

Contributions of Behavioral and Social Sciences Research (BSSR)

The Public Health Problem

50M

More than 50 million (20.4%) U.S. adults experience daily chronic pain and 20 million suffer from high-impact chronic pain (i.e., chronic pain that frequently limits life or work activities).¹ Pain is more prevalent and less likely to be adequately treated in the elderly, women, children, racial and ethnic minorities, those who reside in rural areas, and adults who are on public health insurance, unemployed, or impoverished.²

\$635B

Chronic pain contributes to an estimated \$560 billion to \$635 billion each year in direct medical costs, lost productivity, and disability programs. The annual cost of pain is greater than the combined annual costs of cancer and diabetes.³

#1

Chronic pain is the leading cause of long-term disability in America, with arthritis and back or spine pain as the top two contributors.⁴

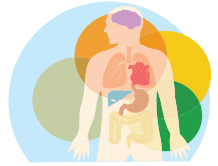
Chronic pain—pain that persists or recurs for at least 3 months and often becomes a condition in its own right⁵—is associated with many other injuries and conditions, including:

- Low-back and neck injury or degeneration
- Migraine and head-ache
- Arthritis
- Neuropathy
- Cancer
- Prior injury
- Surgery
- Fibromyalgia
- Endometriosis
- Inflammatory bowel disease

BSSR Health Impacts

Integrated Care Models

The most promising ways of managing chronic pain use an individualized, patient-centered diagnostic and treatment framework that relies on the biopsychosocial model,⁶ which addresses physical and emotional components of pain. Multimodal, multidisciplinary, and integrated approaches combine therapies such as medications, behavioral and interventional approaches, restorative therapies, and complementary health. Integrated approaches reduce pain severity and improve mood, quality of life, and functionality.⁷⁻⁸



Pain Education

Broad-based societal education about chronic pain conditions and treatment increases understanding and decreases stigma. Educating both patients and health care providers enhances the patient-clinician relationship, increases compassionate and empathetic care, validates the patient's pain experience, and improves pain self-management.⁹ Learning about the neurobiological and physiological processes involved in pain changes the framework in which patients perceive pain and reduces pain-intensifying behaviors, leading to lower pain levels, reduced disability, and improved mobility and function.¹⁰



Cognitive Behavioral Therapy (CBT)

CBT¹¹ for pain management alters behavioral responses to pain and improves coping skills. In particular, CBT improves self-efficacy and reduces catastrophizing, a type of cognitive distortion that magnifies a pain experience and associated helplessness; it is especially effective for pain management among patients with fibromyalgia and low-back pain.¹²



Mindfulness

Mindfulness¹³ and acceptance-based therapies seek to reduce the extent to which pain interferes with daily life. Acceptance and Commitment Therapy, an acceptance-based therapy that incorporates mindfulness strategies, moderately mitigates pain and pain-related disability immediately and over 6-month follow-ups.¹⁴ Brief Mindfulness-Based Interventions (BMBIs) outperformed other types of behavioral pain management interventions in 11 of 19 studies.¹⁵



Physical Activity and Exercise

Regular physical activity¹⁶ is an essential part of prevention and treatment of chronic pain. Individually tailored interventions commonly include physiotherapy, therapeutic exercise, aerobic conditioning, muscle strengthening, flexibility training, yoga, and tai chi. Exercise is particularly effective for treating low-back and neck pain, osteo- and rheumatoid arthritis, and fibromyalgia. Therapeutic exercise helps patients overcome fear of movement, anxiety, low efficacy, and motivational hurdles that result from and contribute to pain and disability.^{17, 18, 19}



References and Definitions

- 1 Dahlhamer, J., Lucas, J., Zelaya, C., Nahin, R., Mackey, DeBar, L., Kerns, R., Von Korff, M., Porter, L., & Helmick, C.S. (2018). [Prevalence of chronic pain and high-impact chronic pain among adults - United States, 2016](#). Morbidity and Mortality Weekly Report, 67(36), 1001-1006. [\[Back\]](#)
- 2 Institute of Medicine. (2011). [Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research](#). Washington, D.C.: National Academies Press. [\[Back\]](#)
- 3 Institute of Medicine. (2011). [Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research](#). Washington, DC: National Academies Press. [\[Back\]](#)
- 4 Centers for Disease Control and Prevention. (2009). [Prevalence and most common causes of disability among adults—United States, 2005](#). Morbidity and Mortality Weekly Report, 58(16), 421-426. [\[Back\]](#)
- 5 Treede, R.D., Winfried, R., Barke, A., Aziz, Q., Bennette, M.I., Benoliel, R., Cohen, M., Evers, S., Finnerup, N.B., First, M.B., Giamberardino, M.A., Kaasa, S., Korwisi, B., Kosek, E., Lavand'homme, P., Nicholas, M., Perrot, S., Scholz, J., Schug, S., Smith, B.H., Svensson, P., Vlaeyen, J.W.S., Wang, S.J. (2019). [Chronic pain as a symptom or a disease: the IASP Classification of Chronic Pain for the International Classification of Diseases \(ICD-11\)](#). *Pain* 160(1), 19-27. [\[Back\]](#)
- 6 The biopsychosocial model is a framework that accounts for the biological, psychological, and social/family/cultural dimensions of illness and disease. The biopsychosocial model provides a basis for the understanding and treatment of disease that takes into account the patient, his/her social context, and the impact of illness on that individual from a societal perspective. The model states that ill health and disease are the result of interaction among biological, psychological, and social factors.

