ISSN Print: 2664-7559
ISSN Online: 2664-7567
IJSHPE 2025; 7(1): 101-106
www.physicaleducationjournal.in
Received: 17-12-2024
Accepted: 23-01-2025

Megha Pundir
M.Sc., Ph.D. Scholar, Department of Yoga, Central University of Rajasthan, Ajmer, Rajasthan, India

Chaitanya Kaushal
B.P.Ed, Lakshmibai National Institute of Physical Education, North East Regional Centre (LNIPE-NERC) in Guwahati is located at Tepesia Sports Complex, Sonapur, Guwahati, Assam, India

Corresponding Author:
Megha Pundir
M.Sc., Ph.D. Scholar, Department of Yoga, Central University of Rajasthan, Ajmer, Rajasthan, India

Meditation as a holistic approach to women's mental health: A narrative review

Megha Pundir and Chaitanya Kaushal

DOI: https://www.doi.org/10.33545/26647559.2025.v7.i1b.183

Abstract
Background: Mental health disorders are a significant global health concern, disproportionately affecting women due to a combination of biological, psychological, and sociocultural factors. Meditation, a centuries-old practice with growing scientific validation, is increasingly recognized as an effective, non-invasive intervention to improve mental health outcomes. However, a comprehensive review focusing on the specific impact of meditation on women's mental health remains underexplored.
Aim: This review aims to examine the role of meditation in addressing mental health challenges faced by women. It evaluates the prevalence of mental health disorders in women, explores the neurophysiological mechanisms of meditation, and highlights the benefits of different meditation techniques across various life stages.
Methods: A narrative review of peer-reviewed literature was conducted, focusing on studies published in the last two decades. Databases such as PubMed, Scopus, and PsycINFO were searched using keywords like "meditation," "mental health," "women," "stress," "depression," and "anxiety." Articles addressing meditation's psychological and physiological effects on women were included.
Results: Mental health disorders, including depression and anxiety, are significantly more prevalent in women due to hormonal fluctuations, caregiving responsibilities, and sociocultural stressors. Meditation interventions, including mindfulness-based stress reduction (MBSR), loving-kindness meditation (LKM), and transcendental meditation, have shown to reduce stress, anxiety, and depressive symptoms in women. Neuroimaging studies reveal that meditation enhances activity in brain regions associated with emotion regulation, attention, and self-awareness. Additionally, meditation reduces cortisol levels, mitigating the impact of chronic stress. Evidence highlights its benefits during pregnancy, postpartum, and menopause, as well as for managing workplace stress and trauma recovery.
Conclusion: Meditation is a promising tool for addressing the unique mental health needs of women. It offers physiological and psychological benefits that span across various life stages. Despite its potential, further research is needed to address gaps in understanding its long-term effects and to develop culturally sensitive, accessible interventions.

Keywords: Meditation, mental health, women, stress, depression, mindfulness, neurophysiology

Introduction

Mental health disorders are a major global health concern, disproportionately affecting women due to a complex interplay of biological, psychological, and sociocultural factors. Women are nearly twice as likely as men to experience common mental health disorders such as depression and anxiety [1]. The reasons for this heightened vulnerability include hormonal fluctuations, pregnancy-related changes, caregiving responsibilities, gender-based violence, and societal expectations. Research indicates that major depressive disorder (MDD) and generalized anxiety disorder (GAD) are significantly more prevalent in women, with lifetime prevalence rates of 21% and 23%, respectively, compared to 12% and 14% in men [2]. Additionally, hormonal transitions such as puberty, the menstrual cycle, pregnancy, postpartum, and menopause contribute to emotional dysregulation, increasing the risk of mood disorders [3]. These challenges highlight the urgent need for gender-specific mental health interventions.

Meditation, an ancient contemplative practice, has gained significant scientific recognition for its role in mental well-being. Traditionally rooted in Eastern philosophies, meditation is now widely integrated into modern psychological and medical frameworks as a complementary therapy for stress reduction and emotional regulation [4]. Various forms of meditation, including mindfulness-based stress reduction (MBSR), loving-kindness meditation (LKM), and transcendental meditation (TM), have been shown to reduce stress, anxiety, and depressive symptoms while enhancing cognitive and emotional resilience [5]. Neuroimaging studies

reveal that meditation strengthens activity in brain regions associated with emotion regulation, attention, and self-awareness, such as the prefrontal cortex, anterior cingulate cortex, and amygdala [6]. Additionally, meditation lowers cortisol levels, a key biomarker of stress, thereby mitigating the adverse physiological effects of chronic stress [7].

