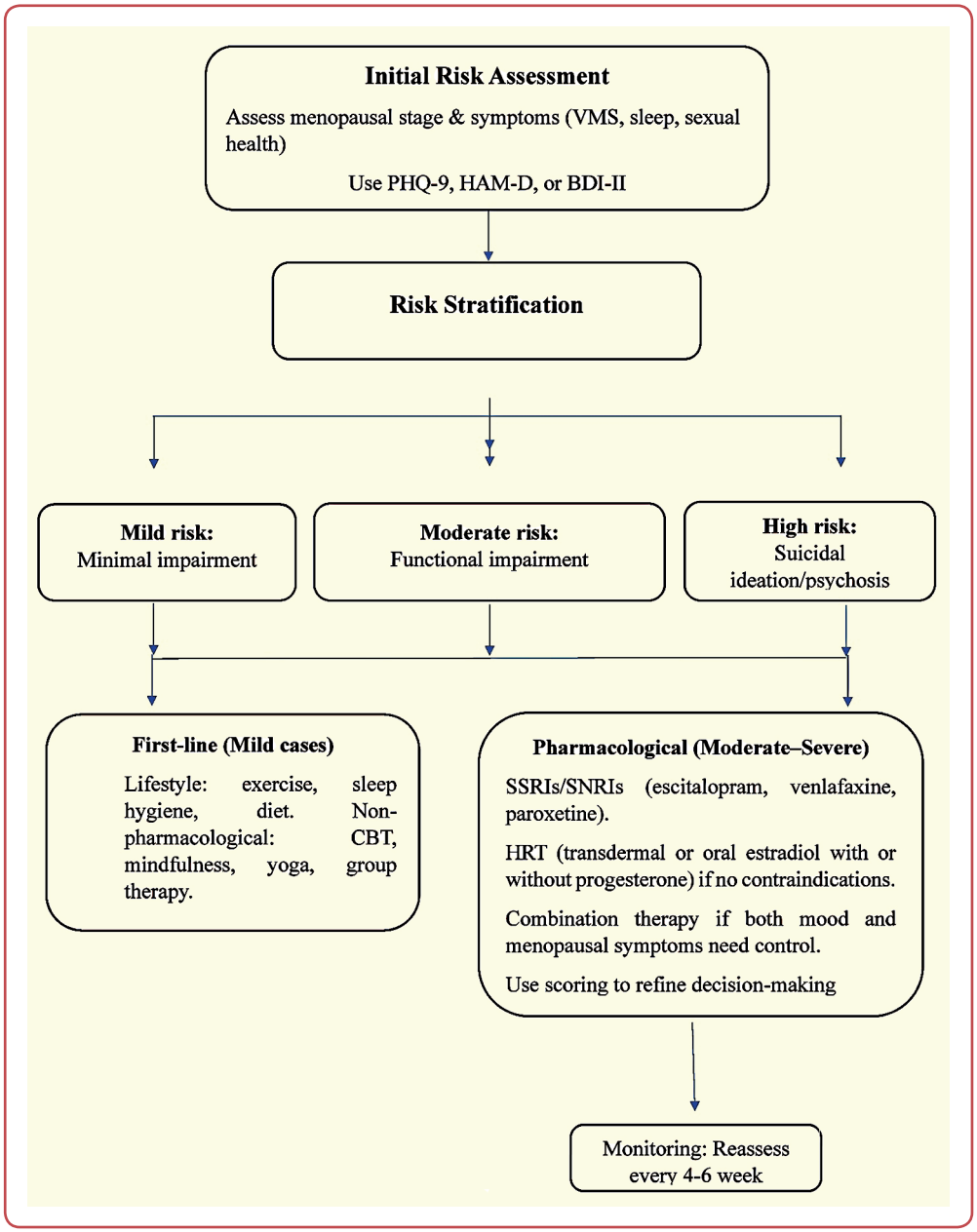

Figure 2: Clinical algorithm for screening and management of menopausal depression

HAM-: Hamilton Rating Scale for Depression; BDI-II: Beck Depression Inventory-II; PHQ-9: Patient Health Questionnaire-9; SSRIs: selective serotonin reuptake inhibitors; SNRIs: serotonin and norepinephrine reuptake inhibitors; VMS: vasomotor symptoms; HRT: hormone replacement therapy; CBT: cognitive-behavioural therapy;

It's crucial to get help right away from a mental health expert or by phoning a crisis hotline. To begin with, get advice from a healthcare practitioner who can evaluate your symptoms, rule out any underlying medical concerns and offer direction on what to do next. Research has shown that CBT, along with other therapeutic modalities, is a successful treatment for depression. Developing coping mechanisms and investigating underlying problems might be assisted by a mental health specialist. To correct the neurotransmitter imbalance in the brain, medication may be suggested in some situations. Weighing the possible advantages against any potential negative effects, this should be explored with a healthcare professional. Making new friends or reconnecting with people who have gone through similar struggles helps foster a sense of understanding and togetherness. Figure 2 depicts a clinical algorithm for screening and management of menopausal depression.

