Trauma, Chronic Stress, and the Menopause Transition:

Understanding the Link Between Lifetime Stress Exposure and Early or More Severe Perimenopausal Symptoms—With a Focus on Women of Color

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Introduction

Perimenopause is often framed as a purely biological milestone, a predictable hormonal transition marking the end of reproductive capacity. Yet for many women, especially those with significant lifetime exposure to trauma and chronic stress, this transition is far more complex. It is not simply a shift in estrogen and progesterone; it is a convergence of neuroendocrine dysregulation, cumulative physiological burden, psychosocial stress, and lived experience.

Despite this, mainstream clinical conversations rarely integrate trauma history, chronic stress exposure, or social determinants of health into menopause care. This gap is particularly consequential for women of color, who are disproportionately exposed to chronic stressors such as systemic racism, socioeconomic inequities, and healthcare disparities. These factors contribute to what has been termed "weathering," a process of accelerated biological aging due to cumulative stress (Geronimus et al., 2006).

Emerging research suggests that higher lifetime exposure to adversity is associated with **earlier onset of reproductive aging in some populations, as well as more severe and persistent perimenopausal symptoms** (Faleschini et al., 2022; Gibson et al., 2019; Harlow et al., 2022). This article explores the intersection of trauma, stress physiology, reproductive health, and menopause, with a particular focus on disparities affecting women of color.

Understanding Perimenopause and Menopause

Perimenopause, also known as the menopausal transition, is the period preceding menopause during which ovarian function declines and hormone levels fluctuate. It is characterized by irregular menstrual cycles and symptoms such as:

- Vasomotor symptoms (hot flashes, night sweats)
- Sleep disturbances
- Mood changes (anxiety, depression, irritability)
- Cognitive complaints ("brain fog")

- Vaginal dryness and sexual discomfort

Menopause is clinically defined as **12 consecutive months without menstruation**, with the average age in the United States being approximately 51–52 years (National Institute on Aging [NIA], 2024).

Perimenopause typically begins in the mid-to-late 40s but can start earlier. The transition is often divided into:

- **Early perimenopause:** subtle cycle changes, occasional symptoms
- **Late perimenopause:** more pronounced hormonal fluctuations, frequent symptoms
- **Postmenopause:** stabilization at low estrogen levels

The duration varies widely, with a median of approximately 4 years, though symptoms may persist for over a decade in some women (Avis et al., 2015).

Factors Influencing Onset and Symptom Severity

The timing, progression, and lived experience of perimenopause are not uniform. Rather, they are shaped by a complex interplay of biological, psychological, behavioral, and social determinants of health. Understanding these factors is essential for both clinicians and patients, as they help explain why some women experience mild transitions while others face prolonged, disruptive, or early-onset symptoms.

Genetics

Genetic factors play a foundational role in determining the timing of menopause and the trajectory of perimenopause. Studies consistently demonstrate that **age at menopause is strongly heritable**, with maternal menopause age often serving as a predictor for daughters (Gold et al., 2001). Genetic variations influence ovarian reserve, follicular depletion rates, and hormonal signaling pathways.

However, genetics does not operate in isolation. Environmental exposures and life experiences can accelerate or mitigate genetically predisposed timelines. This highlights an important clinical truth: **genetics may load the gun, but environment often pulls the trigger**.

Smoking Status

Smoking is one of the most well-established modifiable risk factors associated with **earlier onset of menopause**, often advancing menopause by 1–2 years (Whitcomb et al., 2018). The mechanisms are multifactorial and include:

- Direct ovarian toxicity
- Accelerated follicular depletion
- Anti-estrogenic effects
- Increased oxidative stress

Smoking is also associated with **more severe vasomotor symptoms**, likely due to its impact on vascular function and thermoregulation.

From a public health perspective, smoking disproportionately affects populations experiencing socioeconomic disadvantage, further compounding disparities in reproductive aging.

Body Composition

Body composition, particularly adiposity, plays a significant role in hormonal balance during perimenopause. Adipose tissue is hormonally active and contributes to **peripheral estrogen production via aromatization**.

Women with higher body fat percentages may experience:

- Altered estrogen levels
- Increased inflammation
- Greater severity of vasomotor symptoms

Conversely, very low body weight is also associated with earlier menopause due to insufficient estrogen reserves. This demonstrates that **both ends of the metabolic spectrum can influence reproductive aging**.

Additionally, metabolic dysfunction, such as insulin resistance, can exacerbate fatigue, mood disturbances, and cardiovascular risk during the menopausal transition.

Reproductive History

A woman's reproductive history provides important insight into her perimenopausal experience. Factors include:

- Age at menarche
- Parity (number of pregnancies)
- History of infertility
- Use of hormonal contraception
- Surgical history (e.g., hysterectomy, oophorectomy)

Women with histories of reproductive disorders, such as **polycystic ovary syndrome (PCOS), endometriosis, or uterine fibroids**, may experience more complex hormonal transitions.

Surgical menopause, particularly following oophorectomy (removal of ovaries), results in an abrupt decline in estrogen and is often associated with **more severe and immediate symptom onset**.

Mental Health

Mental health is both a contributor to and an outcome of the perimenopausal transition. Women with pre-existing conditions such as:

- Depression
- Anxiety
- Post-traumatic stress disorder (PTSD)

are more likely to report **greater symptom severity**, particularly in the domains of mood disturbance, sleep disruption, and perceived stress (Bromberger et al., 2011).

Neurobiologically, fluctuations in estrogen influence neurotransmitter systems, including serotonin and dopamine pathways, which regulate mood and emotional stability. When combined with chronic stress or trauma history, these fluctuations can intensify psychological symptoms.

Socioeconomic Status

Socioeconomic status (SES) significantly influences both the timing and experience of menopause. Lower SES is associated with:

- Earlier menopause
- Increased symptom burden
- Reduced access to healthcare
- Higher exposure to chronic stress

Women facing financial instability may also experience:

- Food insecurity
- Limited access to preventive care
- Increased caregiving responsibilities

These factors contribute to cumulative physiological stress and reduced capacity for symptom management.

Importantly, SES intersects with race, geography, and systemic inequities, amplifying disparities in menopausal health outcomes.

Chronic Stress Exposure

Chronic stress is one of the most influential yet underrecognized factors shaping perimenopause.

Persistent activation of the stress response system leads to:

- Dysregulation of the HPA axis
- Elevated cortisol levels
- Disruption of reproductive hormone signaling

- Increased inflammation

Over time, this contributes to **allostatic load**, which accelerates biological aging and impairs the body's ability to maintain homeostasis (McEwen & Stellar, 1993).

Women with high lifetime stress exposure may experience:

- Earlier onset of symptoms
- Increased severity of vasomotor symptoms
- Greater sleep disturbances
- Heightened emotional reactivity

Psychosocial Stress and Adverse Life Experiences

Beyond general stress, **psychosocial stress and adverse life experiences**, including trauma, abuse, discrimination, and chronic instability, have emerged as key contributors to menopausal symptom burden.

Longitudinal research demonstrates that:

- Women with histories of physical or sexual abuse report **worse menopausal symptoms and poorer well-being**
- Financial instability is associated with increased depressive symptoms and overall symptom severity
  (Faleschini et al., 2022)

These experiences are not simply psychological; they become biologically embedded, influencing:

- Neuroendocrine function
- Immune response
- Hormonal regulation

This process, often referred to as **biological embedding of stress**, helps explain why the body may respond more intensely during the menopausal transition.

Integrating the Factors: A Whole-Body Perspective

These factors do not act independently. Instead, they interact dynamically across the lifespan.

For example:

- A woman with genetic predisposition, chronic stress exposure, and limited healthcare access may experience earlier and more severe symptoms.
- A woman with strong social support, access to care, and lower stress exposure may experience a more manageable transition.

This underscores a critical point:

Perimenopause is not just a hormonal event; it is a reflection of cumulative life experience.

Clinical Implications

Recognizing these influencing factors allows for more effective, individualized care. Clinicians should:

- Assess not only symptoms, but life context
- Screen for trauma, stress, and mental health history
- Consider social determinants of health
- Provide culturally responsive and trauma-informed care

By doing so, we move away from a one-size-fits-all model and toward a **whole-person approach to midlife health**.

The Physiology of Stress and Trauma

The HPA Axis and Allostatic Load

The human body is designed for survival. At the center of this survival system is the **hypothalamic-pituitary-adrenal (HPA) axis**, a neuroendocrine network that coordinates the body's response to perceived threat.

When a stressor is detected, whether physical, emotional, or psychological, the hypothalamus releases corticotropin-releasing hormone (CRH), which signals the pituitary gland to secrete adrenocorticotropic hormone (ACTH). ACTH then stimulates the adrenal glands to release **cortisol**, the body's primary stress hormone (McEwen, 2007).

In acute situations, this system is protective. Cortisol mobilizes energy, sharpens attention, and enhances the body's ability to respond to danger. However, when stress becomes chronic, as seen in prolonged trauma exposure, systemic adversity, or persistent psychosocial strain, the HPA axis remains activated beyond its intended purpose.

Over time, this leads to **HPA axis dysregulation**, characterized by either persistently elevated cortisol levels or, in some cases, a blunted cortisol response due to system exhaustion.

Allostatic Load: The Cost of Chronic Adaptation

The concept of **allostasis** refers to the body's ability to achieve stability through change. However, when adaptive systems are repeatedly activated, they begin to accumulate strain. This cumulative physiological burden is known as **allostatic load** (McEwen & Stellar, 1993).

Allostatic load is not a single condition but a multisystem process involving:

- Neuroendocrine dysregulation
- Immune system activation and suppression cycles
- Metabolic imbalance
- Cardiovascular strain

Biomarkers associated with elevated allostatic load include:

- Elevated cortisol
- Increased inflammatory markers (e.g., IL-6, CRP)
- Altered blood pressure
- Dysregulated glucose metabolism

Over time, elevated allostatic load contributes to widespread physiological disruption, including:

Hormonal Dysregulation

Chronic cortisol exposure interferes with endocrine signaling, disrupting feedback loops across multiple hormonal systems, including thyroid, insulin, and reproductive hormones.

Immune Dysfunction

Persistent stress leads to a paradoxical state of **chronic low-grade inflammation** alongside impaired immune defense, increasing susceptibility to both inflammatory conditions and infections.

Sleep Disturbances

Cortisol dysregulation disrupts circadian rhythms, impairing melatonin production and contributing to insomnia, fragmented sleep, and reduced restorative sleep cycles.

Cardiometabolic Disease

Chronic stress is associated with increased risk of hypertension, insulin resistance, obesity, and cardiovascular disease, conditions that become increasingly relevant during midlife.

Neurobiological Changes

Prolonged stress impacts brain structure and function, particularly in regions such as the hippocampus, amygdala, and prefrontal cortex, affecting memory, emotional regulation, and stress reactivity (McEwen, 2007).