— Definition adapted from the Institute of Medicine Committee on Advancing Pain Research Care and Education [\[Back\]](#)
- 7 Institute of Medicine. (2011). [Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research](#). Washington, DC: National Academies Press. [\[Back\]](#)
- 8 U.S. Department of Health and Human Services. (2019). [Pain Management Best Practices Inter-Agency Task Force Report: Updates, Gaps, Inconsistencies, and Recommendations](#). [\[Back\]](#)
- 9 U.S. Department of Health and Human Services. (2019). [Pain Management Best Practices Inter-Agency Task Force Report: Updates, Gaps, Inconsistencies, and Recommendations](#). [\[Back\]](#)
- 10 Robins, H., Perron, V., Heathcote, L., & Simons, L. (2016). [Pain neuroscience education: State of the art and application in pediatrics](#). *Children*, 3(4), 43. [\[Back\]](#)
- 11 CBT strategies include education about chronic pain, the relationships between thoughts and emotional and physical reactions, sleep hygiene, and relapse prevention; and instruction and practice in changing dysfunctional thoughts, setting and working toward behavioral goals, relaxation skills, and activity pacing.

— Definition adapted from *Journal of the American Medical Association* [\[Back\]](#)
- 12 U.S. Department of Health and Human Services. (2019). [Pain Management Best Practices Inter-Agency Task Force Report: Updates, Gaps, Inconsistencies, and Recommendations](#). [\[Back\]](#)
- 13 Mindfulness meditation involves reframing pain experiences by having the pain patient refocus on a combination of sensations and environment.

— Definition adapted from the *Annals of Behavioral Medicine* [\[Back\]](#)
- 14 Veehof, M.M., Trompetter, H.R., Bohlmeijer, E.T., & Schreurs, K.M.G. (2016). [Acceptance- and mindfulness-based interventions for the treatment of chronic pain: A meta-analytic review](#). *Cognitive Behaviour Therapy*, 45:1, 5-31. [\[Back\]](#)
- 15 McClintock, A.S., McCarrick, S.M., Garland, E.L., Zeidan, F., & Zgierska, A.E. (2019). [Brief mindfulness-based interventions for acute and chronic pain: A systematic review](#). *Journal of Alternative and Complementary Medicine*, 25(3), 265-278. [\[Back\]](#)
- 16 Physical activity is defined any bodily movement produced by skeletal muscles that requires energy expenditure, including activities undertaken while working, playing, carrying out household chores, travelling, and engaging in recreational pursuits. Exercise is a sub-category of physical activity that is planned, structured, repetitive, and aims to improve or maintain one or more components of physical fitness.

— Definition adapted from <https://www.who.int/news-room/fact-sheets/detail/physical-activity> [\[Back\]](#)
- 17 Ambrose, K.R., & Golightly, Y.M. (2015). [Physical exercise as non-pharmacological treatment of chronic pain: Why and when](#). *Best Practice and Research in Clinical Rheumatology*, 29(1), 120-130. [\[Back\]](#)
- 18 U.S. Department of Health and Human Services. (2019). [Pain Management Best Practices Inter-Agency Task Force Report: Updates, Gaps, Inconsistencies, and Recommendations](#). [\[Back\]](#)
- 19 Skelly, A.C., Chou, R., Dettori, J.R., Turner, J.A., Friedly, J.L., Rundell, S.D., Fu, R., Brodt, E.D., Wasson, N., Kantner, S., & Ferguson, A.J.R. (2020). [Noninvasive nonpharmacological treatment for chronic pain: A systematic review update](#). *Comparative Effectiveness Reviews*, 227. AHRQ Publication No. 20-EHC009. Rockville, MD: Agency for Healthcare Research and Quality. [\[Back\]](#)