Treatment

Treatment options research is summarised in Table 1.

Table 1: Evidence on interventions for depression in peri- and post-menopausal women

Study	Design	Intervention	Findings	Ref
Wu et al, 2020	RCT	Antidepressants	Improvement in depression symptoms.	[33]
Swales et al, 2023	Double-blind RCT	Transdermal oestradiol	Improved mood in hormone-sensitive perimenopausal women vs placebo.	[34]
Glynne et al, 2025	Retrospective cohort	Transdermal oestradiol + progesterone + testosterone	Mean Meno-D scores improved after therapy; significant mood improvement across peri- and postmenopausal groups.	[35]
Chen et al, 2025	Randomised trial	Combined HRT (*Femoston* or similar) + escitalopram	Greater improvement in depressive symptoms after combined therapy	[36]
Glynne et al, 2024	Pilot randomised trial	Transdermal testosterone	Pilot data indicate improvements in mood (greater than cognition)	[37]
Kulkarni et al, 2025	Pilot randomised trial	Bazedoxifene plus conjugated oestrogen	Improvement in depression symptoms	[38]
Tseng et al, 2023	Network meta-analysis of RCTs	Multiple pharmacologic agents (HRT, SSRIs, SNRIs, others)	Oestrogen shows benefit for perimenopausal depression; SSRIs/SNRIs are effective for VMS and may yield secondary mood/QoL benefits.	[39]
Borozan et al, 2024	Systematic review and meta-analysis	Oestrogen	RCTs show antidepressant effects of oestrogen in perimenopausal women; evidence in post-menopausal women is less consistent.	[40]
Grigolon et al, 2023	Systematic review and meta-analysis	Various nutritional interventions	Improved mood/anxiety during menopausal transition.	[41]
Zhao et al, 2023	Blind RCT	Acupuncture	Improvement in comorbid depression and insomnia.	[42]
He et al, 2025	Systematic review and meta-analysis	Acupuncture	Effective and safe treatment for reducing menopausal depression symptoms.	[43]

Cho et al, 2023	Systematic review and meta-analysis	Aromatherapy	Moderate effect on depression.	[44]
Ye eta al, 2022	Systematic review and meta-analysis	Cognitive therapy and behaviour therapy	Effective psychological treatment.	[45]
Han et al, 2024	Meta-analysis of RCT	Exercise	Positive effect on depression, more optimal being, mind-body exercise.	[46]
Xu et al, 2024	Systematic review and meta-analysis	Mind-body exercise	Positive effect on depression.	[47]
Kim et al, 2024	RCT	Cognitive behavioural therapy	Improvement in emotional symptoms, anxiety.	[48]
Demirhan et al, 2024	Meta-analysis of RCT	Melatonin	Improvement in depression, anxiety.	[49]
Sharifpour et al, 2025	RCT	Ginseng	Improvement in depression symptoms.	[50]
Rattanatantikul et al, 2022	RCT	Phytoestrogen	Improvement in depressed mood, irritability symptoms.	[51]
Luan et al, 2025	Systematic review and meta-analysis	Soy isoflavone	Improvement in psychological symptoms and depression.	[52]
Li et al, 2021	Systematic review and meta-analysis	Phytoestrogens	Improvement in depression symptoms.	[53]
Karalis et al, 2023	Case series	Phytoestrogens	Improvement in depression symptoms.	[54]
Mehrnoush et al, 2021	Systematic review of meta-analysis	Complementary and alternative therapies	Positive effect in reducing psychological symptoms.	[55]

HRT: hormone replacement therapy; RCT: randomised controlled trial; SSRIs: selective serotonin reuptake inhibitors; SNRIs: serotonin and norepinephrine reuptake inhibitors; QoL: quality of life; VMS: vasomotor symptoms;