Impact on the Reproductive System

HPA–HPG Axis Interaction

The reproductive system does not operate independently; it is tightly regulated by the **hypothalamic-pituitary-gonadal (HPG) axis**, which is highly sensitive to stress signals.

Under chronic stress conditions, the HPA axis exerts an inhibitory effect on the HPG axis. This interaction is evolutionarily adaptive: in times of perceived threat, the body deprioritizes reproduction in favor of survival.

However, when this suppression becomes prolonged, it leads to significant reproductive consequences.

Mechanisms of Disruption

Reduced Gonadotropin-Releasing Hormone (GnRH) Signaling

Chronic elevation of CRH and cortisol suppresses hypothalamic GnRH secretion, which is essential for initiating the reproductive hormone cascade.

Altered LH and FSH Secretion

Disrupted GnRH pulsatility leads to irregular secretion of luteinizing hormone (LH) and follicle-stimulating hormone (FSH), impairing follicular development and ovulation.

Impaired Ovarian Function

Reduced ovarian responsiveness results in:

- Decreased estrogen and progesterone production
- Irregular or anovulatory cycles
- Accelerated follicular depletion

Increased Inflammatory and Oxidative Stress

Chronic stress contributes to oxidative damage and inflammatory processes within ovarian tissue, potentially impacting ovarian reserve and function.

Clinical Manifestations

The downstream effects of these disruptions may present as:

- Irregular menstrual cycles
- Shortened or lengthened cycle intervals
- Anovulation
- Hormonal instability
- Early onset of perimenopausal symptoms

Over time, these patterns may contribute to **earlier reproductive aging** or a more symptomatic menopausal transition.

Stress, Estrogen, and the Nervous System

Estrogen plays a critical role in regulating not only reproductive function but also:

- Thermoregulation
- Mood stability
- Sleep architecture
- Cognitive function

Chronic stress alters estrogen signaling in several ways:

- Cortisol competes with estrogen at receptor sites
- Inflammatory cytokines interfere with estrogen metabolism
- Stress-induced enzymatic changes affect hormone conversion pathways

As estrogen levels begin to fluctuate during perimenopause, a body already burdened by chronic stress may have reduced resilience to these changes.

This helps explain why women with high lifetime stress exposure often report:

- More intense hot flashes
- Greater mood instability
- Increased anxiety and irritability
- More severe sleep disruption

Trauma, the Nervous System, and Symptom Amplification

Trauma does not only affect hormones; it reshapes the **nervous system's baseline state**.

Chronic trauma exposure is associated with:

- Heightened sympathetic activation (fight-or-flight)
- Reduced parasympathetic regulation (rest-and-digest)
- Increased vigilance and stress reactivity

This altered baseline can amplify perimenopausal symptoms through:

- Increased sensitivity to temperature changes (worsening hot flashes)
- Heightened perception of discomfort and pain
- Greater emotional reactivity
- Reduced capacity for physiological recovery

In this context, perimenopause becomes not just a hormonal transition, but a **neurobiological stress test**.

Integrative Understanding

When viewed through a systems-based lens, the connection becomes clear:

- Chronic stress dysregulates the HPA axis
- HPA dysregulation suppresses the HPG axis
- Hormonal disruption accelerates reproductive changes
- Nervous system dysregulation amplifies symptom perception
- Allostatic load reduces the body's resilience to transition

This creates a feedback loop in which stress and hormonal change reinforce one another, increasing both the **intensity and duration of perimenopausal symptoms**.

Clinical Implications

Understanding this physiology shifts the clinical approach from symptom suppression alone to **root-cause-informed care**.

Effective management should include:

- Assessment of chronic stress and trauma history
- Evaluation of sleep and nervous system regulation
- Integration of mental health and reproductive care
- Interventions targeting both hormonal and stress pathways

This approach is particularly important for populations with elevated lifetime stress exposure, including women of color, who may enter perimenopause with a higher baseline allostatic load.

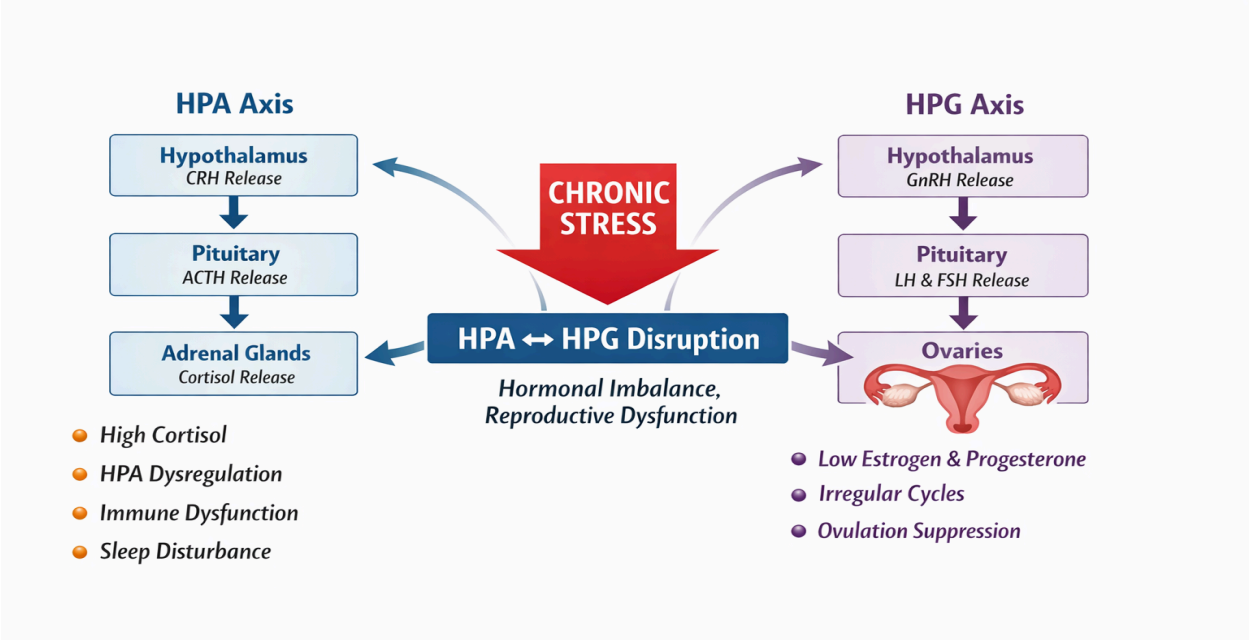

Figure 1. Chronic Stress and Hormone Disruption

Trauma Exposure and Menopause Symptoms

A growing body of research demonstrates that trauma exposure is not only a psychological experience; it becomes biologically embedded, shaping how the body responds to hormonal transitions later in life. The menopausal transition, particularly perimenopause, represents a period of heightened physiological sensitivity. For women with histories of trauma, this transition can amplify symptoms in both intensity and duration.

Trauma as a Biologically Embedded Experience

Trauma, whether experienced in childhood, adolescence, or adulthood, can lead to long-term alterations in:

- Neuroendocrine function
- Autonomic nervous system regulation
- Immune response
- Stress hormone signaling

This process, often referred to as **biological embedding**, means that past experiences are carried forward in the body's regulatory systems (Shonkoff et al., 2009).

As a result, when the body encounters a physiologically demanding transition such as perimenopause, it is not starting from a neutral baseline. Instead, it is responding from a system that may already be dysregulated.

Childhood Trauma and Vasomotor Symptoms

Early-life adversity has been strongly associated with increased vasomotor symptoms during midlife.

In a study by Thurston et al. (2008), women with histories of childhood abuse or neglect had significantly higher odds of reporting hot flashes and night sweats compared to those without such histories. These symptoms are not merely uncomfortable; they are closely linked to:

- Sleep disruption
- Mood instability
- Reduced quality of life

Importantly, follow-up research has shown that this association extends beyond self-report. Carson and Thurston (2019) demonstrated that women with childhood trauma histories experienced **more frequent physiologically measured vasomotor symptoms during sleep**, confirming that the relationship is rooted in biological processes rather than perception alone.

Adult Trauma: Intimate Partner Violence and Sexual Trauma

Trauma occurring in adulthood continues to shape menopausal experience.

Women with histories of **intimate partner violence (IPV), sexual assault, or chronic relational trauma** report significantly higher rates of:

- Sleep disturbances
- Night sweats
- Vaginal dryness and irritation
- Dyspareunia (pain during intercourse)

(Gibson et al., 2019)

These symptoms reflect the intersection of hormonal change and **trauma-related alterations in the nervous system**. For example:

- Chronic hypervigilance can impair sleep architecture
- Pelvic floor tension associated with trauma can contribute to sexual pain
- Emotional dysregulation may intensify the perception of physical symptoms

This highlights that trauma impacts not only the endocrine system, but also **somatic and relational aspects of health**, which become increasingly relevant during perimenopause.

Longitudinal Impact of Psychosocial Stress

Long-term studies provide compelling evidence that trauma and stress exert lasting effects across the lifespan.

In the Project Viva cohort, Faleschini et al. (2022) found that:

- Histories of physical abuse were associated with worse somatic and psychological menopausal symptoms
- Sexual abuse was linked to worse overall symptom burden
- Financial instability and chronic stress were associated with increased depressive symptoms and poorer overall well-being

These findings are particularly significant because they demonstrate that **stress exposures decades earlier continue to influence health outcomes in midlife**.

Neurobiological Mechanisms Linking Trauma to Symptom Severity

The relationship between trauma and menopausal symptoms is mediated through several interconnected biological pathways:

HPA Axis Dysregulation

Chronic trauma alters cortisol regulation, leading to either hyperactivation or blunted stress responses. This dysregulation affects thermoregulation, contributing to more frequent and intense hot flashes.

Autonomic Nervous System Imbalance

Trauma is associated with increased sympathetic activation and reduced parasympathetic tone. This imbalance can:

- Heighten sensitivity to temperature changes
- Increase cardiovascular reactivity
- Amplify physical discomfort

Inflammation

Chronic stress and trauma are linked to elevated inflammatory markers, which may influence vasomotor symptoms, mood disturbances, and fatigue.

Neurotransmitter Disruption

Alterations in serotonin and norepinephrine pathways, both involved in mood regulation and thermoregulation, may exacerbate symptoms such as anxiety, depression, and hot flashes.

Trauma, Sleep, and Symptom Amplification

Sleep disturbance is one of the most common and debilitating symptoms of perimenopause, and trauma significantly compounds this issue.

Women with trauma histories are more likely to experience:

- Insomnia
- Night awakenings
- Reduced sleep efficiency

Because vasomotor symptoms frequently occur during sleep, poor sleep can create a **feedback loop**, where:

- Night sweats disrupt sleep
- Sleep deprivation increases stress reactivity
- Increased stress worsens symptom perception

This cyclical pattern contributes to both physical and emotional exhaustion.

