



## Editorial

## Being hot: Climate versus climacteric



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Menopause and its accompanying symptoms of hot flushes and night sweats have been experienced by women since antiquity—and obviously predate global warming. Although Aristotle noted that the age of menopause was 40 years of age, he did not mention specific complaints stemming from this life cycle change and, if symptoms did occur, what effective remedies could be recommended [1]. However, despite a lack of discussion in Aristotle's works, the symptoms of menopause have been universally known for generations. And, these symptoms have been uniquely managed by various interventions, specific to historical timing, available treatments, and often specific geographic regions of the globe.

The term 'menopause' to describe this life event is a fairly recent one. However, regardless of what it was previously referred to, it was a 'dreaded transition' by most of the population, heralding the onset of decrepitude [2]. So much so that physician G Napheys in the 1800s felt the necessity to refute this notion of menopause being a horrific life event. He wrote that this cessation of menses in women was not a dreaded disease, and it did not signal a change from robust living to end-of-life living. As he put it, "Unscientific people... call it the change of life; physicians know it as menopause—the period of cessation of the monthly flow." [3].

Despite it being an expected life cycle transition for all women, some women note it only by no longer having menses and are fortunate in that they never experience symptoms. However, others become extremely symptomatic. And for this latter group of women, these unwelcome symptoms often interfere with their lifestyle, their physical and sexual comfort and their sleep pattern. As T Graham noted, as early as 1837, many women, at the time of menopause "...are much troubled with rheumatic or flying pains, headache, hot flushes and other troublesome symptoms" [4]. And, of course, the hallmark of adverse symptoms that menopause may herald and those most publicized in the lay literature are hot flushes and night sweats, which obviously interfere with the woman's temperature regulation.

One of the most accurate descriptions of hot flushes was made in 1887 by a woman, AM Longshore-Potts. Her summary is still timely:

"Flashes of heat, followed by perspiration, then a chill, are some of the accompanying symptoms of the change of life; they may commence at any stage, from the first, before any other symptoms are noticed, or not until the catamenial flow has become irregular or more scanty than usual" [5]. Today, vasomotor symptoms that may accompany the menopausal transition are one of the major reasons why women seek pharmacological intervention.

However, despite menopause being a universal event in all cis-gender women, there is variation in the number of women affected by these symptoms. Data suggest that vasomotor symptoms affect 80% of Dutch women vs 0% in rural Mayan Indians in Mexico [6]. Interestingly, temperatures in Holland are more variable, although overall lower than in Mexico. Several questions naturally follow this observation. What impact does regional temperature have on hot flush prevalence? Is the increasing temperature that the Earth is undergoing due to climate change increasing the numbers of women affected? With extreme heat and sweating signifying the menopausal hot flush, will the prevalence of women experiencing this adverse symptom increase as they become more subject to environmental heat as our Earth's climate increases?

Women who report hot flushes are intolerant of warm interiors and often note that while everyone in the same vicinity of them are cold, they are comfortable. Or when others are comfortable, they are sweating and need ice water, fans, air-conditioning—anything to lower their core body temperature. And since this is a well-known reality, it follows that with climate change, vasomotor incidence should be increasing, because cool temperatures are what women seek both when they are experiencing hot flushes and when they are trying to avoid them. And data clearly support that all of us are living on a warmer globe.

As background, with objective measurements of the Earth available since the 1880s, it was documented by the National Oceanic and Atmospheric Administration that 2020 was the planet's second-hottest year of the past 140 years. Further, nineteen of the warmest years recorded have occurred since the turn of the century. The implications for all human health of these increasing temperatures include not only

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more sensation of warmth and sweating, humans seeking cooler environments to live and work in and dressing in cooler clothing, but also more seasonal allergies and insect bites and more ailments brought on by extreme temperatures, including increased urinary tract infections. But what is the connection between menopausal symptoms and climate? Are a symptomatic climacteric and a symptomatic environment from increasing atmospheric temperature related? Does climate change exacerbate hot flushes?

Although there is not a robust literature on this issue, there are data that suggest a link. Freeman and Sherif noted in 2007 that vasomotor symptoms are highly prevalent in most societies and that this percentage can be influenced by climate as well as diet, lifestyle, women's roles, and attitudes regarding the end of reproductive life and aging [7]. However, despite this influence, environmental temperature and vasomotor symptoms may not be directly related. It appears that the frequency of a woman experiencing hot flushing is not directly associated with constant heat in a geographic area, but to extreme differences in environmental temperature. Sievert and Flanagan, reporting on a meta-analysis of 54 studies noted that hot flush incidence was not related to the mean temperature of the warmest month, but rather there was an increase in hot flush frequency as the difference in heat intensity increased between the hottest and coldest months [8]. So, with climate, it can be inferred that it may be the exaggerated swings in temperature rather than an absolute temperature that contributes to a woman experiencing more hot flushes. Our Earth is not only getting overall hotter, but there are more pronounced swings in temperature throughout the year.

Therefore, to address hot flushes it may not be the best approach to get more medical interventions to manage the increasing frequency of them that will follow these widely fluctuating temperature ranges, but rather to look at how we can live on the Earth without increasing global warming. Perhaps the One Health approach should be adopted by all health care providers and researchers. Medicine should explore ways that we can live in a healthier way on this planet so as not to destroy the natural harmony of plants, animals and humans. Perhaps with any of the health issues, from the major to the minor ones that affect humans, we must not see ourselves in isolation, but a continuum of all living creatures.

For example, Suzanne Simard, author of the book *Finding the Mother Tree*, provides a great example of how we must live with our environment in a way that respects it [9]. She has noted that forests are sophisticated societies in which trees communicate and cooperate with one another. Trees, as well as the other organisms of the forest, share both carbon and nutrients. And, surprisingly, she notes that the older 'mother' trees communicate with the younger ones and support their growth and wellbeing. It follows that perhaps this communication leads to the longevity of trees, the longest-living species on the planet. Records note that some of the oldest trees are still alive at more than 1000 years since they sprouted. It is reported that an English oak in Nonington, England, began growing during the Elizabethan era and that in Publia, Italy, there are olive trees that are over 1000 years old.

In conclusion, although there appears to be a link between climate change and the incidence of vasomotor symptoms through temperature fluctuations, perhaps there is one conclusion over which there is no

debate: mutual respect of the Earth and all of its inhabitants. This respect will not only eliminate the need to talk about global warming and vasomotor symptoms, but also eliminate the need to prepare for other environmental maladies that global warming presents.

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