Hormonal therapy

Hormone replacement therapy (HRT) involves supplementing oestrogen and, in some cases, progesterone to alleviate the hormonal imbalances associated with menopause. For women experiencing severe depressive symptoms linked to hormonal fluctuations, HRT may be a viable option. MHT can be used in women with mild depression to treat hot flashes, sleep disturbances and other symptoms that lead to psychosocial discomfort, depression and anxiety.[56] Treatment with oestrogen can alleviate symptoms since the majority of menopausal symptoms are brought on by ovarian senescence-related oestrogen deficiency. The routes via which endogenous oestrogen acts at oestrogen receptors, where it binds to nuclear receptors or G protein-coupled receptors (GPCRs) to control gene transcription, are similar to those used by HT.[57] Owing to the body's varied expression of oestrogen receptors and its unique action on cells, oestrogen has an impact on a variety of symptoms. Endometrial tissue thickening and endometrial tumours are increased by oestrogen alone, even if it is useful in alleviating menopausal symptoms.[58] The proliferative impact of oestrogen on uterine tissue is countered by progesterone, which also induces endometrial shedding and prevents oestrogen from attaching to oestrogen receptors. To maintain the uterine endometrial tissue and reduce the danger, progesterone is employed in combination with hormone replacement treatment.[58] It should be noted that there is clear evidence about a positive effect on psychological symptoms and cognitive function (primarily due to a decrease in vasomotor symptoms – hot flashes) while using MHT in women in surgical, but not in natural menopause.[59] Some studies have confirmed the advantage of oestrogen therapy on the feeling of well-being, improved mood and decreased

anxiety in peri- and postmenopausal women.[60] Oestrogens can increase serotonin activity and show a synergistic effect with antidepressants.[56] A study involving 34 perimenopausal women with depression after treatment with oestradiol showed considerable symptom improvement following oestradiol treatment compared to the placebo group.[24]

Antidepressants

Traditional antidepressant medications, such as selective serotonin reuptake inhibitors (SSRIs), namely fluoxetine, paroxetine, citalopram, etc, or serotonin-norepinephrine reuptake inhibitors (SNRIs), namely venlafaxine, are commonly prescribed to manage depression during menopause. These medications can help regulate neurotransmitter levels in the brain and alleviate symptoms of low mood.[61] Most of the drugs are safe to use, but can cause side effects like anorexia, diarrhoea, nausea, decreased libido, headache and insomnia.[61] It has been demonstrated that citalopram combined with SSRIs and duloxetine and venlafaxine combined with SNRIs, enhance mood as well as the intensity of vasomotor symptoms.[62] Zhou et al conducted a comparison of the safety and effectiveness of venlafaxine and fluoxetine in the treatment of severe postmenopausal depression. The multicentre, randomised, single-blind, actively-controlled trial had an 8-week duration. Of the 172 women who were involved, 90 received fluoxetine and 82 received venlafaxine. It was discovered that venlafaxine was easier to tolerate than fluoxetine and that this helped treat post-menopausal major depressive episodes (MDD) more successfully.[63]

Selective oestrogen receptor modulators (SERMs)

With their ability to minimise negative effects on the uterus and breast while retaining the positive therapeutic benefits of oestrogen on bone, lipids and the brain, SERMs provide a unique option to HT.[64] SERMS are ligands for the oestrogen receptor that bind to the ER-α and/or ER-β, changing the conformation of the binding domain of the oestrogen receptor.[64] Drugs like raloxifene, tamoxifen, tibolone, etc, are frequently utilised. Another SERM having encouraging effects on the nervous system and psyche is tibolone. It is an effective therapy for perimenopausal depression and may be neuroprotective through cellular antioxidant synthesis.[65] The structures of tibolone and raloxifene are different. Tibolone's oestrogenic, progestogenic and androgenic activities are attributed to its two active metabolites, which also preserve trabecular and cortical bone length, restrict the growth of breast tissue and counteract vaginal dryness.[24] According to a recent study, postmenopausal women's depressive symptoms might be reduced with tibolone when compared to a placebo.[66] Given that SERMs are safer for breast, uterine and ovarian tissue than normal MHT, they may prove to be a viable alternative to HT in the treatment of menopausal-associated psychosocial and cognitive disorders, as well as climacteric symptoms.[67]

Mg supplements

The usage of organic magnesium salts is recommended for perimenopausal and postmenopausal women who exhibit signs of stress, anxiety and depression.[68] It is well established that the glutamatergic system and N-methyl-D-aspartate (NMDA) CNS receptors play a role in the pathogenesis of illnesses associated with stress, including cognitive and emotional problems.[69] All NMDA-receptor subtypes have a natural stabiliser in magnesium ions, which seals the NMDA-receptor channel when the receptor is at rest. A shortage in magnesium activates NMDA receptors together with calcium channel opening, resulting in neuronal injury and malfunction that may present clinically as sadness and anxiety.[70]

Phytoestrogen

Phytoestrogens are structurally comparable to oestrogen, such as oestradiol and bind to oestrogen receptors (α and β). These preferably bind to beta receptors.[71] Phytoestrogens can therefore affect all the activities that are performed by oestrogen. Chalcones, stilbenoids, lignans and flavonoids (including isoflavonoids, flavones, flavanones and flavonols) all fall under the group of phytoestrogens. The oestrogenic activity of dietary phytoestrogens is increased by metabolism in the body by gut microflora to active compounds like daidzein and genistein.[72] As per Bu et al, phytoestrogens have a neuroprotective role.[73] Kotsopolus et al performed a study to determine soy's effect on menopausal females and they found a 25 % decrease in depression scores as compared to placebo.[74]