Despite the increasing body of evidence supporting meditation's mental health benefits, research specifically addressing its effects on women remains limited. Given the unique mental health challenges faced by women, a comprehensive exploration of meditation as a gender-sensitive intervention is necessary. This review aims to synthesize existing literature on the role of meditation in women's mental health, examining its effectiveness across various life stages, including pregnancy, postpartum, menopause, workplace stress, and trauma recovery. By highlighting meditation's neurophysiological mechanisms and psychological benefits, this review underscores its potential as a holistic, non-invasive approach to improving women's mental well-being.

Neurophysiological Mechanisms of Meditation in Women's Mental Health

Meditation exerts profound neurophysiological effects that contribute to mental well-being by modulating brain function, stress hormone regulation, and autonomic nervous system activity. The impact of meditation on mental health is mediated by changes in brain structure, functional connectivity, and neurochemical processes, all of which play a crucial role in emotional regulation, cognitive flexibility, and resilience to stress. This section explores the neurophysiological mechanisms underlying meditation's benefits for women's mental health, focusing on brain regions, neural networks, stress response systems, and neurotransmitter changes.

Brain Regions Involved in Meditation and Emotional Regulation

Meditation induces structural and functional changes in several key brain regions implicated in emotion regulation, attention, and self-awareness. Neuroimaging studies have shown that long-term meditation practice enhances gray matter density and functional connectivity in areas critical for mental well-being:

- **Prefrontal Cortex (PFC):** The PFC is responsible for executive functions, cognitive control, and emotional regulation. Meditation has been shown to increase cortical thickness in the PFC, improving self-regulation and reducing vulnerability to stress, anxiety, and depression [8].
- **Anterior Cingulate Cortex (ACC):** The ACC plays a key role in attention regulation, error detection, and emotional self-regulation. Meditation enhances ACC activity, promoting better attentional control and reducing emotional reactivity [9].
- **Amygdala:** The amygdala is involved in processing emotions, particularly fear and stress responses. Meditation has been found to decrease amygdala activation and volume, leading to reduced emotional reactivity and lower anxiety levels [10].
- **Hippocampus:** The hippocampus, associated with memory and emotion regulation, shows increased gray matter density following meditation practice. This enhancement is particularly relevant for women, as hippocampal dysfunction has been linked to stress-induced mood disorders, including depression and PTSD [11].

Neural Networks and Functional Connectivity

Meditation influences large-scale neural networks that regulate attention, emotional responses, and self-referential processing:

- **Default Mode Network (DMN):** The DMN is active during self-referential thinking and mind-wandering, which is often linked to rumination and anxiety. Studies suggest that meditation reduces DMN activity, decreasing excessive self-focus and negative thought patterns [12].
- **Salience Network (SN):** The SN, which includes the insula and ACC, detects emotionally significant stimuli and regulates the switch between the DMN and the Central Executive Network (CEN). Meditation strengthens SN function, improving emotional awareness and reducing stress reactivity [13, 14].
- **Central Executive Network (CEN):** The CEN, governed by the dorsolateral PFC, is responsible for cognitive control and decision-making. Meditation enhances CEN efficiency, allowing for better emotional regulation and resilience against mental health disorders [15].

Regulation of the Stress Response System

Women are more prone to stress-related disorders due to heightened hypothalamic-pituitary-adrenal (HPA) axis reactivity, which results in excessive cortisol secretion. Meditation has been shown to regulate the HPA axis by:

- **Reducing Cortisol Levels:** Regular meditation practice lowers baseline cortisol levels, reducing chronic stress and its detrimental effects on mental health [16].
- **Enhancing Parasympathetic Nervous System Activity:** Meditation increases vagal tone, promoting relaxation and resilience to stress [9].
- **Decreasing Inflammatory Markers:** Stress and depression are associated with increased inflammatory cytokines such as IL-6 and TNF-α. Meditation reduces systemic inflammation, contributing to improved mental health outcomes [17].