The Role of Perception and Sensory Processing

Trauma also affects how the brain processes and interprets bodily sensations.

Women with trauma histories may experience:

- Heightened interoceptive awareness (increased sensitivity to internal sensations)
- Lower thresholds for discomfort
- Greater emotional reactivity to physical symptoms

This does not mean symptoms are exaggerated; it means the **nervous system is primed to detect and respond to changes more intensely**.

Integrating the Evidence

Taken together, the evidence suggests that trauma influences menopause symptoms through:

- Hormonal pathways (HPA–HPG interaction)
- Nervous system dysregulation
- Inflammatory processes
- Behavioral and psychosocial factors

This creates a multidimensional effect in which symptoms are not only more frequent, but also more disruptive to daily functioning.

Clinical Implications

Recognizing the role of trauma in menopause is essential for effective care.

Healthcare providers should:

- Screen for trauma history in a sensitive, non-invasive manner
- Recognize that symptom severity may reflect underlying physiological dysregulation

- Integrate trauma-informed approaches into menopause care
- Address both hormonal and psychosocial contributors

This approach shifts the narrative from:

> "Why are these symptoms so severe?"
> to
> "What has this body experienced, and how is it responding?"

A Reframed Understanding

Perimenopause is often described as a transition of decline. However, for many women, it is also a **revelatory phase**, where unresolved physiological and emotional patterns surface.

Trauma does not create weakness; it creates adaptation.
But adaptation comes with a cost.

The menopausal transition reveals where that cost has accumulated, offering an opportunity not only for symptom management, but for deeper, integrative healing.

Chronic Stress and Timing of Menopause

Evidence suggests that chronic stress may influence the timing of menopause, though findings remain nuanced and, at times, inconsistent. What is more consistently supported across the literature is that chronic stress meaningfully shapes **how** the menopausal transition unfolds, often accelerating the onset of symptoms and prolonging their duration, even when the exact age at final menstrual period is only modestly affected.

What the Research Shows About Timing

Population-based studies indicate that women experiencing higher levels of perceived daily stress may reach menopause slightly earlier than those with lower stress exposure. For example, Choi et al. (2015) found that women reporting high stress levels had a statistically significant, though modest, earlier age at natural menopause compared to their lower-stress counterparts.

While the difference in years may appear small at the individual level, even shifts of several months to a year are clinically meaningful when considered across populations. Earlier menopause has been associated with:

- Increased risk of cardiovascular disease
- Reduced bone mineral density and higher fracture risk
- Cognitive and metabolic changes
- Earlier decline in estrogen's protective effects

Thus, small changes in timing can translate into **long-term health implications**, particularly when compounded by other risk factors such as socioeconomic disadvantage or limited access to care.

Why Findings on Timing Vary

The variability in findings reflects the complexity of menopause as a multifactorial process. The timing of menopause is influenced by:

- Genetic predisposition
- Ovarian reserve and follicular depletion rate
- Environmental exposures
- Lifestyle factors (e.g., smoking, nutrition)
- Psychosocial stress

Chronic stress does not act in isolation; rather, it interacts with these variables. As a result, its influence on **age at menopause** may be subtle or difficult to isolate in large epidemiological studies.

However, focusing solely on the age of menopause risks overlooking a more clinically relevant reality: **the lived experience of the transition itself**.

Earlier Onset of Symptoms vs. Earlier Menopause

A critical distinction must be made between:

- **Age at menopause (final menstrual period)**
- **Age at onset of perimenopausal symptoms**

Emerging evidence suggests that chronic stress may not dramatically shift the age at menopause for all women, but it can:

- Trigger **earlier onset of vasomotor symptoms**
- Increase **symptom frequency and severity**
- Prolong the **duration of the menopausal transition**

This means that a woman may technically reach menopause at a “normal” age, yet experience **years of intensified symptoms leading up to that point**.

Mechanisms Linking Stress to Reproductive Aging

Several biological pathways help explain how chronic stress may influence reproductive timing and symptom onset:

HPA–HPG Axis Crosstalk

Chronic activation of the HPA axis suppresses the hypothalamic-pituitary-gonadal (HPG) axis, disrupting ovarian signaling and potentially accelerating functional reproductive decline (Kalantaridou et al., 2004).

Cortisol and Ovarian Function

Elevated cortisol levels may:

- Interfere with follicular development
- Alter estrogen and progesterone production
- Contribute to irregular ovulatory patterns

Inflammation and Oxidative Stress

Chronic stress is associated with increased inflammatory cytokines and oxidative stress, which may contribute to **ovarian aging and reduced follicular quality**.

Telomere Shortening and Biological Aging

Stress has been linked to accelerated cellular aging, including **shortened telomeres**, which may reflect broader processes of reproductive aging (Epel et al., 2004).

Chronic Stress and Prolonged Menopausal Distress

Perhaps the most consistent finding across studies is that chronic stress is associated with:

- **Earlier onset of symptoms**
- **Greater symptom burden**
- **Longer duration of vasomotor symptoms**

Longitudinal data from large cohorts, including the Study of Women's Health Across the Nation (SWAN), indicate that psychosocial stressors, such as financial strain, perceived stress, and life adversity, are linked to prolonged vasomotor symptoms and poorer overall menopausal experience (Avis et al., 2015; Faleschini et al., 2022).

This suggests that stress may not only influence when the transition begins, but also **how long and how intensely it is experienced**.

A Lifespan Perspective

Understanding menopause timing requires a **lifespan lens**.

Chronic stress accumulates over time, and its effects are often delayed. Early-life adversity, ongoing psychosocial strain, and cumulative stress exposure contribute to:

- Increased allostatic load
- Altered endocrine function

- Reduced physiological resilience

By the time a woman enters midlife, her body may already be carrying years, if not decades, of biological wear. In this context, perimenopause does not initiate dysfunction; it **reveals underlying dysregulation**.

Implications for Women of Color

These dynamics are particularly relevant for women of color, who are disproportionately exposed to chronic stressors, including systemic racism, economic inequity, and healthcare disparities.

Research suggests that Black women may experience:

- Earlier onset of menopausal symptoms
- Longer duration of vasomotor symptoms
- Greater overall symptom burden

(Harlow et al., 2022)

These patterns are consistent with the concept of **weathering**, where cumulative stress accelerates biological aging and influences reproductive health trajectories.

Clinical and Public Health Implications

Shifting the focus from "When does menopause occur?" to "How is menopause experienced?" allows for more meaningful intervention.

Clinicians should:

- Assess chronic stress exposure across the lifespan
- Recognize early symptom onset as a potential marker of underlying stress burden
- Provide anticipatory guidance for women at higher risk
- Integrate stress-reduction and trauma-informed approaches into care

Public health efforts should prioritize:

- Education on the impact of stress on reproductive health
- Early screening and intervention
- Addressing structural determinants of chronic stress

Reframing the Narrative

Menopause timing is often treated as a fixed biological endpoint. However, the evidence suggests that it is, at least in part, shaped by lived experience.

Chronic stress may not always dramatically change the calendar, but it changes the journey.

And for many women, especially those who have carried prolonged stress across their lifespan, the menopausal transition becomes less about aging and more about **the body navigating the cumulative weight of survival**.

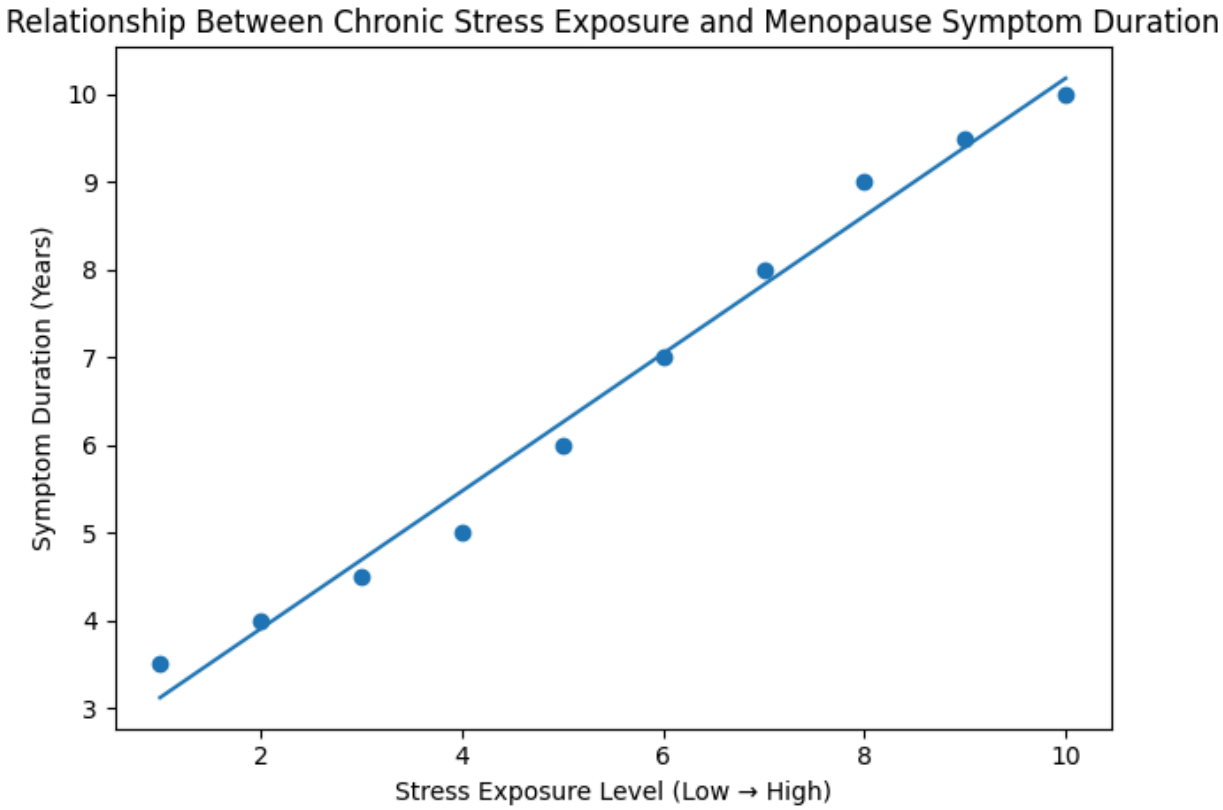

Figure 2: Relationship Between Chronic Stress Exposure and Menopause Symptom Duration

Women of Color, Chronic Stress, and "Weathering"

The Role of Structural and Social Stressors

Women of color, particularly Black women in the United States, often move through the menopausal transition carrying a disproportionate burden of cumulative stress. This burden is not incidental or individual; it is patterned by **structural, social, and historical forces** that shape exposure to adversity across the lifespan.

