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GoBlue International, LLC (J. Brewer, PI). **Developing a novel digital therapeutic for the treatment of generalized anxiety disorder**. NIH/NIMH project #1R41MH118130-01. [link]

Pacific University (M. Christopher, PI). **Mindfulness-based resilience training for aggression, stress and health in law enforcement officers**. NIH/NCCIH project #1U01AT009841-01. [link]

Rutgers University (N. Cooperman, PI). **MORE as an adjunct to methadone treatment for opioid and chronic pain management**. NIH/NCCIH project # 1R21AT010109-01. [link]

University of Michigan (A. King, PI). **Neural mechanisms of MBCT for PTSD**. NIH/NCCIH project # 1R61AT009867-01. [link]

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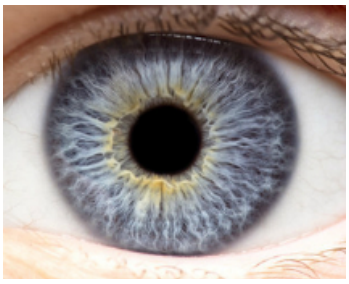
HIGHLIGHTS

A summary of select studies from the issue, providing a snapshot of some of the latest research

Glaucoma is a leading cause of blindness that affects 65 million people worldwide. It is caused by increased fluid buildup inside of the eye (intraocular pressure) that results in progressive damage to the optic nerve. Psychological stress is known to increase several glaucoma risk factors (oxidative stress, inflammation, glutamate toxicity, and vascular dysregulation) while simultaneously reducing several protective factors (neurotrophins and glial activity). This finding has led some to wonder whether stress reduction interventions might benefit glaucoma patients. **Dada et al. [*Journal of Glaucoma*]** conducted a randomized, controlled study to test if a mindfulness-based intervention (MBI) could reduce intraocular pressure and affect psychological stress-related biomarkers as well as alter gene expression in glaucoma patients.

The researchers randomly assigned 90 patients (average age = 57 years; 55% male) with moderate-to-severe glaucoma to either a MBI or a wait-list control group. MBI participants engaged in daily hour-long teacher-led group sessions for 21 consecutive days. The sessions included 15 minutes of slow-breathing exercises followed by 45 minutes of mindfulness meditation. Attrition rate was 18% in the MBI group and 7% in the wait-list control group.

Intraocular pressure was assessed pre- and post-intervention, as were biomarkers of psychological stress (cortisol and β-endorphins), inflammation (IL-6 and TNF-α), oxidative stress (the imbalance between free radicals and antioxidants as measured by ROS and TAC), and a protein that protects nerve cells (BDNF). Whole blood RNA was assessed for post-intervention differences in gene expression, and participants completed the World Health Organization Quality of Life Questionnaire.



MBI participants showed a significant 6 mmHg reduction in intraocular pressure, while controls only decreased by about 1 mmHg. Seventy-five percent of the participants who completed the MBI reduced their pressure by over 25%. In evaluating quality of life, MBI participants recorded significant improvements while controls recorded little to no improvement. Biological markers for stress (cortisol, β-endorphins) showed significant improvement for MBI participants, but remained essential unchanged for controls.

One measure of inflammation (TNF-α) significantly decreased for MBI participants and significantly increased for controls. For MBI participants, levels of BDNF significantly increased and oxidative stress measures (ROS and TAC) significantly improved, but similar changes were not observed for controls.

With regard to gene expression, 109 genes differentiated MBI participants from controls. These included genes implicated in nerve cell maturation, cell death and survival, inflammation, glutamate toxicity, and ocular hypertension.

There were significant intercorrelations between intraocular pressure, all of the biomarkers, differential gene expression, and quality of life. For example, lower intraocular pressure was positively associated with quality of life, BDNF, TAC, β-endorphins and a variety of genes, but negatively associated with cortisol, IL-6, ROS, and certain other genes.

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The results show initial promise for the adjunctive use of mindfulness-based interventions in the treatment of glaucoma. Mitigating stress by means of a daily mindfulness practice appears to play a role in reducing biological markers that indicate progression of glaucoma. The results are limited by the absence of long-term follow-up or an active control. As this is the first study of the use of a MBI as an adjunctive treatment for glaucoma, the results require replication before more definitive statements can be made.

Children from low-income, high-stress families are at increased risk for obesity. Further, highly stressed parents tend towards parenting styles that are less warm, less involved, and more punitive. An intervention that improves parental nonjudgmental attention to moment-to-moment parent-child interactions might also prove helpful in preventing childhood obesity. **Jastreboff et al. [*Journal of Pediatrics*]** explored whether a novel mindful parenting program could improve parenting style and reduce the risk for obesity in the parents' preschool-aged children.

The researchers randomly assigned 42 highly stressed low-income parents of preschool aged children (average age = 31 years; 98% female; 62% multiracial; average BMI=36) to either an 8-week Parenting Mindfully for Health (PMH) program or an educational control group. High parental stress was defined by high scores on a perceived stress scale. The PMH and control participants both attended 8 weekly 2-hour group sessions that included 20 minutes of nutrition and physical activity education and counseling. The remainder of the time in the PMH group was modeled after MBSR, which included a focus on mindful parenting, eating, and physical activity. The remainder of the control group's time was devoted to viewing and discussing nature videos.

Parents were assessed pre- and post-intervention for mindfulness (using the Mindful Attention Awareness Scale), perceived stress, nutritional intake, pedometer-measured physical activity, and BMI. Their preschool children wore an activity sensor to measure levels of physical activity and also had their BMI calculated from their height and weight. Parent-child dyads were videotaped during a "Toy Wait Test" in which the children had to wait five minutes until their parents completed some paperwork before they could play with a toy. Toy Wait Test videotapes were rated for the quality of parent-child interaction by independent blind raters.

The average child's BMI percentile increased significantly more for control children (a 12 percentile increase) than for PMH children (a 1 percentile increase; f=0.42). After intervention, PMH parents spent significantly more time verbally interacting with their children to help them tolerate waiting for the toy and remained more involved with their children than control parents (f=0.34). PMH parents also showed a trend towards increased positive parental affect, warmth, and engagement, but control parents did not. Both groups of parents ate healthier diets after intervention (f = 0.36), but only the PMH parents significantly decreased their eating in response to emotional upset. There were no significant changes in parental mindfulness, stress, BMI, or physical activity at post-intervention in either group.

The results show that the Parenting Mindfully for Health (PMH) program effectively improved positive parenting style, and significantly slowed weight gain in their preschool children over the course of 8 weeks. Given that PMH parents showed no significant changes in mindfulness or stress, the mechanisms of action remain unknown. Didactic aspects of the program involving mindful parenting and eating may have been responsible for the observed intervention effects, as the control group contained no similar components. The study is limited by its small sample size and lack of longer-term follow up.