Neurotransmitter and Hormonal Changes

Meditation influences neurotransmitter systems that regulate mood and emotional balance:

- **Serotonin (5-HT):** Meditation is linked to increased serotonin production, which plays a crucial role in mood regulation and reducing depressive symptoms [18].
- **Gamma-Aminobutyric Acid (GABA):** GABA is an inhibitory neurotransmitter that counteracts excitatory signals linked to stress and anxiety. Studies indicate that meditation enhances GABAergic activity, promoting relaxation and emotional stability [19].
- **Dopamine (DA):** Dopamine, associated with motivation and reward, is modulated by meditation, improving positive affect and reducing anhedonia [20].
- **Oxytocin:** Meditation, particularly loving-kindness and compassion-based techniques, has been shown to increase oxytocin levels, fostering emotional bonding and reducing social stress [21].

Implications for Women's Mental Health

Given that women experience greater susceptibility to stress, mood disorders, and hormonal fluctuations, meditation's neurophysiological benefits hold significant promise for

addressing these challenges. By strengthening brain regions involved in emotional regulation, reducing stress hormone levels, and enhancing neurotransmitter balance, meditation serves as a holistic, non-invasive approach to improving women's mental well-being.

Benefits of Meditation across Different Life Stages in Women

Women experience distinct physiological and psychological changes across different life stages, including adolescence, reproductive years, pregnancy, postpartum, menopause, and aging. Meditation has been found to offer significant benefits at each stage, supporting emotional well-being, cognitive function, and overall mental health. This section explores how meditation impacts women's health throughout their lifespan.

1. Adolescence: Enhancing Emotional Regulation and Reducing Stress

Adolescence is a critical period marked by rapid brain development, hormonal changes, and increased vulnerability to stress, anxiety, and mood disorders. Meditation can help adolescent girls navigate these challenges by:

- **Reducing Anxiety and Depression:** Mindfulness-based interventions have been shown to decrease symptoms of anxiety and depression in adolescents [22].
- **Improving Emotional Regulation:** Meditation enhances prefrontal cortex development, leading to better impulse control and reduced emotional reactivity [23].
- **Boosting Academic Performance:** Regular meditation improves attention, working memory, and cognitive flexibility, supporting academic success [24].

2. Reproductive Years: Managing Stress, Mood, and Hormonal Balance

During reproductive years, women face significant physiological and psychological demands, including menstrual cycle fluctuations, career pressures, and emotional stress. Meditation provides multiple benefits:

- **Alleviating Menstrual Pain and PMS Symptoms:** Studies suggest that mindfulness meditation can reduce premenstrual syndrome (PMS) symptoms and menstrual pain by modulating the pain perception network [25].
- **Balancing Hormonal Changes:** Meditation has been associated with lower cortisol levels and improved estrogen balance, which helps regulate mood and emotional well-being [26].

3. Pregnancy and Postpartum: Promoting Maternal Well-being

Pregnancy and postpartum periods involve profound physiological and psychological transformations, making women more susceptible to stress, anxiety, and depression. Meditation has been shown to:

- **Reduce Prenatal Anxiety and Depression:** Mindfulness-based prenatal interventions significantly lower prenatal stress and improve maternal-fetal bonding [27].
- **Improve Birth Outcomes:** Meditation is linked to lower perceived pain during labor, reduced risk of preterm birth, and improved postpartum recovery [28] (Dhillon, Sparkes, & Duarte, 2017).
- **Support Postpartum Mental Health:** Meditation enhances oxytocin release, reducing the risk of postpartum depression and promoting positive mother-infant interactions [29].

4. Menopause: Managing Hormonal Shifts and Emotional Well-being

Menopause is associated with declining estrogen levels, leading to mood swings, sleep disturbances, and increased anxiety or depression. Meditation serves as a non-pharmacological intervention to:

- **Reduce Hot Flashes and Sleep Disturbances:** Mindfulness meditation has been found to alleviate menopause-related vasomotor symptoms and improve sleep quality [30, 31].
- **Enhance Cognitive Function:** Meditation supports cognitive resilience, reducing the risk of age-related memory decline and improving attention [32].
- **Regulate Mood and Emotional Stability:** Meditation modulates stress-response systems, helping women manage mood fluctuations and psychological distress during menopause [33].

5. Aging: Cognitive Preservation and Emotional Well-being

As women age, the risk of neurodegenerative disorders, cognitive decline, and loneliness increases. Meditation provides neuroprotective benefits that promote healthy aging:

- **Delaying Cognitive Decline:** Meditation has been linked to increased cortical thickness and enhanced memory function in older adults, reducing the risk of Alzheimer's disease [34].
- **Reducing Depression and Loneliness:** Meditation fosters emotional resilience, decreasing feelings of isolation and improving overall life satisfaction in elderly women [35].
- **Enhancing Quality of Life:** Meditation improves autonomic nervous system balance, promoting relaxation, emotional stability, and a sense of inner peace in aging women [36].