Key domains of chronic stress exposure include:

- **Systemic racism and discrimination** (interpersonal and institutional)
- **Economic inequity** (income instability, wealth gaps, job precarity)
- **Healthcare disparities** (delayed diagnosis, undertreatment, mistrust rooted in historical harm)

- **Community and environmental stressors** (neighborhood safety, environmental toxins, limited access to resources)

These exposures are not isolated events. They are **chronic, cumulative, and often unavoidable**, creating a sustained activation of the body's stress-response systems.

Weathering: Accelerated Biological Aging

The concept of **weathering**, introduced by Geronimus and colleagues (2006), describes how repeated exposure to social, economic, and environmental stressors leads to **accelerated biological aging**. In this framework, the body "weathers" under the strain of persistent adversity.

Weathering is reflected in elevated **allostatic load**, a composite measure of physiological wear across systems, including:

- Neuroendocrine (e.g., cortisol dysregulation)
- Cardiovascular (e.g., blood pressure)
- Metabolic (e.g., glucose, lipids)
- Immune/inflammatory markers (e.g., CRP, IL-6)

Empirical studies demonstrate that Black women, on average, exhibit **higher allostatic load at earlier ages** compared to White women, even after accounting for socioeconomic status (Allen et al., 2019). This suggests that stress exposures linked to racism and structural inequity exert independent physiological effects.

Discrimination as a Chronic Stressor

Discrimination is not merely a social experience; it is a **biological stressor**. Repeated exposure to discrimination has been associated with:

- Elevated cortisol and altered diurnal rhythms
- Increased inflammatory markers
- Higher blood pressure and cardiovascular risk
- Greater psychological distress

Importantly, discrimination-related stress is often **anticipatory and ongoing**, meaning the body remains in a heightened state of vigilance even in the absence of an immediate threat.

Over time, this sustained activation contributes to **neuroendocrine dysregulation**, which intersects directly with reproductive hormone pathways.

Economic Inequity and Chronic Strain

Economic stressors, including income instability, underemployment, and wealth disparities, further compound physiological burden. Financial strain is associated with:

- Increased perceived stress
- Reduced access to preventive healthcare
- Higher rates of chronic disease
- Greater exposure to unsafe or resource-limited environments

For many women of color, economic inequity is not episodic but persistent, reinforcing cycles of stress that accumulate across decades.

Healthcare Disparities and Delayed Intervention

Healthcare inequities play a critical role in shaping midlife health outcomes. Women of color are more likely to experience:

- Delayed diagnosis of gynecologic and endocrine conditions
- Dismissal or minimization of symptoms
- Reduced access to hormone therapy and specialty care
- Lower rates of culturally responsive care

These disparities mean that by the time women enter perimenopause, underlying conditions, such as fibroids, metabolic dysfunction, or untreated mental health concerns, may already be advanced.

This contributes to a **more symptomatic and medically complex menopausal transition**.

Community and Environmental Stressors

Environmental context further influences stress exposure. Women of color are more likely to reside in areas with:

- Higher exposure to environmental toxins
- Limited access to green space and safe recreational areas
- Increased neighborhood stress (e.g., violence, instability)
- Reduced access to nutritious food options

Environmental stressors interact with biological systems, contributing to inflammation, endocrine disruption, and overall health decline.

Weathering and the Menopause Transition

When viewed through the lens of weathering, the menopausal transition reflects not only chronological aging but **cumulative physiological burden**.

By midlife, many women of color may already exhibit:

- Elevated allostatic load
- Chronic inflammation

- Cardiometabolic risk factors
- Hormonal dysregulation

In this context, perimenopause becomes a **physiological tipping point**, where existing dysregulation is amplified by hormonal fluctuations.

This helps explain observed patterns such as:

- Earlier onset of menopausal symptoms
- Greater severity of vasomotor symptoms
- Longer duration of symptom burden
- Increased impact on sleep, mood, and overall quality of life

(Harlow et al., 2022; Reeves et al., 2024)

Intergenerational and Lifespan Dimensions

Weathering is not limited to individual experience; it is also **intergenerational**.

Exposure to stressors such as:

- Historical trauma
- Structural inequity
- Community-level disadvantage

can shape health trajectories across generations through both social and biological pathways.

This reinforces the importance of adopting a **lifespan and multigenerational perspective** when addressing reproductive and menopausal health disparities.

Reframing the Narrative

It is essential to shift the narrative away from deficit-based interpretations.

The increased symptom burden observed in women of color is not a reflection of biological weakness; it is evidence of **adaptive systems responding to prolonged demand**.

The body has been working to survive, regulate, and adapt under conditions of sustained stress.

Perimenopause does not create this burden; it **reveals it**.

Clinical and Public Health Implications

Addressing weathering in menopause care requires a systemic shift:

Clinical Practice

- Integrate screening for chronic stress and discrimination
- Recognize early or severe symptoms as potential markers of cumulative stress
- Provide trauma-informed, culturally responsive care
- Address both biological and psychosocial contributors

Public Health and Policy

- Invest in research focused on women of color and midlife health
- Address structural determinants of health (housing, income, access to care)
- Expand access to preventive and specialty care
- Promote education on menopause and stress-related health

A Call Forward

Understanding weathering is not about identifying disparity; it is about **intervening on it**.

When we acknowledge the role of chronic stress, structural inequity, and cumulative burden, we move closer to:

- Earlier recognition of symptoms
- More effective, personalized care
- Reduced long-term health risks
- Improved quality of life for women navigating midlife transitions

This is not just a clinical issue; it is a matter of **health equity, justice, and informed care**.

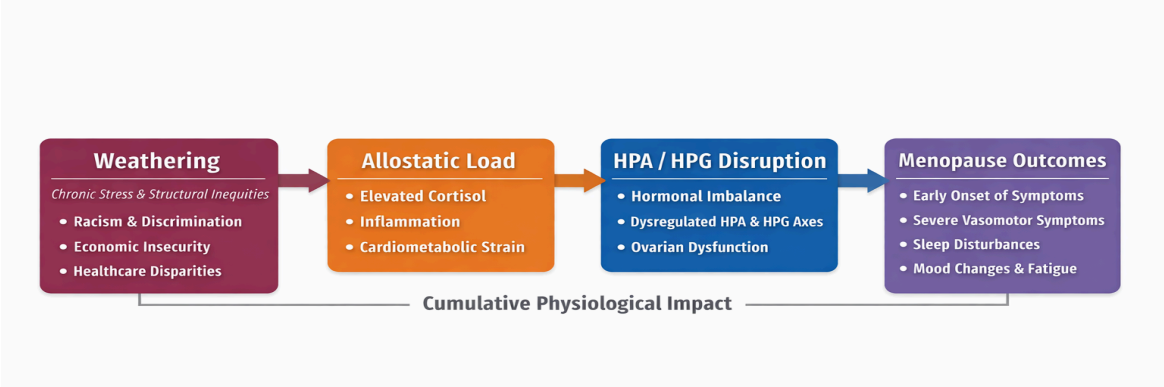

Figure 3: Weathering and Menopause Outcomes

Racial Disparities in Menopause Symptoms

Data from large, multiethnic cohort studies, most notably the Study of Women's Health Across the Nation (SWAN), have consistently demonstrated that menopausal symptoms are not experienced equally across racial and ethnic groups. Among these disparities, the experiences of Black women in the United States stand out as both **clinically significant and systematically patterned**.

Prevalence and Symptom Burden

Black women report a **higher prevalence of vasomotor symptoms (VMS)**, including hot flashes and night sweats, than their White counterparts. Estimates suggest that approximately **80% of Black women experience vasomotor symptoms**, compared to about **65% of White women** (StatPearls, 2023).

However, prevalence alone does not capture the full picture.

Black women are more likely to report:

- **Earlier onset of symptoms**, often beginning in premenopause or early perimenopause
- **Greater severity**, with symptoms described as more intense and disruptive
- **Higher frequency**, including more frequent daily and nightly episodes
- **Greater interference with daily functioning**, including sleep, mood, and work performance

These patterns suggest that the menopausal transition for many Black women is not only more common in symptom presentation, but also **more physiologically and functionally burdensome**.

Duration and Persistence of Symptoms

One of the most striking findings from SWAN is the difference in **duration of vasomotor symptoms**.

- Black women: median duration ~**10.1 years**
- White women: median duration ~**6.5 years**
  (Avis et al., 2015)

This represents a difference of nearly **four additional years of symptoms**, which has profound implications for quality of life, sleep health, mental health, and long-term well-being.

Further analyses indicate that Black women have significantly higher odds of experiencing **persistent vasomotor symptoms across multiple stages** of the menopausal transition—from premenopause through postmenopause (Harlow et al., 2022).

This persistence suggests that symptom burden is not transient, but rather **prolonged and cumulative**.

Beyond Vasomotor Symptoms: A Broader Symptom Profile

While vasomotor symptoms are the most studied, disparities extend across multiple domains of menopausal health:

- **Sleep disturbances:** Higher rates of insomnia and disrupted sleep
- **Mood symptoms:** Increased prevalence of depressive symptoms and anxiety
- **Fatigue:** Greater reports of persistent tiredness and reduced energy
- **Somatic complaints:** Including joint pain, headaches, and bodily discomfort

These symptoms are often interconnected, creating **compounding effects**. For example, frequent night sweats disrupt sleep, which in turn exacerbates mood disturbances and fatigue.

Psychosocial Stress and Discrimination as Contributing Factors

A critical body of research has begun to identify **psychosocial stress, particularly discrimination, as a key contributor** to these disparities.

In SWAN-based analyses, Black women report:

- Higher levels of **everyday discrimination**
- Greater accumulation of **lifetime stress exposure**
- Increased **perceived stress and vigilance**

Reeves et al. (2024) found that discrimination was significantly associated with increased risk of vasomotor symptoms, suggesting that **social stressors are not peripheral but central to symptom development and persistence**.

Discrimination-related stress operates through biological pathways, including:

- HPA axis activation
- Increased cortisol and inflammatory signaling
- Disruption of thermoregulation
- Altered autonomic nervous system function

This reinforces the understanding that **social experiences are biologically embodied**.

Structural Inequities and Access to Care

Disparities in symptom experience are compounded by **inequities in healthcare access and utilization**.

Black women are:

- Less likely to receive hormone therapy
- More likely to have symptoms dismissed or undertreated
- Less likely to receive culturally responsive care

(Harlow et al., 2022)

This creates a critical gap between **symptom burden and symptom management**, leaving many women without adequate support during a physiologically demanding transition.

Intersection of Reproductive History and Midlife Health

It is also important to recognize that many Black women enter perimenopause with a higher prevalence of pre-existing reproductive health conditions, such as:

- Uterine fibroids
- Chronic pelvic pain
- Surgical interventions (e.g., hysterectomy)

These conditions can:

- Alter hormonal trajectories
- Increase symptom complexity
- Contribute to earlier or more abrupt transitions

Thus, menopause does not occur in isolation; it is layered onto an already complex reproductive health landscape.

