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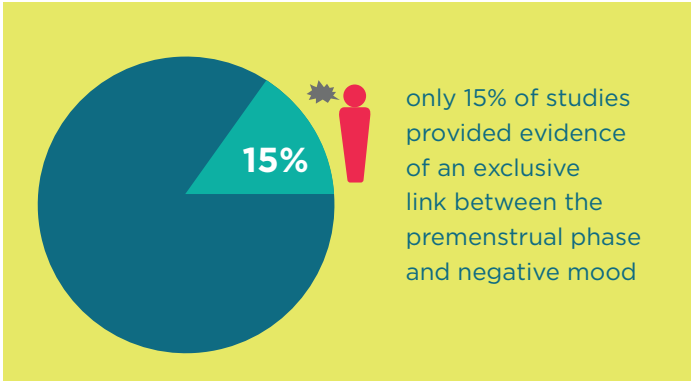
SCIENCE FACT OR SCIENCE FICTION: DOES PMS EXIST?

Premenstrual syndrome (PMS) is widely accepted as a medical reality, believed to affect most women and girls of reproductive age.[1,2] In addition to physical symptoms like cramping, PMS is linked to negative moods including sadness, anxiety and irritability. But does research support a clear link between the premenstrual phase and negative mood? Or is PMS more science fiction than fact?

THE "CULTURAL BAGGAGE" OF PMS

"There is so much cultural baggage around women's menstrual cycles, and entire industries built around the idea that women are moody, irrational—even unstable—in the phase leading up to menstruation," says Dr. Gillian Einstein, Director of U of T's collaborative program in Women's Health.[3] The tendency to surround women's reproductive functions with myths and misinformation has a long history dating as far back as Hippocrates, who suggested women's uteruses travelled freely throughout their bodies (a phenomenon called the "wandering womb"), causing depression and madness.[4] However, it wasn't until the early 1930s that the premenstrual phase specifically was identified as a cause of negative mood in women.[5]

Many women take it for granted that the premenstrual phase causes negative moods,[6] but this connection is not universal. Women living in countries where the link between negative mood and the premenstrual phase is less culturally engrained, such India and China, are far less likely to report experiencing negative mood symptoms during the premenstrual phase.[7] Surprisingly, a recent review of published articles measuring links between mood and women's menstrual cycles found that only 15% of studies provided evidence of an exclusive link between the premenstrual phase and negative mood.[8]



These findings and other new research are challenging the belief that the premenstrual phase causes moodiness in most women.

THE EVIDENCE

The CIHR-funded Mood in Daily Life (MiDL) study examined the extent to which women's daily moods are influenced by their menstrual cycles and by reproductive hormones. Over 100 randomly selected healthy Canadian women who were unaware that the study was about mood and the menstrual cycle were given smartphones and asked to record their negative and *positive* moods over a period of six months—providing the researchers with real-time mood data. At the end of the study, the MiDL team found that in a healthy population blinded to the purpose of the study, physical health, perceived stress, and social support were much stronger predictors of mood than any menstrual cycle phase.[9]

A subset of the MiDL study measured participants' estrogen and progesterone levels daily for six weeks, leading to two important findings. First, these hormones contributed only slightly to women's moods. And second, it turned out that the amount of time women spent in each menstrual cycle phase varied so much that it wasn't

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possible to accurately predict women's hormone levels by simply counting back from the start of the menstrual cycle. This suggests past studies that have identified a link between menstrual cycle and mood without measuring reproductive hormones may have incorrectly attributed cultural factors to biology.[10]

So how did we come to associate negative mood so strongly with the premenstrual phase? In previous studies, researchers have often failed to ask about positive moods, assuming the premenstrual phase would be associated with negative moods.[8] In other studies, participants weren't blinded to the fact that they were participating in a study about mood and PMS.[8] As the MiDL team points out, if "attitudes toward menstruation are widely negative, women's expectations of themselves during menstruation may be negative as well."[8] Researchers have also used data from women seeking clinical help for mood as evidence for the existence of PMS.[8] Current research suggests that between 1.3%–9% of women have a disabling mood syndrome linked to the menstrual cycle, termed "premenstrual dysphoric disorder."[8] However, as the MiDL team discovered using a randomly selected population, the moods of women not seeking help are far more likely to be affected by psychosocial factors than PMS.

CONCLUSION

Culturally held beliefs about PMS seem to have influenced both women's and researchers' expectations of the premenstrual phase, but new research is debunking the existence of negative mood caused by PMS in the general female population. The evidence that we do have for PMS is limited, and psychosocial factors—such as physical health and social support—appear to be more strongly related to mood than any menstrual cycle phase. Research that challenges assumptions about biological links between the premenstrual phase and moodiness may eventually change how society views women's moods and menstruation.

MOOD IN DAILY LIFE: ABOUT THE STUDY

The Mood In Daily Life (2004-2006) study was conducted by a team of Toronto researchers: principal investigator Sarah Romans from Women's College Hospital; Nili Benazon and Brenda Toner from the Centre for Addiction and Mental Health; Donna Stewart and Sheila Laredo from Women's College Hospital; Kathryn Morgan from the Department of Philosophy at the University of Toronto; and Gillian Einstein from U of T's Department of Psychology. Study results were published in *Gender Medicine, Psychotherapy and Psychosomatics* and in *Hormones and Behavior*. Funding was provided by CIHR.

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