Discussion

This review highlights the significant impact of meditation on women's mental health, emphasizing its benefits across different life stages. The findings indicate that meditation practices such as mindfulness-based stress reduction (MBSR), loving-kindness meditation (LKM), and transcendental meditation (TM) effectively reduce symptoms of stress, anxiety, and depression in women. These effects are particularly relevant given the higher prevalence of mental health disorders among women, influenced by hormonal changes, caregiving roles, and sociocultural stressors [37].

From a neurophysiological perspective, meditation enhances brain function in regions associated with emotion regulation, self-awareness, and cognitive control, including the prefrontal cortex, amygdala, and insular cortex [5]. Neuroimaging studies demonstrate that long-term meditation practice leads to increased gray matter density in these regions, contributing to better resilience against mental health challenges [8]. Furthermore, meditation modulates the hypothalamic-pituitary-adrenal (HPA) axis, leading to reduced cortisol levels and improved autonomic nervous system balance, which are crucial for managing chronic stress [7].

The findings also underscore meditation's role in specific life phases such as pregnancy, postpartum, and menopause. Studies show that prenatal meditation reduces stress, anxiety, and depressive symptoms, improving both maternal and fetal

health outcomes [26, 28]. Similarly, postnatal meditation helps in managing postpartum depression by promoting relaxation and emotional stability [38]. For menopausal women, meditation is linked to reduced hot flashes, mood swings, and sleep disturbances, thereby enhancing overall quality of life [39].

While the reviewed evidence supports meditation as a promising intervention, certain limitations must be acknowledged. Many studies rely on self-reported measures, which may introduce bias. Additionally, variations in meditation techniques, session duration, and participant characteristics make it difficult to standardize findings. Future research should focus on longitudinal studies with larger, more diverse populations and incorporate biological markers (e.g., cortisol, heart rate variability, EEG) to establish objective measures of meditation's effects.

Conclusion

Meditation serves as a holistic and accessible approach to addressing mental health concerns among women. By promoting emotional regulation, reducing stress, and enhancing neurophysiological resilience, meditation can significantly benefit women across different life stages, from young adulthood to old age. The existing body of evidence supports its efficacy in managing stress, anxiety, depression, and hormonal transitions such as pregnancy and menopause. Despite its promise, more rigorous, large-scale studies are needed to further validate meditation's long-term effects and optimize intervention strategies. Future research should explore culturally tailored meditation programs, ensuring that diverse groups of women can access and benefit from this practice. Integrating meditation into healthcare systems, workplaces, and community programs could play a crucial role in promoting women's mental well-being on a broader scale.