Reframing the Disparities

It is essential to avoid framing these disparities as inherent biological differences. Instead, they should be understood as the result of:

- **Cumulative exposure to chronic stress**
- **Structural inequities across the lifespan**
- **Differential access to care and resources**

The increased symptom burden observed in Black women reflects **adaptive physiological responses to sustained environmental and social demands**.

Clinical and Research Implications

Addressing these disparities requires intentional shifts in both practice and research:

Clinical Practice

- Screen for stress, discrimination, and trauma exposure
- Recognize early and severe symptoms as clinically significant
- Provide culturally responsive, trauma-informed care
- Expand access to both hormonal and non-hormonal treatment options

Research

- Increase representation of women of color in menopause research
- Examine intersectional factors (race, SES, trauma, environment)
- Move beyond symptom description to mechanistic understanding

A Call for Equity in Midlife Health

Menopause is a universal transition, but it is not a universally experienced one.

For many Black women, the menopausal transition reflects not only hormonal change, but **a lifetime of cumulative physiological demand**.

Recognizing and addressing these disparities is not simply a matter of improving symptom management; it is a step toward **health equity, justice, and comprehensive care across the lifespan.**

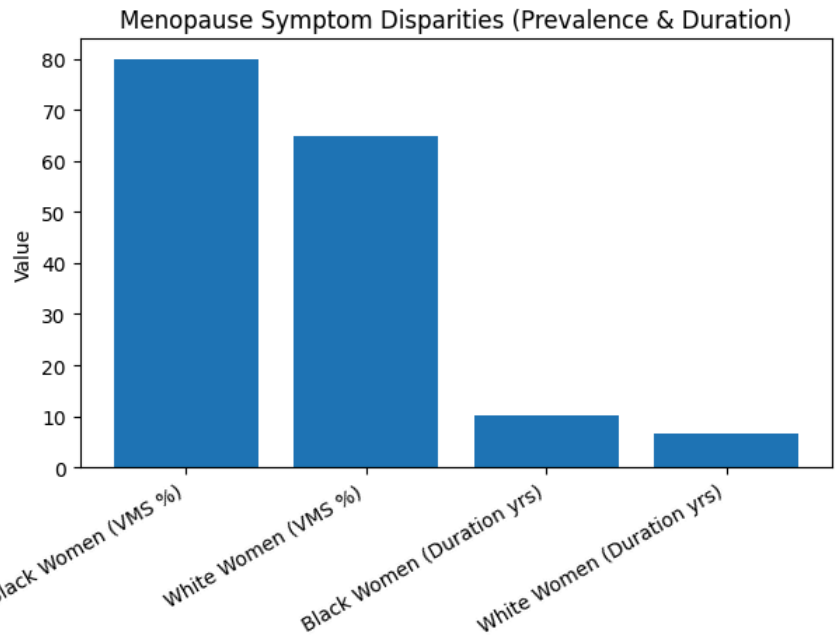

Figure 4: Racial Disparities in Vasomotor Symptoms Prevalence and Duration

Reproductive Health Disparities and Compounding Burden

For many women of color, particularly Black women, the menopausal transition does not begin from a baseline of reproductive health stability. Instead, it is often layered upon a history of **disproportionate gynecologic burden**, including uterine fibroids, endometriosis, chronic pelvic pain, and higher rates of surgical intervention. These conditions do not exist in isolation; they interact with hormonal changes, stress physiology, and healthcare inequities to create a **compounded and often more complex menopausal experience**.

Disproportionate Burden of Gynecologic Conditions

Women of color face significantly higher rates of several reproductive health conditions across the lifespan:

Uterine Fibroids

Uterine fibroids (leiomyomas) represent one of the most well-documented disparities in women's health.

- Black women are **up to three times more likely** to develop fibroids compared to White women
- They tend to develop fibroids at **younger ages**
- They are more likely to experience **larger, more numerous, and more symptomatic tumors** (Stewart et al., 2013)

Fibroids are estrogen- and progesterone-sensitive tumors, meaning that hormonal fluctuations during perimenopause can lead to:

- Increased bleeding irregularities
- Pelvic pressure and pain
- Worsening anemia
- Greater overall symptom burden

Even as estrogen declines later in menopause, the years leading up to that decline can be marked by **significant symptom exacerbation**.

Endometriosis

Although historically underdiagnosed in women of color, emerging evidence suggests that endometriosis may be **under-recognized rather than less prevalent**.

Endometriosis contributes to:

- Chronic pelvic pain
- Dysmenorrhea
- Pain during intercourse
- Infertility

For women entering perimenopause, residual or untreated endometriosis can complicate the transition, particularly when overlapping with:

- Hormonal instability
- Inflammatory processes
- Central sensitization of pain pathways

Chronic Pelvic Pain

Chronic pelvic pain is both a condition and a symptom cluster, often linked to fibroids, endometriosis, trauma, or pelvic floor dysfunction.

Women of color are more likely to experience:

- **Delayed diagnosis and treatment**
- **Minimization of pain in clinical settings**
- **Inadequate pain management**

This leads to prolonged suffering and increased likelihood of **centralized pain syndromes**, where the nervous system becomes sensitized to pain signals.

Hysterectomy and Surgical Interventions

Black women have higher rates of hysterectomy compared to White women, often at younger ages and for conditions such as fibroids.

These procedures may involve:

- Removal of the uterus (hysterectomy)
- Removal of the ovaries (oophorectomy), either concurrently or later

Surgical interventions can result in:

- **Abrupt hormonal shifts** (especially if ovaries are removed)
- Earlier onset of menopausal symptoms
- Increased risk of cardiovascular and metabolic conditions

Even when ovaries are preserved, disruption of pelvic blood flow and hormonal signaling may influence ovarian function over time.

The Compounding Effect Across the Lifespan

The presence of these conditions creates a **layered physiological burden** that interacts with the menopausal transition in several ways:

Hormonal Complexity

Conditions like fibroids and endometriosis are hormonally responsive. As estrogen and progesterone fluctuate during perimenopause, these conditions may become more symptomatic before eventual stabilization.

Inflammation and Immune Activation

Many reproductive conditions are associated with **chronic inflammation**, which:

- Amplifies pain
- Interferes with hormonal signaling
- Contributes to fatigue and mood changes

Nervous System Sensitization

Chronic pain and repeated medical experiences can lead to **central sensitization**, where the nervous system becomes more reactive to stimuli. This can intensify:

- Pain perception
- Vasomotor symptoms
- Emotional reactivity

Surgical and Medical History

Prior interventions, particularly hysterectomy, can alter the trajectory of menopause, often leading to:

- Earlier symptom onset
- More abrupt transitions
- Increased symptom severity

The Role of Chronic Stress in Exacerbation

Chronic stress interacts with reproductive health conditions through multiple biological pathways:

Inflammatory Pathways

Stress increases pro-inflammatory cytokines, which may:

- Promote fibroid growth
- Worsen endometriosis-related inflammation
- Intensify pain symptoms

Hormonal Dysregulation

Through HPA axis activation, chronic stress disrupts reproductive hormone balance, potentially exacerbating:

- Estrogen dominance patterns
- Irregular bleeding
- Ovulatory dysfunction

Vascular and Tissue Effects

Stress-related vascular changes may influence uterine and pelvic blood flow, contributing to symptom severity in fibroids and pelvic pain conditions.

Structural and Diagnostic Inequities

The burden of reproductive conditions is compounded by **systemic inequities in diagnosis and treatment**.

Women of color are more likely to experience:

- **Delayed or missed diagnoses**
- **Dismissal of symptoms**
- **Limited access to minimally invasive treatments**
- **Higher rates of invasive procedures as first-line interventions**

These patterns contribute to:

- Progression of disease before intervention
- Increased symptom severity
- Reduced trust in healthcare systems

Intersection with Menopause

By the time women of color reach perimenopause, many are already managing:

- Chronic reproductive conditions
- Persistent pain
- Hormonal irregularities
- Cumulative stress exposure

This creates a scenario in which menopause is not a singular transition, but rather a **convergence of multiple physiological stressors**.

The result is often:

- Earlier or more noticeable onset of symptoms
- Greater complexity in symptom presentation
- Increased impact on quality of life

Reframing the Clinical Perspective

It is essential to move away from viewing menopause as an isolated hormonal event and instead recognize it as part of a **continuum of reproductive health across the lifespan**.

For women of color, this continuum often includes:

- Higher baseline reproductive burden
- Greater exposure to chronic stress
- Structural barriers to care

These factors do not operate independently; they **interact, reinforce, and compound one another**.

Clinical and Public Health Implications

Clinical Practice

- Take comprehensive reproductive histories, including prior conditions and surgeries
- Recognize the cumulative impact of reproductive and stress-related factors
- Provide individualized, trauma-informed care
- Address both symptom management and underlying contributors

Public Health

- Increase awareness of reproductive health disparities across the lifespan
- Expand access to early diagnosis and preventive care
- Invest in culturally responsive gynecologic and midlife health services
- Address systemic inequities that contribute to delayed care

A Whole-Picture Understanding

Reproductive health disparities do not begin at menopause, and they do not end there.

They are part of a broader pattern of:

- Structural inequity
- Chronic stress exposure
- Biological adaptation

Understanding this compounding burden allows for a more accurate, compassionate, and effective approach to care.

Because when we recognize the full context, we move from treating isolated symptoms to **supporting the whole person across time**.

Why Symptoms May Be More Severe

The increased severity of perimenopausal symptoms observed in women of color is not a reflection of inherent biological difference or inferiority. Rather, it reflects the **cumulative physiological burden of chronic stress exposure, structural inequities, and unmet healthcare needs across the lifespan**. When

the menopausal transition begins, it does so within a body that has often been navigating prolonged adaptation, dysregulation, and survival.

Understanding this distinction is critical. What appears as "more severe symptoms" is, in many cases, the body expressing **the cumulative cost of chronic activation and limited recovery over time**.

Chronic Nervous System Activation

One of the most significant contributors to symptom amplification is **persistent activation of the stress response system**, particularly the sympathetic nervous system.

In individuals exposed to chronic stress, the nervous system may remain in a prolonged state of:

- Hypervigilance
- Heightened arousal
- Reduced parasympathetic (rest-and-repair) activity

This dysregulation directly impacts thermoregulation, emotional processing, and hormonal signaling.

Vasomotor symptoms, such as hot flashes, are closely linked to **autonomic nervous system instability**. When the nervous system is already sensitized, the threshold for triggering these symptoms becomes lower, leading to:

- More frequent hot flashes
- Greater intensity
- Increased nighttime awakenings

Research has shown that heightened sympathetic activation and reduced vagal tone are associated with increased vasomotor symptom frequency (Thurston et al., 2012).

Sleep Disruption as Both Cause and Consequence

Sleep disturbance is both a **driver and outcome** of menopausal symptom severity.

