



Not Just Mind Over Matter: Reviewing With Patients How Mindfulness Relieves Chronic Low Back Pain

Natalia E. Morone, MD, MS¹

Abstract

The current opioid crisis has spurred the need for nonpharmacological therapies for chronic low back pain. In a study published in *JAMA Internal Medicine*, we reported that in 282 older adults with chronic low back pain, an 8-week mind-body group program modeled on Mindfulness-Based Stress Reduction (MBSR) decreased long-term pain and increased short-term function. Barriers to uptake remain such as patient resistance to accepting the benefits of nonpharmacological treatments for chronic low back pain. They may fear the clinician does not believe their pain complaint because they are not being offered a pain pill. By not appreciating the value of the therapy in helping their chronic low back pain, the patient may not be compliant with recommendations. Resistance likely derives from lack of understanding how a mind-body approach like MBSR can help relieve the sensation of pain as well as help increase function. Clinicians can help break through this barrier by educating their patients about the different ways in which MBSR works to reduce pain and improve function. In this commentary, we will discuss how our findings can inform the discussion clinicians have with their patients regarding the ways MBSR can relieve back pain. Pain processing is complex and top-down regulation is not fully engaged when pain is treated with pharmacotherapy alone. We share that our study showed a clinically meaningful reduction in pain and improvement in function and discuss some of the possible underlying mechanisms of MBSR's effect.

Keywords

mindfulness, back pain, meditation

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In the article “A Mind-Body Program for Older Adults With Chronic Low Back Pain: A Randomized Clinical Trial,” we reported that in 282 older adults with chronic low back pain (cLBP) an 8-week mind-body group program modeled on Mindfulness-Based Stress Reduction (MBSR) decreased long-term pain and increased short-term function.¹ Partially based on our work, MBSR is now recommended by the American College of Physicians, along with 12 other nonpharmacological therapies, as initial treatment for cLBP.² Yet barriers to uptake remain such as transportation or scheduling conflicts for group sessions. Another significant barrier to uptake is patient resistance to accepting the benefits of nonpharmacological treatments for cLBP. They may fear the clinician does not believe their pain complaint because they are not being offered a pain pill. By not appreciating the value of the therapy in helping their cLBP the patient may not be compliant with recommendations. Resistance likely derives from lack of understanding how a mind-body approach like MBSR can help relieve the sensation of pain as well as help increase function.

Clinicians can help break through this barrier by educating their patients about the different ways in which MBSR works to reduce pain and improve function. This commentary will discuss how our findings can inform the discussion clinicians have with their patients regarding the ways MBSR can relieve back pain.

It is important to discuss with patients that MBSR results in a clinically meaningful reduction in pain intensity. Most investigators and clinicians define this as a 30% improvement.³ In our study we found that 6 months after completing the intervention, more than one-third of MBSR participants as

¹ Boston University, Boston, MA, USA

Corresponding Author:

Natalia E. Morone, MD, MS, Section of General Internal Medicine, Boston University School of Medicine, 801 Massachusetts Avenue, Second Floor, Boston, MA 02118, USA.
Email: moronen@bu.edu



Table 1. Proportion Achieving ≥ 5 -Point Improvement From Baseline RMDQ Score at 8-Week and 6-Month Follow-up.

	8 Weeks			6 Months		
	Intervention (n = 132)	Control (n = 138)	P	Intervention (n = 117)	Control (n = 135)	P
RMDQ	49 (37.1)	31 (22.5)	.01	36 (37.1) ^a	40 (29.6)	.88

Abbreviation: RMDQ, Roland and Morris Disability Questionnaire.

^aN = 118 responded to the RMDQ at 6 months in the intervention group.

compared with control participants had at least a 30% improvement in average (36.7% vs 26.7%), current (44.4% vs 25.2%), or most severe pain (35.9% vs 22.2%) over the past week. To place this in context, clinical trials of nonsteroidal anti-inflammatory drugs *have not shown a clinically significant improvement* in cLBP. A recent meta-analysis found a statistical improvement, but not a clinically significant improvement of nonsteroidal anti-inflammatory drugs compared with placebo.⁴ We also evaluated a stricter 50% improvement in pain in our trial. We found that at program completion intervention as compared with control participants had at least a 50% statistically significant improvement in current pain (32.6% vs 15.9%). There was also a difference between groups for average and most severe pain reduction (15.9% vs 10.1% and 15.9% vs 8.7%, respectively), but this difference did not reach statistical significance. The effects on pain improved at the 6-month follow-up with a 50% statistically significant improvement in current (35.0% vs 20.7%) and average (24.8% vs 13.3%) pain. Severe pain also improved (21.4% vs 12.6%) but did not reach statistical significance. Since the effects on pain were maintained at the 6-months follow-up, it indicates that mindfulness' effect on pain reduction is long term. It should be emphasized to patients that this improvement occurred with a nonpharmacological approach to cLBP.

