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The Gravity of Weight

The Turmoil of Menopause

The potential metabolic consequences during "The Change."

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KEY POINTS

- In the U.S., each year two million women reach menopause, defined as amenorrhea for 12 months in a woman 45 years or older.
- During the transition to menopause, a woman can gain 5 to 7 pounds, mostly in abdominal fat around her waist, and her BMI may be misleading.
- The menopause transition can lead to a cauldron of metabolic abnormalities, including diabetes and cardiovascular disease.
- With increased longevity, some women will spend 40 percent of their lives post-menopause.



"The birth of Isaac." The Bible tells us that Sarah, well past menopause, was 90 years old when she conceived her son Isaac.

Source: Gospel images, Public Domain

No wonder Abraham's wife Sarah laughed when she overheard an Angel of God tell Abraham that she would conceive a child. By this time, (*Genesis* 17-18), Sarah was 90 years old, and Abraham was nearly 100. Though the word "menopause" would not be used for thousands of years, Sarah rightly understood that a woman that old could not possibly become pregnant. Sarah and Abraham would name their son "Isaac," with the etymological root of "laughter."

According to the *Oxford English Dictionary*, an English physician first referenced the term "menopause" in the 1850s. Bennet astutely recognized that both menstruation and menopause have "physiological variations" all "quite compatible with health" (*Lancet*, 1852). In other words, "every female has her own individual standard." Short of divine intervention, though, menopause represents the end of a woman's childbearing years.

In her groundbreaking book first published in 1991 and simply titled *The Change*, Germaine Greer wrote, "The experience of menopause is a non-event. It doesn't happen on a day or in a place. It is not announced... It is not even your last menstrual period, which is, by definition, pre-menopause, not to mention you can't even know it is your last until months have passed." With "no rite of passage," there is a "social invisibility" to menopause.

In the U.S., two million women reach menopause each year; with increased longevity, women may now spend 40 percent of their lives in a post-menopausal state (Marlatt et al., 2022).

Some medical professionals, though, view menopause, with its hormonal fluctuations and a *significant* decrease in estrogen, as a "deficiency disease" or even a "physiological crisis," i.e., something pathological and abnormal (Bell, 2018), rather than a normal phase in the life of a woman.



Advertising poster, 1919, for a French cosmetics company by artist Leonetto Cappiello.

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Assessment of menopause is clinical and is made *retrospectively*. Rarely are hormonal levels required, though increased levels of follicle-stimulating hormone (FSH) above 30 IU/ml are diagnostic (McNeill and Merriam, 2021). By convention, natural menopause (as contrasted with surgically- or medication-induced) is defined as amenorrhea (no menstrual period) for 12 consecutive months in a woman aged 45 or older. The average age for menopause is 51.4, plus or minus five years (Kozakowski, et al., 2017).



"Hot flash," woodcut, 2001. Up to 80% of women experience vasomotor symptoms of hot flashes and night sweats during the menopause transition.

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The so-called *menopause transition* typically lasts for about four or five years, during which periods become irregular in length and frequency before they cease permanently, but this transition can last from less than one year to ten years or longer (Marlatt, et al.). It consists of an *early perimenopause* phase when cycle length increases and up to 80 percent of women begin to experience classic vasomotor symptoms of hot flashes and night sweats. Then there is a *late perimenopausal phase* in which intervals of amenorrhea last at least 60 days and there can be no periods for three to 11 months (Marlatt, et al.; El Khoudary, et al., 2019).

Much of our information about menopause comes from the *Study of Women's Health Across the Nation* (SWAN) (El Khoudary, et al.), begun in 1996 with the goal of defining the menopause transition in ethnically and racially diverse populations. SWAN recruited more than 3,300 women, initially between the ages of 42 and 52, from seven different geographical sites (El Khoudary, et al.).

What these researchers found is that there is *considerable variability* in hormone levels among women during the menopause transition: circulating levels of estradiol and FSH varied by body mass index (BMI) and race/ethnicity. Further, some women never experienced hot flashes (sometimes called "flushes") and night sweats.

Many others, though, were symptomatic for a median of 7.4 years or even longer, including a group of *superflashers* who started well prior to their final period and continued symptomatic until well past menopause. The physiology of these symptoms is not well understood but lower levels of estradiol and higher FSH levels were associated with more symptoms (El Khoudary, et al.). There is likely a genetic component that warrants further study (Crandall, et al., 2020).

Further, researchers recommend greater standardization in measuring the frequency, severity, and intensity of symptoms, as they found little consistency across 214 randomized controlled studies of vasomotor symptoms (Iliodromiti, et al., 2019), and not all women may be referring to the same sensations (van Dijk, et al., 2015). Hormone replacement therapy is effective in reducing the severity and frequency of these symptoms by more than 70 percent (McNeill and Merriam; Crandall, et al.).