Women experiencing chronic stress are more likely to have:

- Difficulty falling asleep
- Frequent nighttime awakenings
- Reduced sleep quality

When combined with night sweats and hormonal fluctuations, this creates a reinforcing cycle:

Stress → Poor Sleep → Hormonal Disruption → Increased Symptoms → Further Sleep Disturbance

Sleep deprivation affects:

- Cortisol regulation
- Glucose metabolism
- Emotional regulation
- Pain perception

Over time, inadequate sleep lowers resilience and increases the body's reactivity to both internal and external stressors, intensifying symptom experience.

Inflammation and Immune Dysregulation

Chronic stress is associated with a state of **low-grade systemic inflammation**, characterized by elevated inflammatory markers such as C-reactive protein (CRP) and interleukin-6 (IL-6).

Inflammation plays a critical role in:

- Vasomotor symptom expression
- Mood disturbances
- Pain sensitivity
- Cardiometabolic risk

Studies suggest that women with higher inflammatory markers report **more frequent and severe menopausal symptoms**, including hot flashes and fatigue (Gordon et al., 2016).

For women of color, who are more likely to experience chronic stress and higher allostatic load, baseline inflammatory levels may already be elevated before perimenopause. This creates a physiological environment in which symptoms are more easily triggered and more intensely experienced.

Hormonal Dysregulation and Axis Disruption

The menopausal transition is fundamentally a hormonal process, but it does not occur in isolation. Chronic stress disrupts the delicate balance between the **hypothalamic-pituitary-adrenal (HPA) axis** and the **hypothalamic-pituitary-gonadal (HPG) axis**.

Sustained cortisol elevation can:

- Suppress gonadotropin-releasing hormone (GnRH)
- Alter luteinizing hormone (LH) and follicle-stimulating hormone (FSH) patterns
- Disrupt estrogen and progesterone balance

This leads to:

- Greater hormonal fluctuation
- Increased cycle irregularity
- Amplified symptom variability

Rather than a gradual transition, the body may experience **more erratic hormonal shifts**, which are strongly associated with symptom severity.

Reduced Access to Care and Treatment Gaps

Structural inequities in healthcare access significantly contribute to symptom burden.

Women of color are less likely to:

- Receive timely menopause-related education
- Be offered or prescribed hormone therapy
- Have symptoms taken seriously in clinical encounters

(Harlow et al., 2022)

This leads to:

- Delayed symptom management
- Increased reliance on coping rather than treatment
- Progression of symptoms before intervention

When care is delayed or inaccessible, symptoms that could be mitigated become **prolonged and intensified**.

Underutilization of Hormone Therapy

Hormone therapy (HT) remains one of the most effective treatments for vasomotor symptoms, yet it is underutilized among women of color.

Contributing factors include:

- Historical mistrust of the medical system
- Lack of culturally responsive counseling
- Miscommunication regarding risks and benefits
- Structural barriers to access

As a result, many women navigate perimenopause without evidence-based symptom relief, leading to:

- Greater symptom persistence
- Increased impact on quality of life

Interaction and Amplification of Factors

These factors do not act independently; they **interact and amplify one another**.

For example:

- Chronic stress increases inflammation
- Inflammation worsens sleep disruption
- Sleep disruption exacerbates hormonal instability
- Hormonal instability intensifies vasomotor symptoms
- Limited access to care prevents effective intervention

This creates a **self-reinforcing cycle of physiological and experiential burden**.

The Role of Perception and Embodiment

It is also important to acknowledge that symptom severity is not solely a matter of physiological output; it is also shaped by **how the body processes and perceives internal signals**.

Chronic stress can heighten:

- Interoceptive sensitivity (awareness of internal bodily sensations)
- Pain perception
- Emotional reactivity

This does not make symptoms "psychological" or less real. Rather, it reflects a nervous system that has been conditioned to **detect, respond to, and amplify signals more rapidly**.

Reframing Severity

The increased severity of symptoms in women of color should not be interpreted as an anomaly; it is a **predictable outcome of cumulative exposure to stress and structural inequity**.

When the body has been:

- Persistently activated
- Under-recovered
- Undersupported

the menopausal transition becomes more than a hormonal shift; it becomes a **physiological stress test**.

Clinical and Public Health Implications

To address symptom severity effectively, interventions must move beyond symptom suppression and toward **root-cause understanding**.

Clinical Practice

- Incorporate stress and trauma screening into menopause care
- Address sleep, inflammation, and nervous system regulation
- Provide equitable access to hormone therapy and alternative treatments

- Deliver culturally responsive, patient-centered care

Public Health

- Increase awareness of the role of chronic stress in symptom severity
- Expand access to education and preventive care
- Address structural determinants that contribute to chronic stress
- Invest in research that centers women of color

A More Complete Understanding

Symptom severity is not random. It is patterned, shaped, and influenced by lived experience.

When we understand the interconnected roles of:

- Nervous system activation
- Hormonal fluctuation
- Inflammation
- Structural inequity

we move closer to a model of care that is not only clinically effective, but **equitable and responsive to the realities women are living**.

Clinical and Public Health Implications

The Need for Trauma-Informed Menopause Care

The evidence is clear: menopause is not solely an endocrine event; it is a **biopsychosocial transition shaped by lived experience, cumulative stress exposure, and access to care**. As such, symptom-based care alone is insufficient. A trauma-informed approach is not an added layer; it is a necessary shift in how care is conceptualized, delivered, and sustained.

Trauma-informed menopause care recognizes that for many women, particularly women of color, symptoms are not isolated complaints, but **expressions of a nervous system and body shaped by chronic stress, adversity, and structural inequities**.

Core Principles of Trauma-Informed Menopause Care

1. Screening for Trauma and Chronic Stress

Routine menopause care should include **intentional screening for lifetime stress exposure**, including:

- Adverse childhood experiences (ACEs)
- Intimate partner violence
- Chronic psychosocial stress

- Discrimination and structural stressors

Screening should be conducted in a way that is:

- Voluntary
- Non-invasive
- Clinically relevant

Importantly, the goal is not to pathologize, but to **contextualize symptoms within a broader physiological and psychosocial framework**.

Research has demonstrated that trauma exposure is associated with increased menopausal symptom severity, including vasomotor symptoms and sleep disturbance (Thurston et al., 2008; Faleschini et al., 2022).

2. Understanding Cultural and Social Context

Menopause does not occur in a vacuum. Cultural beliefs, social roles, and historical context shape how symptoms are experienced, interpreted, and managed.

Trauma-informed care requires providers to:

- Recognize the impact of systemic racism and inequity
- Understand cultural narratives around aging, femininity, and reproductive health
- Respect traditional and ancestral healing practices

This approach fosters **cultural humility**, moving beyond "cultural competence" toward an ongoing process of learning, listening, and adapting care.

3. Avoiding Dismissal and Medical Minimization

A common and harmful experience reported by women, particularly Black women, is the **dismissal or minimization of symptoms**.

Statements such as:

- "That's just part of aging"
- "You'll get through it"
- "It's not that serious"

undermine patient trust and delay effective intervention.

Trauma-informed care prioritizes:

- Validation of lived experience
- Active listening

- Shared decision-making

Symptom severity should be treated as **clinically meaningful data**, not subjective exaggeration.

4. Integrating Mental Health and Reproductive Care

The separation of mental health and reproductive health is a structural limitation that fails to reflect biological reality.

Menopause is associated with:

- Increased risk of depression and anxiety
- Sleep disruption
- Changes in sexual function and identity

Integrating mental health care into menopause management allows for:

- Early identification of psychological distress
- Support for emotional and relational changes
- Regulation-focused interventions (e.g., somatic therapies, CBT, mindfulness-based approaches)

This integration is especially critical for individuals with a history of trauma, where hormonal fluctuations may **reactivate or intensify underlying symptoms**.

Interdisciplinary Care Models

Effective menopause care requires a **collaborative, interdisciplinary model** that addresses the full spectrum of biological, psychological, and social needs.

1. OB/GYN and Primary Care Providers

These providers play a central role in:

- Hormonal evaluation and management
- Screening for reproductive health conditions
- Prescribing hormone therapy and non-hormonal treatments

However, their role must expand to include **recognition of stress-related contributors** and coordination with other disciplines.

2. Mental Health Professionals

Psychologists, counselors, and trauma specialists provide essential support in:

- Addressing trauma and chronic stress

- Managing mood disorders and anxiety
- Supporting identity transitions and life-stage changes
- Teaching regulation and coping strategies

Evidence-based approaches such as **cognitive behavioral therapy (CBT)** and **mindfulness-based interventions** have been shown to reduce menopausal symptom distress (Green et al., 2015).

3. Clinical Sexologists and Sexual Health Specialists

Sexual health is often overlooked in menopause care, despite its significant impact on quality of life.

Sexologists can address:

- Pain during intercourse (dyspareunia)
- Changes in desire and arousal
- Relationship dynamics and intimacy concerns
- Trauma-related sexual dysfunction

This is particularly important for individuals with a history of sexual trauma, where menopause may intersect with **stored somatic and relational experiences**.

4. Holistic and Integrative Practitioners

Integrative care providers, including herbalists, naturopathic practitioners, and somatic therapists, offer additional tools to support:

- Nervous system regulation
- Sleep improvement
- Hormonal balance support
- Stress reduction

Modalities may include:

- Herbal medicine (e.g., phytoestrogens, adaptogens, nervines)
- Nutritional interventions
- Mind-body practices (e.g., breathwork, yoga, somatic experiencing)

While these approaches vary in evidence base, many are **valuable adjuncts** when used safely and collaboratively.

5. Public Health Support Systems

At the population level, public health systems play a critical role in addressing disparities by:

- Expanding access to menopause education and resources

- Increasing availability of culturally responsive care
- Supporting community-based programs focused on stress reduction and wellness
- Funding research that includes diverse populations

Public health interventions must move upstream to address:

- Social determinants of health
- Structural inequities
- Chronic stress exposure across the lifespan

Bridging Clinical Care and Public Health

Trauma-informed menopause care exists at the intersection of **clinical practice and public health strategy**.

Clinical care addresses:

- Individual symptom management
- Personalized treatment plans

Public health addresses:

- Population-level disparities
- Prevention and early intervention
- Structural drivers of health outcomes

Bridging these domains allows for a more comprehensive approach that:

- Treats symptoms
- Addresses root causes
- Reduces long-term health disparities

Implementation: Moving from Theory to Practice

To operationalize trauma-informed menopause care, healthcare systems must:

- Train providers in trauma-informed and culturally responsive care
- Incorporate screening tools into routine practice
- Develop referral networks across disciplines
- Ensure equitable access to both hormonal and non-hormonal treatments
- Create patient education materials that are inclusive and accessible

A Call to Transform Care

Menopause care is at a critical turning point.

Continuing to treat symptoms in isolation will perpetuate gaps in care and outcomes. A trauma-informed, interdisciplinary approach offers a path forward; one that recognizes:

- The role of chronic stress and lived experience
- The importance of culturally responsive care
- The need for integrated, whole-person treatment models

This is not about adding complexity to care; it is about **aligning care with reality**.

