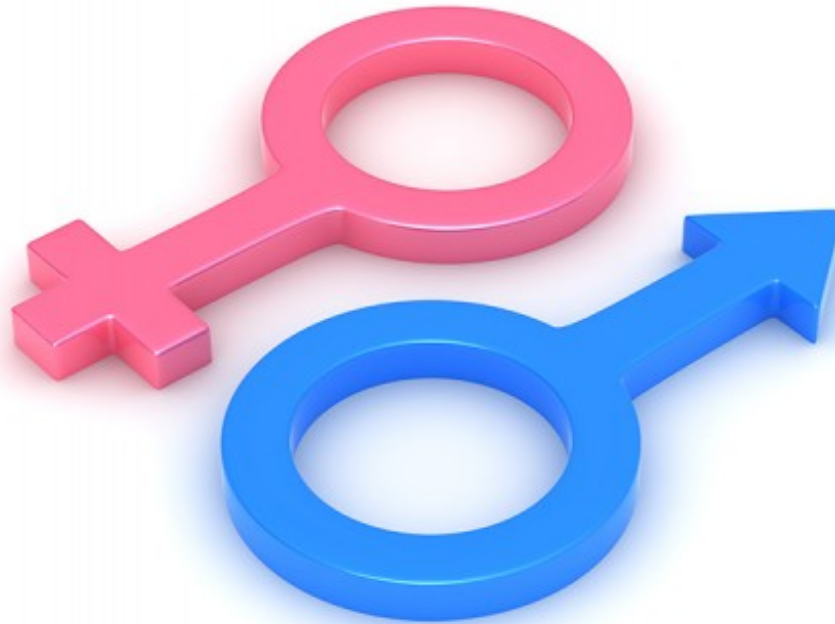


SeXX Matters in Sleep Health

 sleepreviewmag.com/2016/04/sexx-women-sleep-health/



The Society for Women’s Health Research explains why women’s sleep health needs more attention.

By Kyle Binion and Monica P. Mallampalli, PhD, MSc

Women sleep differently than men. They can take longer to fall asleep, tend to be more sleep deprived, are at increased risk for insomnia, and often report different sleep disorder symptoms than men. These differences are due to biological and physiological reasons; environmental, social, and cultural factors may also influence sleep in both sexes.¹ “Sex differences” is a scientific term that refers to the biological and physiological differences between women and men. Sex chromosomes (XX in women; XY in men) and gonadal hormones (estrogen and progesterone in women; testosterone in men) contribute to sex differences throughout a person’s lifespan, from infancy to old age. On the other hand, “gender differences” refer to the effect of environmental, social, and cultural factors on sex differences.²

Sex differences exist in normal sleep and in sleep disorders. For instance, some research indicates that women have lower average sleep efficiency (ratio of total sleep time to time spent in bed) time than men.^{3,4} In real life, this translates to women spending more time

lying awake in bed than their male counterparts. With aging, deep sleep appears to be better preserved in women than men.⁵ Despite better objective sleep, women have poorer sleep quality than men, as ascertained by standardized self-reported instruments.⁶

Sleep disorders such as insomnia and restless legs syndrome (RLS) are more common in women than in men and their occurrences coincide with hormonal changes.⁷ Sleep apnea affects more men than women, and there is a notable increase in sleep apnea prevalence following menopause in women.⁸ Further, sex differences in severity of sleep apnea symptoms can lead to misdiagnosis or a delay in appropriate treatment in women.⁹ Lack of awareness among healthcare providers and the gender disparity in sleep apnea diagnosis are some of the reasons for misdiagnosis and undertreatment.^{9,10} Therefore, it is essential to design sex-specific instruments for correct diagnosis of sleep apnea in women. Popular screening instruments, such as the STOP-Bang, were designed with questions biased toward men—making them less useful in women.⁶ Furthermore, there is a need to recognize sex differences in sleep apnea and develop appropriate sex-specific therapies, including devices and pharmacological agents. Growth in scientific literature implicating insomnia, RLS, insufficient sleep duration, and sleep apnea as significant risk factors for the development of chronic mental health and/or physical health disorders provides a strong impetus to improve sleep health in both women and men. Recent data indicating that women may be more susceptible to the cardiovascular effects of sleep apnea than men further highlight the need to correct the sex gap in sleep apnea diagnosis and treatment.¹¹



Insights into the role of sex hormones in sleep and sleep disorders can be gleaned by studies of women across the lifespan. Hormonal changes during menses, pregnancy, and peri- and post-menopause in women can impact sleep health and lead to sex-specific sleep disorders during these periods.⁷ For example, one-third of women complain of sleep disturbances and related symptoms such as cramps, bloating, and headaches as reasons for disrupted sleep during the premenstrual week or during menses.¹ Many hormonal and physiologic changes contribute to poor quality sleep during pregnancy and can lead to sleep disorders such as sleep apnea, RLS, and increased risk for other chronic illness such as cardiovascular disease and depression.^{7,12-15} This risk for sleep apnea, RLS, and insomnia is again high for women when they reach menopause.^{7,13} Sleep disturbances and insomnia symptoms during menopause may be partly attributed to hot flashes; the influence of reproductive hormones on brain functioning also has been suggested.¹⁶

While improvements have been made in sleep research for women, several major research gaps continue to exist. This is in part due to the early work focused on sleep apnea in men. In addition, lack of awareness of sex differences in sleep research has contributed to this

knowledge gap. Finally, overreliance on the use of male animal models in research has limited basic discoveries such as the influence of sex hormones on sleep and sleep disorders.¹⁷

There is a pressing need for all sleep providers and researchers to expand their knowledge of sex and gender differences in sleep and sleep disorders. The fallacies in overreliance on sleep apnea screening instruments and polysomnography findings, which may not reflect the pathophysiological processes in women, need to be overcome with sex- and gender-specific approaches to diagnose and treat sleep disorders. Join SWHR in our efforts at www.swhr.org/advocacy.



Monica P. Mallampalli, PhD,
MSc

The Society for Women's Health Research (SWHR) is a nonprofit organization committed to improving women's health through science, advocacy, and education. In 2013, SWHR held an interdisciplinary roundtable of sleep experts to identify knowledge gaps in sex differences in sleep research and the findings, including expert panel recommendations, and insights from this roundtable were published in the *Journal for Women's Health*.¹ In order to address these knowledge gaps and to further raise awareness of sex differences in sleep, SWHR launched an Interdisciplinary Research Network on Sleep in 2014. The mission of the network is: "To stimulate sex- and gender-based research that elucidates the role of sleep and circadian rhythms on health and wellbeing across the lifespan." To date, the network has been very productive in raising awareness among the general public.¹⁸ The network also continues to work toward raising awareness among healthcare providers and the scientific community. Please join us in these efforts and stay up to date on the Sleep Network's progress by visiting our website at www.swhr.org.

Kyle Binion is a science intern at the Society for Women's Health Research (SWHR). Monica P. Mallampalli, PhD, MSc, is vice president of scientific affairs at SWHR and program director for SWHR's Interdisciplinary Research Network on Sleep.

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