Other signs and symptoms include sleep disturbances, depression, anxiety, cognitive difficulties, changes in bone density, and urogenital symptoms. Differentiating the effects of menopause from normal aging or even

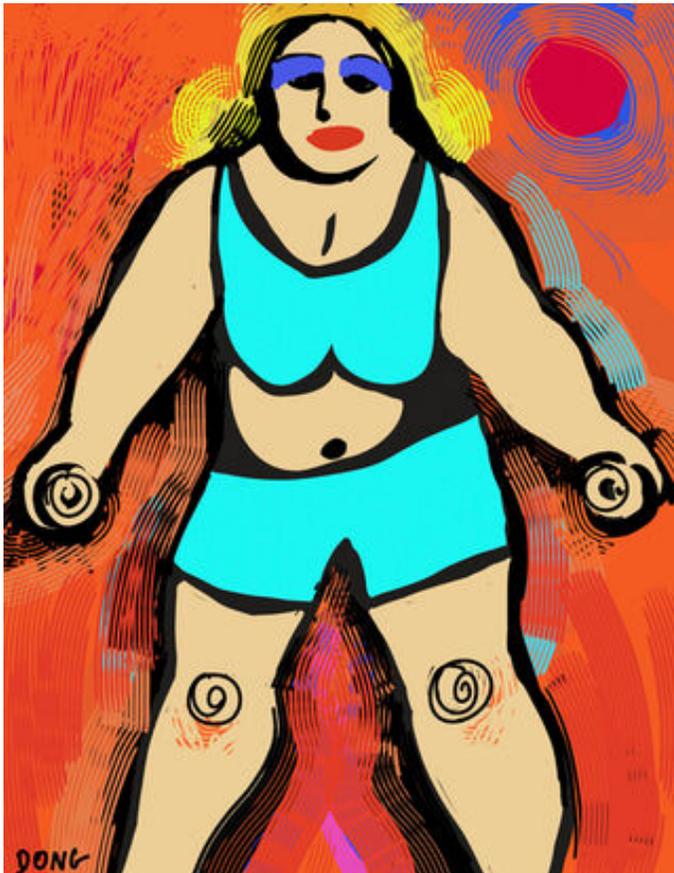


"Seated Female Nude II," 1972 by Picasso

Source: Copyright 2022 Estate of Pablo Picasso/Artists Rights Society (ARS), New York. Photo credit copyright Succession Picasso/DACS, London 2022/Bridgeman Images. Used with permission of ARS and Bridgeman Images

thyroid disease is sometimes difficult (El Khoudary, et al.; Stachowiak, et al., 2015).

Most notably, though, the menopause transition may involve a veritable cauldron of metabolic consequences and adverse changes in body composition (De Paoli, et al., 2021; Greendale, et al., 2019). One of the most troubling of these metabolic consequences is weight gain, with a potentially two- to four-fold increase in dangerous abdominal (central) fat (Greendale, et al.), diagnosed by an increase in waist circumference or more accurately, by dual-energy absorptiometry (DXA), as well as a loss of lean muscle (El Khoudary, et al.; Banack, et al., 2018). On average, women can gain five to seven pounds over the course of the transition (Marlatt, et al.). Researchers do not fully understand the mechanism for this abdominal fat accumulation (Kozakowski, et al.).



"Fight the fat," 2007 by Diana Ong. Lifestyle changes of exercise and diet can mitigate against some of menopausal weight gain.

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Body mass index (BMI), as an indirect measure of obesity, can be highly inaccurate in many populations. Some researchers believe it can lead to the misclassification of women in menopause, and recommend using a percentage of fat, though there is no consensus on what fat percentage to use (Banack, et al.). Investigators found that those of normal weight (based on BMI) but who have central obesity had a higher risk of cardiovascular disease and even greater mortality (Sun, et al., 2019). Along the lines of so-called "apple" and "pear" shapes, Allison, et al. have called these at-risk women with a high waist circumference and comparatively low BMI "olives on a toothpick" (Golzarri-Arroyo, et al., 2019).

Menopause is also a time for "diabetes vigilance," with increased risk for the development of metabolic syndrome (e.g., impaired glucose tolerance, insulin resistance, abnormal lipid levels, increased blood pressure), all of which make a woman more susceptible to cardiovascular disease (Stachowiak, et al.). Statistics vary depending on the population, but 20 to 50 percent of women over the age of 60 develop metabolic syndrome (Lumsden and Sassarini, 2019; Lovre, et al., 2017). Frequent vasomotor symptoms increase risk and are considered a "biomarker" for cardiovascular disease (Ryu, et al., 2020).

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