Non-pharmacological treatment

Cognitive-behavioural therapy (CBT)

When treating depression, cognitive-behavioural therapy, or CBT, is a popular and successful psychological strategy. The goal of this talk therapy is to recognise and alter the harmful thinking patterns and actions that underlie depressed symptoms. CBT can support women in overcoming the emotional obstacles brought on by menopause by offering coping mechanisms and encouraging an optimistic outlook.[75]

Lifestyle changes

An essential part of controlling depression during menopause is living a healthy lifestyle. Frequent exercise has been demonstrated to improve mood by encouraging the body's natural mood enhancers, endorphins, to be released.[76] A nutrient-dense, well-balanced diet with omega-3 fatty acids can help promote mental health. Furthermore, stress-reduction methods like yoga and mindfulness meditation may help control hormone changes and lessen the symptoms of depression.[63]

Support groups and counselling

Participating in support groups or individual therapy might offer a secure environment for women to discuss their menopausal experiences and feelings. Talking about difficulties with people going through comparable changes might help you feel less alone and provide insightful information. Individualised solutions for treating depression and enhancing general mental health can be obtained via professional counselling.[77]

Alternative and complementary therapies

Alternative and complementary therapies help some women who are depressed by relieving their symptoms. Some people believe that therapies like biofeedback, herbal supplements and acupuncture can enhance conventional medical care. To make sure these choices support both personal safety and health requirements, it's crucial to proceed cautiously and speak with medical experts.[67]

Rehabilitation

Rehabilitation is essential primarily for patients with surgical menopause. It includes diet therapy, adequate fluid intake, body weight control, individual and group psychotherapy, health path, remedial gymnastics, herbal medicine, immune disorders and physiotherapy procedures.

Discussion

Although there is increasing awareness of the issue of depression during menopause, the existing literature has several weaknesses. Most of the studies are cross-sectional and they do not allow for the causal relationships between the changes in hormones and depressive symptoms. Studies on oestrogen therapy or other therapies are frequently randomised controlled trials that have small sample sizes, limited follow-ups and diverse methods; thus, it is challenging to come up with a definite conclusion. Moreover, the majority of the evidence is based on the population of the West, with little representation of women who belong to low- and middle-income countries, including Asia, where sociocultural perceptions of menopause can be very strong determinants of mental health outcomes. The second weakness is the absence of individualised interventions, which is why the current literature seldom considers potential genetic predispositions, lifestyle variations, or psychosocial stressors that can influence depression susceptibility.

Further studies are needed in the future, where large-scale and longitudinal studies should be carried out to track women throughout the menopausal transition in order to gain a clearer understanding of causal factors. Effective and safe comparative trials of hormonal versus non-hormonal interventions are required to test efficacy and safety more stringently. Besides this, culturally sensitive research should be given more attention to represent the global differences in menopausal experiences. The improvements in personalised medicine, such as genetic and biomarker profiling, can enable at-risk women to be identified at an early stage and provided with an intervention. Holistic therapies combining hormone therapy, cognitive behavioural therapy, exercise, mindfulness and culturally sensitive interventions need to be further examined with the help of randomised controlled trials.

Conclusion

Menopause, a vital stage in a woman's life, is characterised not only by biological and hormonal changes but also by significant psychosocial shifts. The fluctuations in oestrogen levels, sleep disturbances, vasomotor symptoms and psychosocial stressors frequently contribute to depression during this period. If ignored or untreated, menopausal depression can severely diminish quality of life, heighten the risk of comorbidities and impact overall well-being. Today, it is recognised that a comprehensive management approach—including pharmacological treatment, hormonal therapy when appropriate, lifestyle modifications and psychological support—can effectively reduce depressive symptoms and promote positive outcomes. Routine screening should also be integrated into menopausal care to facilitate early detection and timely intervention. An interdisciplinary, woman-centred approach that considers cultural beliefs, social support systems and individual risk factors is essential for optimal care. Addressing both biological and psychosocial factors enables women to navigate this transition with greater resilience, lessening the long-term impact of depression and supporting healthier aging. Ultimately, acknowledging that menopausal depression is a critical public health issue is vital for improving women's health outcomes during midlife.

Ethics

This study was a secondary analysis based on the currently existing data and did not directly involve with human participants or experimental animals. Therefore, the ethics approval was not required in this paper.

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Conflicts of interest

The authors declare that there is no conflict of interest.

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Data access

The data that support the findings of this study are available from the corresponding author upon reasonable individual request.

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