Pathways to Support and Healing

Perimenopause is not simply a hormonal transition; it is a **whole-body, whole-life recalibration**. For women with histories of trauma or prolonged stress exposure, this phase can feel intensified, unpredictable, and at times overwhelming. Yet, this is also a powerful window for intervention, restoration, and reconnection.

A multidimensional approach, integrating clinical care, psychosocial support, and lifestyle medicine, offers the most effective pathway forward. The goal is not only symptom reduction, but **restoring physiological balance, nervous system safety, and a sense of agency within the body**.

Clinical Interventions

Clinical care remains a cornerstone of effective perimenopause management. When applied thoughtfully and equitably, it can significantly reduce symptom burden and improve quality of life.

Hormone Therapy (When Appropriate)

Hormone therapy (HT) is one of the most effective treatments for vasomotor symptoms such as hot flashes and night sweats.

Benefits may include:

- Reduction in frequency and severity of hot flashes
- Improved sleep quality
- Support for mood stabilization
- Protection against bone loss

For many women, particularly those with moderate to severe symptoms, HT can be life-changing. However, access and utilization remain unequal, especially among women of color.

Trauma-informed prescribing requires:

- Clear, culturally responsive education about risks and benefits

- Shared decision-making
- Consideration of individual medical history and preferences

(North American Menopause Society [NAMS], 2022)

Non-Hormonal Treatments for Vasomotor Symptoms

For women who cannot or choose not to use hormone therapy, several non-hormonal options are available:

- Selective serotonin reuptake inhibitors (SSRIs)
- Serotonin-norepinephrine reuptake inhibitors (SNRIs)
- Gabapentin
- Clonidine

Common Herbs and supplements:

- Black Cohosh
- Ashwagandha
- Red Clover
- Vitamin E and Omega-3
- Flaxseed

These treatments can reduce vasomotor symptom frequency and are particularly useful in individuals with:

- Contraindications to estrogen
- Co-occurring mood disorders

Additionally, emerging therapies targeting thermoregulatory pathways (e.g., neurokinin-3 receptor antagonists) show promising results.

Sleep-Focused Interventions

Sleep disruption is one of the most impactful and under-addressed symptoms of perimenopause.

Effective interventions include:

- Cognitive Behavioral Therapy for Insomnia (CBT-I)
- Sleep hygiene education
- Targeted pharmacologic support when needed

Improving sleep has cascading benefits across:

- Hormonal regulation
- Emotional resilience
- Pain tolerance
- Metabolic health

Given the bidirectional relationship between sleep and stress, addressing sleep is often a **foundational intervention**.

Sexual Health Care

Sexual health is a critical but often overlooked component of menopause care.

Common concerns include:

- Vaginal dryness and atrophy
- Pain during intercourse (dyspareunia)
- Changes in desire and arousal

Treatment options may include:

- Local vaginal estrogen therapy
- Lubricants and moisturizers
- Pelvic floor therapy
- Sexual counseling or sex therapy

For individuals with trauma histories, sexual health care must be approached with **sensitivity, consent, and pacing**, recognizing the interplay between physical symptoms and emotional memory.

Psychosocial and Somatic Support

While clinical interventions address physiological symptoms, psychosocial and somatic approaches address the **underlying regulatory systems that shape symptom experience**.

Trauma-Informed Therapy

Therapeutic support is essential for individuals navigating both menopause and trauma history.

Approaches may include:

- Cognitive Behavioral Therapy (CBT)
- Eye Movement Desensitization and Reprocessing (EMDR)
- Somatic therapies (e.g., Somatic Experiencing)
- Internal Family Systems (IFS)

These modalities support:

- Processing of unresolved trauma
- Reduction of hypervigilance
- Improved emotional regulation

Importantly, therapy during this stage is not about revisiting the past unnecessarily; it is about **reducing the physiological imprint of past experiences on present functioning**.

Nervous System Regulation Practices

Given the central role of the autonomic nervous system in symptom expression, regulation practices are critical.

Effective strategies include:

- Breathwork (e.g., diaphragmatic breathing, paced breathing)
- Grounding techniques
- Body-based awareness practices
- Vagal toning exercises

These practices help:

- Reduce sympathetic overactivation
- Improve parasympathetic engagement
- Stabilize internal physiological states

Even small, consistent practices can significantly reduce:

- Hot flash intensity
- Anxiety
- Sleep disruption

Stress Reduction Strategies

Chronic stress must be addressed not only as a contributing factor, but as an ongoing physiological driver.

Evidence-based strategies include:

- Mindfulness-based stress reduction (MBSR)
- Time-bound relaxation practices
- Cognitive restructuring
- Boundary setting and workload management

Reducing stress is not about eliminating life demands; it is about **increasing the body's capacity to recover from them**.

Lifestyle and Holistic Support

Lifestyle interventions provide a powerful, accessible foundation for healing. These approaches support the body's innate ability to regulate, repair, and adapt.

Nutrition and Metabolic Support

Nutrition plays a central role in hormonal balance, inflammation regulation, and metabolic health.

Key considerations include:

- Adequate protein intake to support muscle mass
- Healthy fats to support hormone production
- Fiber for gut health and estrogen metabolism
- Micronutrients such as magnesium, vitamin D, and B vitamins

Dietary patterns that emphasize:

- Whole foods
- Anti-inflammatory nutrients
- Stable blood sugar

can significantly improve:

- Energy levels
- Mood stability
- Symptom severity

Movement and Physical Activity

Regular physical activity is one of the most effective non-pharmacological interventions for menopause symptoms.

Benefits include:

- Improved cardiovascular health
- Reduced anxiety and depression
- Better sleep quality
- Support for bone density

Types of movement that are particularly beneficial:

- Strength training
- Moderate aerobic activity
- Mind-body movement (e.g., yoga, tai chi)

Movement also serves as a **regulatory tool for the nervous system**, helping to discharge stress and restore balance.

Mind-Body Practices

Mind-body practices bridge physiological and psychological healing by integrating awareness, breath, and movement.

Examples include:

- Yoga
- Meditation
- Guided imagery
- Somatic mindfulness practices

These approaches have been shown to:

- Reduce stress hormone levels
- Improve emotional regulation
- Decrease symptom distress

They are especially valuable for individuals with trauma histories, as they provide **non-verbal pathways to healing and self-connection**.

Integration: A Whole-System Approach

No single intervention is sufficient on its own. The most effective care models integrate:

- Medical treatment
- Psychological support
- Nervous system regulation
- Lifestyle modification

This integrated approach recognizes that:

- Hormones influence the nervous system
- The nervous system influences symptom perception
- Lifestyle factors influence both

Healing occurs not through isolated interventions, but through **alignment across systems**.

Empowerment Through Understanding

For many women, perimenopause can feel like a loss of control. However, when understood through a holistic and trauma-informed lens, it becomes an opportunity to:

- Rebuild the connection with the body
- Address long-standing imbalances
- Establish sustainable patterns of care

The goal is not perfection; it is **capacity, resilience, and informed choice**.

Advancing Awareness and Equity

Addressing disparities in menopause care is not simply a clinical task; it is a **systems-level responsibility**. The evidence surrounding chronic stress, trauma exposure, and racial disparities in menopausal outcomes makes one thing clear: without intentional change, inequities will continue to reproduce themselves across generations.

Advancing awareness and equity requires coordinated action across **research, clinical practice, public health, and policy**. It demands that menopause be reframed—not as a private, isolated experience—but as a **public health priority shaped by social determinants, lived experience, and structural conditions**.

Expanding Research on Women of Color

One of the most critical gaps in menopause science is the **underrepresentation of women of color in research**.

Historically, much of what is considered "standard" knowledge about menopause has been derived from:

- Predominantly White populations
- Homogeneous clinical samples
- Limited exploration of psychosocial and structural variables

Although studies like the Study of Women's Health Across the Nation (SWAN) have made meaningful progress, significant gaps remain in understanding:

- The intersection of trauma, stress, and reproductive aging
- Cultural variations in symptom expression and coping
- Longitudinal impacts of structural inequities

Advancing equity requires:

- Purposeful inclusion of diverse populations in clinical trials
- Intersectional research designs that consider race, socioeconomic status, and trauma exposure
- Community-engaged research approaches that center on lived experience

Research must move beyond documenting disparities to **explaining mechanisms and informing interventions**.

Public Health Education on Menopause and Stress

Menopause remains widely under-discussed, misunderstood, and often stigmatized, particularly within communities of color.

Many women enter perimenopause with:

- Limited knowledge of what to expect
- Misinterpretation of symptoms
- Lack of access to accurate, culturally relevant information

At the same time, the role of **chronic stress and trauma** in shaping symptom severity is rarely addressed in mainstream health education.

Public health initiatives must:

- Normalize conversations around menopause as a life-stage transition
- Educate communities about the connection between stress, hormones, and symptoms
- Provide accessible, culturally tailored educational materials
- Utilize trusted community spaces (e.g., churches, community centers, advocacy groups)

When women understand what is happening in their bodies, they are better positioned to:

- Seek care early
- Advocate for themselves
- Make informed decisions about treatment

Awareness is not just informational; it is **empowering and preventative**.

Culturally Responsive Care Models

Equity in menopause care requires more than access; it requires **care that is responsive to the cultural, social, and historical realities of patients**.

Culturally responsive care includes:

- Acknowledging the impact of systemic racism and discrimination on health
- Respecting cultural beliefs and practices related to aging and reproductive health
- Communicating in ways that are clear, respectful, and non-dismissive
- Building trust through consistency, transparency, and accountability

For many women of color, mistrust of the healthcare system is not unfounded; it is rooted in **historical and ongoing experiences of bias, neglect, and harm**.

Providers must move beyond standardized approaches and instead ask:

- What has this patient experienced before entering this space?
- What barriers may be influencing her care decisions?
- How can care be adapted to meet her needs, not just clinical guidelines?

Culturally responsive care is not an “add-on”; it is **essential to effective treatment and engagement**.

Policy Changes Addressing Healthcare Access

Structural inequities in healthcare access remain a major driver of disparities in menopause outcomes.

Barriers include:

- Limited insurance coverage for menopause-related care
- Restricted access to hormone therapy and alternative treatments
- Geographic disparities in provider availability
- Cost-related barriers to ongoing care

Policy-level interventions are necessary to:

- Expand insurance coverage for menopause evaluation and treatment
- Increase funding for women’s midlife health services
- Support community-based health programs
- Ensure equitable access to both pharmacologic and non-pharmacologic treatments

Additionally, policies must address broader social determinants of health, including:

- Economic stability
- Housing
- Workplace conditions
- Environmental stressors

Because without addressing these upstream factors, clinical interventions alone will have a **limited impact**.