References

1. Organization WH. Depression and other common mental disorders: global health estimates. 2017 [cited 2025 Mar 17]; Available from: https://policycommons.net/artifacts/546082/depression-and-other-common-mental-disorders/1523689/
2. Kuehner C. Why is depression more common among women than among men? Lancet Psychiatry. 2017 Feb 1;4(2):146-158.
3. Rubinow DR, Schmidt PJ. Sex differences and the neurobiology of affective disorders. Neuropsychopharmacology. 2019 Jan 1;44(1):111-128.
4. Goyal M, Singh S, Sibinga EMS, Gould NF, Rowland-Seymour A, Sharma R, *et al*. Meditation programs for psychological stress and well-being: A systematic review and meta-analysis. JAMA Intern Med. 2014;174(3):357-368.
5. Tang Y, Hölzel B, neuroscience MPN reviews, 2015 undefined. The neuroscience of mindfulness meditation. nature.comYY Tang, BK Hölzel, MI PosnerNature reviews neuroscience, 2015 nature.com [Internet]. 2015 [cited 2025 Mar 17]; Available from: https://www.nature.com/articles/nrn3916
6. Fox KCR, Nijeboer S, Dixon ML, Floman JL, Ellamil M, Rumak SP, *et al*. Is meditation associated with altered brain structure? A systematic review and meta-analysis of morphometric neuroimaging in meditation practitioners. ElsevierKCR Fox, S Nijeboer, ML Dixon, JL Floman, M Ellamil, SP Rumak, P Sedlmeier, K ChristoffNeuroscience & Biobehavioral Reviews, 2014•Elsevier [Internet]. 2014 [cited 2025 Mar 17];43:48-73. Available from: https://www.sciencedirect.com/science/article/pii/S0149763414000724
7. Pascoe M, Thompson D. ZJJ of psychiatric, 2017 undefined. Mindfulness mediates the physiological markers of stress: Systematic review and meta-analysis. ElsevierMC Pascoe, DR Thompson, ZM Jenkins, CF SkiJournal of psychiatric research, 2017•Elsevier [Internet]. [cited 2025 Mar 17]. 2017 Dec 1;95:156-178. Available from: https://www.sciencedirect.com/science/article/pii/S0022395617301462
8. Hölzel B, Carmody J, Vangel M. CCP research, 2011 undefined. Mindfulness practice leads to increases in regional brain gray matter density. Elsevier [Internet]. [cited 2025 Jan 11]; Available from: https://www.sciencedirect.com/science/article/pii/S092549271000288X
9. Tang Y, Hölzel B. neuroscience MPN reviews, 2015 undefined. The neuroscience of mindfulness meditation. nature.comYY Tang, BK Hölzel, MI PosnerNature reviews neuroscience, 2015•nature.com [Internet]. 2015 [cited 2025 Jan 10]; Available from: https://www.nature.com/articles/nrn3916
10. Taren AA, Creswell JD, Gianaros PJ. Dispositional Mindfulness Co-Varies with Smaller Amygdala and Caudate Volumes in Community Adults. PLoS One. 2013 May 22, 8(5).
11. Goldin P, Emotion JG, 2010 undefined. Effects of mindfulness-based stress reduction (MBSR) on emotion regulation in social anxiety disorder. psycnet.apa.orgPR Goldin, JJ GrossEmotion, 2010•psycnet.apa.org [Internet]. 2010 [cited 2025 Mar 17]; Available from: https://psycnet.apa.org/journals/emo/10/1/83/
12. Brewer JA, Worhunsky PD, Gray JR, Tang YY, Weber J, Kober H. Meditation experience is associated with differences in default mode network activity and connectivity. National Acad SciencesJA Brewer, PD Worhunsky, JR Gray, YY Tang, J Weber, H KoberProceedings of the National Academy of Sciences, 2011•National Acad Sciences [Internet]. 2011 Dec 13 [cited 2025 Jan 14];108(50):20254-20259. Available from: https://www.pnas.org/doi/abs/10.1073/pnas.1112029108
13. Touroutoglou A, Hollenbeck M, Dickerson BC, Feldman Barrett L. Dissociable large-scale networks anchored in the right anterior insula subserve affective experience and attention. ElsevierA Touroutoglou, M Hollenbeck, BC Dickerson, LF BarrettNeuroimage, 2012•Elsevier [Internet]. 2012 [cited 2025 Mar 17];60(4):1947-1958. Available from: https://www.sciencedirect.com/science/article/pii/S1053811912001899
14. Volkow N, neuroscience TLN, 2005 undefined. The neuroscience of addiction. nature.comN Volkow, TK LiNature neuroscience, 2005•nature.com [Internet]. 2004 [cited 2025 Jan 26];9(9):318-25. Available from: https://www.nature.com/articles/nn1105-1429
15. Fox K, Nijeboer S, Dixon M. JFN&, 2014 undefined. Is meditation associated with altered brain structure? A systematic review and meta-analysis of morphometric neuroimaging in meditation practitioners. ElsevierKCR Fox, S Nijeboer, ML Dixon, JL Floman, M Ellamil, SP Rumak, P Sedlmeier, K ChristoffNeuroscience &