Patients may naturally wonder how pain reduction is possible without a pain pill. Consider reviewing with them that pain processing is complex and occurs via networks in the brain that allow for top-down regulation of pain. When engaged in mindfulness meditation, the networks that regulate pain are engaged and include the emotional, sensory, and cognitive networks, top-down pathways, as well as the parasympathetic network. Mindfulness, therefore, engages a variety of pathways to regulate the experience of pain. Our data support the engagement of these networks in the following way: pain coping was significantly improved in the meditation group. The questionnaire we used asked very direct questions about pain coping, including "How certain are you that you can make a large reduction in your pain by using methods other than taking extra medications?" Our findings support that engaging in mindfulness can directly reduce pain intensity. Imaging studies further our understanding of this observation by shedding light on the brain pathways involved during meditation. Experienced as well as novice persons who meditate during the application of a painful thermal or electrical stimulus engage pain processing and pain evaluation areas of the brain differently than controls. They also report less pain intensity and less pain bothersomeness

providing evidence that the reduction in the pain experience is due to engagement of central pain networks.⁵ In clinical practice, I have found that before patients learn mindfulness meditation, they think that it works by "mind over matter." This statement implies will power alone can affect pain. Reviewing with patients that actual changes occur in the brain during meditation will help to educate them on the biological basis of the pain alleviating effects of mindfulness.

Our qualitative work further sheds light on the different ways that persons directly reduce pain intensity.⁶ Patients' described becoming aware through mindfulness of how their fear of pain was actually making the pain worse and limiting their experience and consequently being able to let go of the fear. They described increased awareness of muscle tension that contributed to pain as well as the release of that tension through mindfulness and meditation to decrease pain intensity. They also described letting go of the significance of pain so that it no longer had a prominent role in their day to day lives. In many ways, the limitations of pharmacotherapy for chronic pain may be due to the lack of engagement of the complex pathways involved in pain modulation. Again, this underscores the importance of nonpharmacological treatment as an initial approach to treating cLBP.

Additionally, mindfulness helped increase functional capacity. This is another important point to review with patients. We found that 57% of intervention versus 45% of control participants in our study had a 2.5-point clinically significant improvement in disability at program completion as measured by the Roland and Morris Disability Questionnaire.⁷ We also looked at even greater improvement in disability by evaluating a 5-point decrease in the Roland and Morris Disability Questionnaire. This questionnaire asks very specific yes/no questions regarding pain interference due to back pain, for example, "because of this pain I need to use a handrail to go upstairs." We found that 35% of intervention versus 22% of control participants had a clinically significant 5-point improvement in disability at 8 weeks (see Table 1). Our findings regarding function did not differ at the 6-month follow-up as 49% of both groups had a 2.5-point clinically significant improvement in function. To maintain functional capacity long-term patients can be counseled to engage in other nonpharmacological therapies such as yoga as well as mindfulness.

Mindfulness may help address the opiate crisis by providing patients with an effective method of coping with their cLBP so that an opiate prescription is not needed. Strong evidence indicates that opiates have no long-term benefit in cLBP.⁸⁻¹⁰ Yet

cLBP is a common complaint for which patients receive an opiate prescription.¹⁰ Mindfulness is an evidence-based treatment that *does* have long-term benefit. Since nonpharmacological therapies such as mindfulness are now recommended as first-line treatment for cLBP it is imperative for patients to understand how it helps their chronic pain. The patient is more likely to engage in treatment when they have confidence it will address their cLBP and may be less likely to request less effective treatment such as opiates once the effects of nonpharmacologic therapy are realized.

Our clinical trial provides evidence for the beneficial effects of MBSR on directly reducing pain intensity in the long term and improving physical function in the short term. Pain processing is complex and top-down regulation is not fully engaged when pain is treated with pharmacotherapy alone. Mindfulness likely involves pain processing and pain evaluation brain pathways that regulate pain. By reviewing these points with patients, providers can play a critical role in increasing patient acceptance and engagement in mindfulness for the treatment of chronic low back pain.

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Ethical Approval

The original trial was approved by the University of Pittsburgh Institutional Review Board.

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