Provider Training in Trauma-Informed Care

A critical gap in current healthcare systems is the lack of **formal training in trauma-informed and stress-informed care**, particularly as it relates to menopause.

Providers are often trained to:

- Identify symptoms
- Prescribe treatments

But not necessarily to:

- Understand how trauma shapes physiology
- Recognize signs of chronic stress and nervous system dysregulation
- Integrate psychosocial context into clinical decision-making

Trauma-informed training should include:

- Education on the HPA axis and stress physiology
- Recognition of trauma responses (e.g., hypervigilance, shutdown, somatic symptoms)
- Communication strategies that promote safety and trust
- Integration of mental health and somatic approaches into care

When providers are equipped with this knowledge, they are better able to:

- Interpret symptoms accurately
- Avoid misdiagnosis or dismissal
- Build stronger therapeutic relationships

Bridging the Gap Between Awareness and Action

Awareness alone is not enough. Without action, knowledge does not translate into change.

Advancing equity requires:

- Accountability at institutional levels
- Investment in underserved communities
- Collaboration across disciplines
- Ongoing evaluation of outcomes and disparities

Healthcare systems must be willing to ask difficult questions:

- Who is being underserved?
- Where are the gaps in care?
- What changes are necessary to close them?

Reframing Menopause as a Public Health Priority

Menopause affects half the population, yet it remains underprioritized in both clinical and public health frameworks.

Reframing menopause as a public health issue allows for:

- Population-level interventions
- Preventative strategies across the lifespan
- Integration of mental, reproductive, and social health

This is particularly important when considering the role of:

- Chronic stress
- Trauma exposure
- Structural inequities

in shaping outcomes.

A Call to Collective Responsibility

Equity in menopause care is not the responsibility of one discipline; it is a **collective effort**.

It requires:

- Researchers who ask better questions
- Providers who listen more deeply
- Systems that prioritize access and inclusion
- Communities that foster open dialogue and support

Most importantly, it requires a shift in perspective:

From:

- Treating symptoms in isolation

To:

- Understanding the full context of women's lives

Moving Forward

The path forward is not about perfection; it is about **intentional progress**.

Every step toward:

- Inclusive research
- Accessible care
- Informed communities
- Trauma-responsive practice

brings us closer to a system where all women, not just some, are supported through one of the most significant transitions of their lives.

Conclusion

Perimenopause is not experienced in isolation from a woman's life history. It is not a sudden biological event that emerges without context; it is a **continuation of the body's story**. For many women, particularly those who have navigated chronic stress, adversity, and systemic inequities, the menopausal transition reflects the cumulative imprint of years spent adapting, surviving, and persevering.

The evidence is no longer subtle; it is clear, consistent, and impossible to ignore:

- Trauma and chronic stress are associated with **more severe, persistent, and disruptive menopausal symptoms**
- Women of color carry a **disproportionate physiological burden** shaped by structural inequities, discrimination, and reduced access to care
- Current healthcare models, largely rooted in symptom-based and siloed approaches, **fail to address the full complexity of this transition**

What we are witnessing is not simply a hormonal shift; it is the **intersection of biology, lived experience, and systemic influence**.

Reframing the Narrative

To move forward, we must challenge outdated frameworks that reduce menopause to declining estrogen levels alone. This narrow lens limits both understanding and intervention.

Menopause must be recognized as a **biopsychosocial and trauma-informed transition**, shaped by:

- The nervous system and its history of activation and regulation
- The endocrine system and its responsiveness to chronic stress
- The immune system and its inflammatory burden
- The social environment and its cumulative demands

When these systems are viewed in isolation, care remains fragmented. When they are understood together, **a more accurate and actionable picture emerges**.

The Cost of Not Seeing the Whole Picture

When the full context of a woman's experience is overlooked:

- Symptoms are minimized or misunderstood
- Treatment is delayed or inadequate
- Trust in healthcare systems is further eroded
- Opportunities for early intervention and prevention are lost

This is not just a clinical gap; it is an equity issue.

Because when certain populations are consistently underserved, dismissed, or excluded from research and care, disparities are not accidental; they are **systemically maintained**.

A Call for Transformation

The path forward requires more than incremental change. It calls for a **paradigm shift** in how menopause is understood, studied, and treated.

This includes:

- **Integrating trauma-informed care** into standard menopause management
- **Expanding research** to include diverse populations and lived experiences
- **Training providers** to recognize the physiological impact of chronic stress
- **Designing public health initiatives** that address both symptoms and root causes
- **Creating healthcare systems** that are accessible, responsive, and equitable

This work is not optional; it is essential.

Honoring the Intelligence of the Body

At its core, the menopausal transition is not a failure of the body; it is a **signal**.

A signal that:

- Systems have been overextended
- Recovery has been insufficient
- Adaptation has come at a cost

When we shift our perspective, we begin to see symptoms not as isolated problems to suppress, but as **meaningful physiological communications**.

This reframing opens the door to care that is not only more effective, but more respectful of the body's intelligence.

Creating Space for Healing

When we acknowledge the full story of the body; its biology, its history, its environment—we create space for:

- More precise and personalized interventions
- Greater compassion in clinical encounters
- Improved outcomes across populations
- Restoration of trust between patients and providers

Healing, in this context, is not about eliminating every symptom. It is about **restoring balance, increasing capacity, and supporting the body through transition with intention and care**.

Moving Forward with Intention

There is room here for better care, for deeper understanding, for meaningful change.

The challenge is not whether we have enough evidence. The challenge is whether we are willing to **act on what we now know**.

Because when we begin to treat menopause not as an isolated event, but as a reflection of the body's lived experience, we move closer to a future where care is:

- More informed
- More equitable
- More human

And in that shift, we do more than manage symptoms; we **honor the full journey of the women experiencing them**.

Author Disclosure and Ethics Statement

Author Information

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Conflict of Interest Disclosure

The author declares no financial or commercial conflicts of interest related to the content of this article. The perspectives presented are based on a synthesis of current scientific literature, clinical experience, and public health frameworks. Any recommendations provided are for educational purposes and are not influenced by external funding, sponsorship, or commercial affiliations.

Ethical Considerations

This article is a scholarly synthesis of existing peer-reviewed research and does not involve direct human subject research conducted by the author. Therefore, institutional review board (IRB) approval was not required.

All referenced studies have been appropriately cited in accordance with APA guidelines. Care has been taken to accurately represent existing research findings while maintaining accessibility for both clinical professionals and the general public.

Commitment to Cultural Responsiveness and Equity

This work intentionally centers the experiences of women of color, particularly Black women, who have historically been underrepresented or misrepresented in medical research. The author acknowledges the importance of culturally responsive, trauma-informed care and strives to present information that reflects both scientific evidence and the lived realities of diverse populations.

The discussion of disparities is grounded in public health literature and aims to highlight systemic factors rather than reinforce biological determinism or deficit-based narratives.

Trauma-Informed Framework

Given the nature of the topic, this article incorporates a trauma-informed lens. The author recognizes that discussions of stress, trauma, and reproductive health may be sensitive for some readers. Care has been taken to present information in a way that is informative, respectful, and non-pathologizing.

Clinical and Educational Disclaimer

The content of this article is intended for educational and informational purposes only and should not be construed as medical advice, diagnosis, or treatment. Readers are encouraged to consult qualified healthcare professionals for individualized care and clinical decision-making.

While the author holds multiple clinical and holistic credentials, this publication does not establish a provider-patient relationship.

Integrity of Scholarship

The author is committed to academic integrity, accuracy, and responsible knowledge dissemination. Every effort has been made to ensure that the information presented is current, evidence-informed, and reflective of best practices at the time of writing.

Recognizing that scientific understanding continues to evolve, readers are encouraged to engage with ongoing research and emerging evidence in the field.

Closing Statement

This work is offered with the intention of advancing understanding, improving care, and contributing to more equitable health outcomes. It reflects a commitment to bridging science, clinical practice, and lived experience in a way that honors both rigor and humanity.

References

Allen, A. M., Wang, Y., Chae, D. H., et al. (2019). Racial discrimination, the superwoman schema, and allostatic load. *Annals of the New York Academy of Sciences, 1457*(1), 104–127.

American College of Obstetricians and Gynecologists. (2025). *The menopause years*.

Avis, N. E., Crawford, S. L., Greendale, G. A., et al. (2015). Duration of menopausal vasomotor symptoms. *JAMA Internal Medicine, 175*(4), 531–539.

Carson, M. Y., & Thurston, R. C. (2019). Childhood abuse and vasomotor symptoms. *Menopause, 26*(10), 1093–1099.

Centers for Disease Control and Prevention. (2024). *Unfair and unjust practices and conditions harm African American people and drive health disparities*.

Choi, B.-O., et al. (2015). Stress and age at menopause. *Korean Journal of Family Medicine, 36*(6), 305–309.

Delamater, L., & Santoro, N. (2018). Management of the perimenopause. *Clinical Obstetrics and Gynecology, 61*(3), 419–432.

Faleschini, S., et al. (2022). Psychosocial stress and menopausal symptoms. *Menopause, 29*(12), 1348–1356.

Geronimus, A. T., et al. (2006). Weathering and health disparities. *American Journal of Public Health, 96*(5), 826–833.

Gibson, C. J., et al. (2019). Trauma and menopause symptoms. *JAMA Internal Medicine, 179*(1), 80–87.

Gold, E. B., Colvin, A., Avis, N., Bromberger, J., Greendale, G. A., Powell, L., Sternfeld, B., & Matthews, K. (2006). Longitudinal analysis of the association between vasomotor symptoms and race/ethnicity across the menopausal transition. *American Journal of Public Health, 96*(7), 1226–1235.

Harlow, S. D., et al. (2022). Racial disparities in reproductive aging. *Women's Midlife Health, 8*, Article 3.

Kalantaridou, S. N., et al. (2004). Stress and the female reproductive system. *Journal of Reproductive Immunology, 62*(1–2), 61–68.

McEwen, B. S., & Stellar, E. (1993). Stress and allostatic load. *Archives of Internal Medicine, 153*(18), 2093–2101. Black women in the Study of Women's Health Across the Nation (SWAN). *International Journal of Epidemiology, 52*(5), 1612–1623.

National Institute on Aging. (2024). *What is menopause?*

Reeves, A. N., Elliott, M. R., Karvonen-Gutierrez, C. A., & Harlow, S. D. (2023).

Reeves, A. N., et al. (2024). Discrimination and vasomotor symptoms. *Menopause, 31*(6), 567–574.

Stewart, E. A., et al. (2013). Uterine fibroids in African American women. *Journal of Women's Health, 22*(10), 807–816.

StatPearls. (2023). *Menopause*.

Thurston, R. C., Bromberger, J. T., Chang, Y., Goldbacher, E., Brown, C., Cyranowski, J. M., & Matthews, K. A. (2008). Childhood abuse or neglect is associated with increased vasomotor symptom reporting among midlife women. *Menopause, 15*(1), 16–22.