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INTERVENTIONS
Articles testing the applied science and implementation of mindfulness-based interventions


Malboeuf-Hurtubise, C., Taylor, G., Mageau, G. A. (2019). Impact of a mindfulness-based intervention on basic psychological need satisfaction and internalized symptoms in elementary school students with severe learning disabilities: Results from a randomized cluster trial. Front Psychology. [link]


ASSOCIATIONS
Articles examining the correlates and mechanisms of mindfulness

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Hatton-Bowers, H., Smith, M. H., Huynh, T.,...Lodl, K. (2019). “I will be less judgmental, more kind, more aware, and resilient!”: Early childhood professionals’ learnings from an online mindfulness module. *Early Child Ed J.* [link]


O’Driscoll, M., Byrne, S., Byrne, H.,...Sahm, L. J. (2019). Undergraduate pharmacy students’ experiences of a mindfulness-based intervention. *Currents Pharm Teach Learn.* [link]


Radin, R. M., Epel, E. S., Daubenmier, J.,...Mason, A. E. (2019). Do stress eating or compulsive eating influence metabolic health in a mindfulness-
based weight loss intervention? Health Psychology. [link]

**METHODS**

Articles developing empirical procedures to advance the measurement and methodology of mindfulness


**Reviews**

Articles reviewing content areas of mindfulness or conducting meta-analyses of published research


**Trials**

Research studies newly funded by the National Institutes of Health (NOV 2019)

VA Connecticut Healthcare System (L. Kachadourian, PI). Mindfulness treatment for anger in veterans with PTSD. Veterans Affairs project # 5IK2CX001259-04. [link]
The human genome is the sum total of genes encoded in our DNA. Epigenetics is the study of how these genes get turned on and off to produce physiological effects. For example, epigenetic changes in the immune system play a central role in disease onset and aging. We may be able to alter our epigenetic activity through behavioral changes in exercise, diet, and stress reduction. While stress reduction practices have previously been found to down-regulate the immune system and inflammation, little is known about how such practices affect immune system epigenetics.

DNA strands are wrapped around protein complexes called histones. Genes can be turned on or off through methylation (the addition of carbon atoms bonded to four hydrogen atoms) of the histones adjacent to DNA gene segments. Chaix et al. [Brain, Behavior and Immunity] studied the effect of intensive mindfulness meditation on the methylation of immune cell (lymphocyte and monocyte) genes in experienced meditators after one day of intensive meditation.

The researchers recruited 19 experienced meditators (average age = 50; 58% female; 84% Caucasian) and 21 meditation-naive controls (average age = 50; 57% female; 84% Caucasian). Meditators had a minimum of 3 years of meditating at least 30 minutes a day and attended at least 3 intensive meditation retreats. The meditators had their blood drawn before and after an 8-hour period of intensive mindfulness meditation similar to a Mindfulness-Based Stress Reduction all-day retreat. Controls had their blood drawn before and after 8 hours of leisure activities such as reading, playing computer games, watching documentaries, and walking. Blood draw immune (mononuclear) cell DNA was analyzed for methylation levels at over 400,000 separate DNA sites. After quality filtering, usable data were obtained for 17 meditators and 17 controls.

Meditators and controls had similar methylation levels at baseline. After the 8-hour intervention period, meditators had 61 DNA sites with significantly changed methylation levels, while DNA sites of leisure activity controls showed no significant changes. Of the 61 altered sites in the meditators, 57 sites showed increased methylation levels. Sites were mainly associated with genes regulating fatty acid metabolism, DNA repair, RNA metabolism, protein translation, telomerase regulation, telomere maintenance, and cell adhesion. These genes also affect immune and inflammatory response by regulating vascular inflammation, the anti-inflammatory cytokine IL-10, and the pro-inflammatory COX-2 molecule.

The study demonstrates that a single 8-hour mindfulness meditation retreat can rapidly alter methylation levels that affect epigenetic expression in genes among experienced meditators. Involved genes include those that regulate inflammation, immune cell metabolism, DNA repair, cellular aging, RNA metabolism, protein translation, cell adhesion, and neurotransmission. These findings align with other studies showing that mindfulness meditation practice has immune system benefits relevant to health and aging. The study is limited by its small sample size and variability in the control group leisure activities. Moreover, the analysis cannot decipher whether individual genes were turned off or on by methylation, whether these changes up-regulated or down-regulated immune function, or whether epigenetic expression was also altered by biochemical pathways other than methylation.
Women diagnosed with epilepsy often report diminished sexual interest and arousal. This is due to a variety of factors including the side-effects of anti-epileptic medication and fear of triggering seizures during sexual activity. Mindfulness-based interventions have previously been shown to improve sexual functioning in women with difficulties in sexual interest and arousal, women with gynecological cancer, and men with erectile dysfunction.

Lin et al. [Seizure] conducted a randomized controlled study to assess the efficacy of Mindfulness-Based Cognitive Therapy for Sexuality (MBCT-S) in improving sexual functioning and quality of life in women with epilepsy and their partners. The researchers randomly assigned 660 women aged 65 or older with epilepsy (average age = 71 years) drawn from 15 Iranian neurology clinics to one of three experimental conditions: 1) MBCT-S for women and their sexual partners, 2) MBCT-S for women and their sexual partners plus a 3-session sexual counseling training program provided to their neurology health care provider, and 3) treatment-as-usual for epilepsy. MBCT-S was offered in an 8-week small-group format delivered in 90-minute weekly sessions. The intervention was similar to standard MBCT, but included psychoeducation about sexual desire, arousal, and intimate relationships, cognitive therapy regarding sexual beliefs, and sensate focus.

The women and their partners were assessed at baseline, 1-month post-intervention, and 6-months post-intervention. The primary outcome measure was the women’s self-report of desire, arousal, lubrication, orgasm, satisfaction, and pain. Secondary measures included self-report measures of emotional and sexual intimacy, sexual distress, mindfulness during sex (using the Five-Facet Mindfulness Scale adapted for sexual behaviors), quality of life, and others.

Both MBCT-S groups showed significant improvement in sexual mindfulness, women's sexual functioning and sexual distress, women’s and partners’ emotional and sexual intimacy, and partners’ erectile function compared to controls, both at 1- and 6-months post-intervention. Both MBCT-S groups also showed significantly greater improvements in anxiety and depression than controls at 1 and 6 months, and improved quality of life at 6 months. Only the MBCT-S group that included health care providers showed significantly larger improvements in sexual attitudes and beliefs and quality of the patient-doctor relationship than controls.

The MBCT-S group that included health care providers improved significantly more at 1-month post-intervention than both comparison groups on women and partner ratings of sexual mindfulness, sexual intimacy, and partner ratings of emotional intimacy. This superiority over both comparison groups persisted at 6-months, with the addition of a significant difference in improved women’s sexual functioning. Improvements in sexual functioning and distress were significantly mediated by improvements in mindfulness during sex and in sexual and emotional intimacy.

This study shows that MBCT-S improves sexual functioning and sexual and emotional intimacy in older Iranian women with epilepsy and their partners, that these improvements persist over time, and that these improvements are mediated by increased mindfulness during sex. It also shows a potential added benefit of educating epilepsy health care providers about sexual counseling. The study is limited by its reliance on a treatment-as-usual control.
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