Novel mind-body program outperforms other forms of treatment for chronic back pain

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Chronic back pain is the leading cause of disability worldwide. In the United States, patients spend up to $300 billion each year to treat the condition, according to a 2012 study published in the *Journal of Pain*. However, common therapies such as surgery and steroid injections

intended to address physical origins of back pain have not been clearly proven to work in randomized clinical trials, and a growing body of evidence suggests that psychological factors may be associated with of some forms of back pain.

Physician-scientists from Beth Israel Deaconess Medical Center (BIDMC) developed a 12-week mind-body program that takes a new approach to chronic back pain. The novel intervention—which is not yet available at BIDMC to the general public—is based on an idea pioneered by the late John Sarno, MD, a professor of rehabilitation medicine at the New York University School of Medicine. In a new publication appearing in journal *PAIN*, the team demonstrated that the mind-body intervention was highly beneficial for treating back pain when compared to standard care, with 64 percent of research volunteers reporting being 100 percent pain free six months later.

"The current paradigm of pain management focuses mostly on treatment of a physical origin of pain, however, in many cases of chronic back pain a physical source of pain cannot be identified," said corresponding author Michael W. Donnino, MD, a physician in the Departments of Critical Care and Emergency Medicine at BIDMC. "Our group focused on the hypothesis that non-specific back pain is the symptomatic manifestation of a psychological process, substantively driven by stress, repressed emotions and other psychological processes. The exact mechanism remains unclear, but an analogy could be made to other known effects of acute emotional states on acute physiological changes, such as how the emotion of embarrassment may result in the capillary vasodilation we know as blushing."

Donnino and colleagues' experimental program, termed Psychophysiologic Symptom Relief Therapy (PSRT), is designed to address underlying stressors and psychological contributors to persistent pain as well as conditioned pain responses and fear avoidant behaviors.

Treatment strategies include educating patients about the links between stressors and pain, as well as the relationship with emotions. Armed with this knowledge, participants learn healthier ways to process stress and express emotions. The program also focuses on desensitization or reverse conditioning to help patients break the associations that often are formed with triggers of pain such as bending or sitting.

"Often these triggers are assumed to be cause of pain, but they are perhaps better described as associations that can be unknowingly conditioned in a way that is similar to how Pavlov conditioned dogs to salivate to a bell by pairing the bell with food," Donnino noted. "Our program works to reverse these conditioned responses and thus improve pain and pain disability."

The program's final eight weeks focus on mindfulness-based stress reduction, or MBSR, the goal of which is to provide the tools to better process current and future stressors, while allowing time to practice the techniques from the first portion of the program.

To assess whether PSRT can reduce symptoms and pain-related anxiety in patients with non-specific chronic back pain, Donnino and colleagues enrolled 35 participants, 18 to 67 years old with chronic back pain that lacked a clear physical origin. Participants were randomly assigned to receive either the novel 12-week PSRT intervention, eight weeks of MBSR only, or usual care under the guidance of their physicians without influence from the study team. All participants filled out pain-related questionnaires prior to the interventions and periodically up to six months after the interventions to assess changes in functional limitations or disability, back pain bothersomeness and pain-related anxiety.

After just four weeks, researchers saw an astonishing 83 percent decrease in reported pain disability in the PSRT group compared to 22 percent and 11 percent in the MBSR and usual care groups, respectively.

With regard to pain bothersomeness over the same time period, the PSRT group had a 60 percent drop compared to 8 percent and 18 percent decreases in pain bothersomeness for the mindfulness and usual care groups, respectively.

The PSRT group was superior to both usual care and MBSR for the primary endpoint of pain disability at every interval and at the end of the six-month monitoring period. Moreover, at the end of the six-month period, 64 percent of patients with chronic back pain in the PSRT group were completely pain free (reporting 0 out 10 on a pain scale) whereas only 25 percent and 17 percent reported being pain free in the mindfulness and usual care arms, respectively.

"Within four weeks, differences between PSRT, MBSR, and usual care were apparent across multiple domains including the primary outcome measure of functional disability as well as pain bothersomeness," Donnino said. "When patients recognize the relationship between the mind and their physical pain, this orientation sheds new light and provides them a basis to engage with the multifaceted program that works interchangeably to improve pain and disability. This study shows that our program has the potential to be highly beneficial when compared to both usual care as well as usual care plus additional treatments such as MBSR."

More information: Michael W. Donnino et al, Psychophysiologic symptom relief therapy for chronic back pain: a pilot randomized controlled trial, *PAIN Reports* (2021). DOI: 10.1097/PR9.0000000000000959

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