Biobehavioral Reviews, 2014•Elsevier [Internet]. [cited 2025 Jan 21]; Available from: https://www.sciencedirect.com/science/article/pii/S0149763414000724
16. Pascoe M, Thompson D. ZJJ of psychiatric, 2017 undefined. Mindfulness mediates the physiological markers of stress: Systematic review and meta-analysis. Elsevier [Internet]. 2017 [cited 2025 Jan 10]; Available from: https://www.sciencedirect.com/science/article/pii/S0022395617301462
17. O'Toole M, Bovbjerg D. MR, behavior undefined, immunity and, 2018 undefined. Effects of psychological interventions on systemic levels of inflammatory biomarkers in humans: A systematic review and meta-analysis. Elsevier [Internet]. 2018 [cited 2025 Mar 17]; Available from: https://www.sciencedirect.com/science/article/pii/S0889159118300916
18. Davidson R, neuroscience BMN, 2012 undefined. Social influences on neuroplasticity: stress and interventions to promote well-being. nature.comRJ Davidson, BS McEwenNature neuroscience, 2012•nature.com [Internet]. 2012 [cited 2025 Mar 17]; Available from: https://www.nature.com/articles/nn.3093
19. Streeter CC, Jensen JE, Perlmutter RM, Cabral HJ, Tian H, Terhune DB, *et al*. Yoga Asana sessions increase brain GABA levels: A pilot study. liebertpub.comCC Streeter, JE Jensen, RM Perlmutter, HJ Cabral, H Tian, DB Terhune, DA CirauloThe journal of alternative and complementary medicine, 2007•liebertpub.com [Internet]. 2007 May [cited 2025 Mar 17];13(4):419-426. Available from: https://www.liebertpub.com/doi/abs/10.1089/acm.2007.6338
20. Kjaer TW, Bertelsen C, Piccini P, Brooks D, Alving J, Lou HC. Increased dopamine tone during meditation-induced change of consciousness. Elsevier [Internet]. 2002 [cited 2025 Mar 17];13:255-259. Available from: https://www.sciencedirect.com/science/article/pii/S0926641001001069
21. Carter CS. The role of oxytocin and vasopressin in attachment. Psychodyn Psychiatry. 2017 Dec 1;45(4):499-518.
22. Zoogman S, Goldberg S, Hoyt W, Mindfulness LM. Undefined. Mindfulness interventions with youth: A meta-analysis. SpringerS Zoogman, SB Goldberg, WT Hoyt, L MillerMindfulness, 2015•Springer [Internet]. 2015 Apr 1 [cited 2025 Mar 17]. 2015;6(2):290-302. Available from: https://link.springer.com/article/10.1007/s12671-013-0260-4
23. Tang Y, Yang L. LLC development, 2012 undefined. Improving executive function and its neurobiological mechanisms through a mindfulness-based intervention: Advances within the field of developmental neuroscience. Wiley Online LibraryYY Tang, L Yang, LD Leve, GT HaroldChild development perspectives, 2012•Wiley Online Library [Internet]. [cited 2025 Mar 17]. 2012 Dec;6(4):361-6. Available from: https://srcd.onlinelibrary.wiley.com/doi/abs/10.1111/j.1750-8606.2012.00250.x
24. Zenner C, Herrnleben-Kurz S, Walach H. Mindfulness-based interventions in schools-A systematic review and meta-analysis. Front Psychol. 2014, 5.
25. Armour M, Smith C, Steel K, and FMB complementary, 2019 undefined. The effectiveness of self-care and lifestyle interventions in primary dysmenorrhea: A systematic review and meta-analysis. SpringerM Armour, CA Smith, KA Steel, F MacmillanBMC complementary and alternative medicine, 2019•Springer [Internet]. Jan 17 [cited 2025 Mar 17], 2019, 19(1). Available from: https://link.springer.com/article/10.1186/s12906-019-2433-8
26. Goyal M, Singh S, Sibinga E. NGJ internal, 2014 undefined. Meditation programs for psychological stress and well-being: a systematic review and meta-analysis. jamanetwork.com [Internet]. [cited 2024 Nov 29]; Available from: https://jamanetwork.com/journals/jamainternalmedicine
27. /fullarticle/1809754%E2%80%A8
28. Zhang D, Tsang KWK, Duncan LG, Benjamin ·, Yip HK, Dicken ·, *et al*. Effects of the Mindfulness-Based Childbirth and Parenting (MBCP) program among pregnant women: A randomized controlled trial. Springer [Internet]. [cited 2025 Mar 17]. 2046 Jan 1;14(1):50-65. Available from: https://link.springer.com/article/10.1007/s12671-022-02046-8
29. Dhillon A, Sparkes E, Mindfulness RD, 2017 undefined. Mindfulness-based interventions during pregnancy: A systematic review and meta-analysis. SpringerA Dhillon, E Sparkes, RV DuarteMindfulness, 2017•Springer [Internet]. [cited 2025 Mar 17]. 2017 Dec 1;8(6):1421-37. Available from: https://link.springer.com/article/10.1007/s12671-017-0726-x
30. Passaquindici I, Pastore M, Nardozza O, Lionetti F, D'Urso G, Palumbo R, *et al*. From inner to dyadic connection: the role of mindfulness in mother-infant interaction during the first year of life. Front Behav Neurosci. 2024, 18.
31. Carmody J, Crawford S, Menopause LC, 2006 undefined. A pilot study of mindfulness-based stress reduction for hot flashes. journals.lww.comJ Carmody, S Crawford, L ChurchillMenopause, 2006•journals.lww.com [Internet]. [cited 2025 Mar 17];13(5):760-9. Available from: https://journals.lww.com/menopausejournal/fulltext/2006/13050/a_pilot_study_of_mindfulness_based_stress.10.aspx
32. Carmody J, Professor of Medicine P, Crawford S, of Medicine P, Salmoirago-Blotcher E, Fellow Mdd, *et al*. Mindfulness training for coping with hot flashes: results of a randomized trial. journals.lww.comJF Carmody, S Crawford, E Salmoirago-Blotcher, K Leung, L Churchill, N OlendzkiMenopause, 2011•journals.lww.com [Internet]. [cited 2025 Mar 17]. 2011;18(6):611-620. Available from: https://journals.lww.com/menopausejournal/fulltext/2011/06000/Mindfulness_training_for_coping_with_hot_flashes_.6.aspx
33. Newberg AB, Wintering N, Khalsa DS, Roggenkamp H, Waldman MR. Meditation effects on cognitive function and cerebral blood flow in subjects with memory loss: A preliminary study. Journal of Alzheimer's Disease. 2010;20(2):517-526.
34. Liu H, Cai K, Wang J, Zhang H. The effects of mindfulness-based interventions on anxiety, depression, stress, and mindfulness in menopausal women: A

