



## Editorial

# Commentary on: “Association Between Passive Body Heating by Hot Water Bathing Before Bedtime and Depressive Symptoms Among Community-Dwelling Older Adults”

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## ARTICLE INFO

*Article history:*

Received July, 8 2021

Accepted July, 9 2021

Depression remains difficult to treat. Despite myriad registered therapies, including dozens of antidepressant agents, mood stabilizers, atypical antipsychotics, and other treatments such as electroconvulsive therapy, transcranial magnetic stimulation, and ketamine, many individuals still do not respond to treatment, and those who do respond often experience recurrence of depression as well as unpleasant adverse effects.<sup>1</sup> These limitations have contributed to the growing interest in complementary/alternative therapies in the United States and worldwide. Complementary therapies often have good tolerability, safety, and work for many people who have not found relief with standard antidepressant medications or other treatments.

Continued research on alternative therapies remains vital from the standpoint of treatment development. Recently, several lines of research have been exploring heat exposure as a potential complementary antidepressant modality, specifically whether artificially raising body temperature might alleviate depression. Whole-body hyperthermia has demonstrated beneficial effects in individuals with depression, surprisingly after a single treatment. For example, in a small randomized controlled trial, our group found that a single session of whole-body hyperthermia produced a sustained reduction of depression for at least 6 weeks when compared to sham treatment.<sup>2</sup> We and others have also been studying heated yoga as an intervention for depression with encouraging results.<sup>3,4</sup> Because nonheated

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<https://doi.org/10.1016/j.jagp.2021.07.004>

yoga has also demonstrated antidepressant benefits in even more studies, this raises the question of whether the addition of heat may work synergistically with the yoga postures. Although heat has been proposed to carry out antidepressant effects in part through the inflammatory system, whose relationship with mood is well established, further investigation into the role of heat as an antidepressant is clearly called for.

In this issue, Tai et al. have added to this body of work by extending on two early investigations of another hyperthermic intervention commonly used in Japanese society, the hot bath.<sup>5</sup> In Japan, immersion baths are popular, but this is the first time that they have been examined in a large-scale study as a potentially beneficial intervention for older depressed individuals. The authors investigated the association between passive body heating through hot water bathing before bedtime and depressive symptoms, among a cross-sectional sample of more than 1,000 community-dwelling older adults in Japan with a mean age of 72 years. These individuals were assessed for their hot water bathing habits prior to bedtime for two consecutive days, and depression scores were assessed after completion. Findings showed that individuals who did not take immersion baths, and those who bathed on only 1 of the 2 days had a higher prevalence of depressive symptoms compared to subjects who bathed on both days. Age, sex, and other potential confounders did not appear to impact the findings, supporting generalizability, at least among older individuals. Furthermore, those who bathed closer to bedtime seemed to have better outcomes, with a lower prevalence of depressive symptoms, regardless of water temperature and duration of bath. The authors concluded that a higher frequency of hot water bathing with a short interval from bathing to bedtime might be beneficial for preventing depression.

The study is very timely in view of the growing interest in heat as a potential treatment or preventive intervention for depression. The findings both support and complement the aforementioned research on heat as an antidepressant intervention. In particular, the study extends prior investigations of psychological effects of bathing in that it examined water temperature, bath duration and timing, which previous investigations had not done.<sup>5</sup> Other strengths include a large sample of patients, with the notable limitation being the restricted focus on older individuals.

One compelling aspect of bathing as depicted here is its easy accessibility and affordability as well as safety and tolerability, all of which are particularly important to consider if this intervention were to serve primarily older individuals, many of which may have mobility issues restricting their ability to go out. Taking immersion baths at home is easier and cheaper than attending yoga classes in a heated studio or going to a clinic to receive a whole-body hyperthermia session. Yet the potential applicability of bathing on a broader scale remains unclear. While bathing of this type is common in Japan, the authors observed that they selected an older population because they were more likely to participate in this type of bathing. Younger people appear more likely to take showers, which may not have the same benefit, presumably due to lack of full immersion resulting in less complete exposure to heat. Future investigations into the effect of different forms of bathing on core body temperature may clarify this question. In the United States and other Western nations, even fewer people take immersion baths, and showers are much more common across the life span. For example, a survey of 2,000 adults in the United Kingdom found that 57% of respondents preferred showers, while 32% chose baths.<sup>6</sup> A US-based survey of 2,000 people found that showers were preferred over baths by a ratio of 9:1, and that men in their 20s were more likely to take showers, whereas women in their 40s were more likely to take baths.<sup>7</sup>

These surveys suggest that in our modern, fast-paced society, fewer people feel they have the time for leisurely bathing and may therefore opt for fast showers.

In view of the above, the acceptability of immersion bathing on a broader scale and throughout the world may limit its overall penetrance, though it could still be impactful primarily as an intervention for elderly people with depression. However, if future studies confirm the findings of Tai et al. in more general populations, they could potentially encourage more people to try bathing at home or at their local gym/spa for alleviating depressive symptoms, and provide guidance as to optimal bath frequency, duration, and temperature. The accessibility, affordability, safety, and tolerability of the intervention is appealing, and if it gained more acceptance, could turn out to be a novel, implementable, and valuable addition to the psychiatric armamentarium, and therefore merits further investigation as a treatment for acute depression.

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## AUTHOR CONTRIBUTIONS

Dr Mischoulon wrote the first draft of the manuscript. Dr Nyer and Dr Raison contributed to the writing of the sections on heated yoga and whole body hyperthermia, and also provided co-writing and modifications to the article as a whole.

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## DISCLOSURES

*Dr Mischoulon has received research support from Nordic Naturals and heckel medizintechnik GmbH.*

*He has received honoraria for speaking from the Massachusetts General Hospital Psychiatry Academy. He also works with the MGH Clinical Trials Network and Institute (CTNI), which has received research funding from multiple pharmaceutical companies and NIMH.*

*Dr Nyer has received grant support from the National Center for Complementary and Integrative Health (NCCIH) (K23 AT0080430A1), and from the NCCIH Loan Repayment Program (LRP).*

*Dr Raison has provided consulting to Usona Institute, Novartis, Otsuka, Emory Healthcare, and Institute of OM Foundation.*

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