systematic review and meta-analysis. Front Public Health. 2023 Jan 9, 10.
35. Luders E, Cherbuin N, Neuroimage CG, 2016 undefined. Estimating brain age using high-resolution pattern recognition: Younger brains in long-term meditation practitioners. ElsevierE Luders, N Cherbuin, C GaserNeuroimage, 2016•Elsevier [Internet]. [cited 2025 Mar 17]. 2016;134:508-13. Available from: https://www.sciencedirect.com/science/article/pii/S1053811916300404
36. Health SPA, M. Undefined. Meditation program mitigates loneliness and promotes wellbeing, life satisfaction and contentment among retired older adults: A two-year follow-up study in four South. Taylor & FrancisSP PandyaAging & Mental Health, 2021•Taylor & Francis [Internet]. 2019 [cited 2025 Mar 17]. 2021;25(2):286-98. Available from: https://www.tandfonline.com/doi/abs/10.1080/13607863.2019.1691143
37. Gard T, Hölzel B. SL of the NYA of, 2014 undefined. The potential effects of meditation on age-related cognitive decline: a systematic review. Wiley Online LibraryT Gard, BK Hölzel, SW LazarAnnals of the New York Academy of Sciences, 2014•Wiley Online Library [Internet]. [cited 2025 Mar 17]. 2014;1307(1):89-103. Available from: https://nyaspubs.onlinelibrary.wiley.com/doi/abs/10.1111/nyas.12348
38. Kendler KS, Edwards AC, Gardner CO. Sex differences in the pathways to symptoms of alcohol use disorder: a study of opposite-sex twin pairs. Alcohol Clin Exp Res [Internet]. [cited 2023 Aug 17]. 2015 Jun 1;39(6):998-1007. Available from: https://pubmed.ncbi.nlm.nih.gov/25845269/
39. Dunn C, Hanieh E, Roberts R, mental RPA of women's, 2012 undefined. Mindful pregnancy and childbirth: effects of a mindfulness-based intervention on women's psychological distress and well-being in the perinatal period. SpringerC Dunn, E Hanieh, R Roberts, R PowrieArchives of women's mental health, 2012•Springer [Internet]. cited 2025 Mar 17]. 2012 Apr;15(2):139-143. Available from: https://link.springer.com/article/10.1007/s00737-012-0264-4
40. Sizoo B. Disabilities EKR in developmental, 2017 undefined. Cognitive behavioural therapy and mindfulness based stress reduction may be equally effective in reducing anxiety and depression in adults with autism spectrum. Elsevier [Internet]. [cited 2025 Mar 17]; Available from: https://www.sciencedirect.com/science/article/pii/S0891422217300823