

Contributions of Behavioral and Social Sciences Research (BSSR)

The Public Health Problem

4.4% Depression is the leading global cause of disability. An estimated 322 million people live with depression worldwide—approximately 4.4% of the world's population.¹

1 in 3 Only around one in three people living with major depressive disorder will achieve remission with the first antidepressant drug that is prescribed to them. Most people will need to switch medications to find a treatment that works, and one major study found that 30% of people with MDD found no relief even after being prescribed four different antidepressants.²

34% Approximately 35% of adults in the United States who experienced an MDD episode in 2020 did not receive treatment.³

Studies suggest that depression is also a source of major economic losses for the United States, estimated at \$210 billion per year.⁴ Specific causes of these economic losses include:

- Direct costs of treating depression
- Indirect costs of treating comorbidities (e.g., anxiety)
- Missed days of work (absenteeism)
- Decreased productivity while at work

BSSR Health Impacts

Cognitive Behavioral Therapy (CBT)

Since the 1970s, CBT⁵ has become the gold standard behavioral treatment for depression. CBT can reduce symptoms long term and treat patients for whom antidepressants alone do not provide relief.^{6,7} Studies show that behavioral activation, a component of CBT that increases positive and goal-driven behaviors, can be as effective as antidepressant medication, and can be more effective than cognitive therapy alone in treating depression.⁸



Mindfulness-Based Cognitive Therapy

Mindfulness-based cognitive therapy, an extension of CBT, can be more effective than antidepressant medications at reducing depressive symptoms by preventing relapse and improving the quality of life for individuals with recurrent depression.⁹ Mindfulness interventions promote focused attention on the present moment and are increasingly applied to various domains (including depression, anxiety, and pain) and settings (such as the workplace or schools).¹⁰



Self-System Therapy (SST)

SST incorporates interpersonal, behavioral activation, and cognitive components of other psychotherapies to help people improve self-regulation.^{11,12} SST has been used to treat depression since the early 2000s—albeit less frequently than CBT—and to address motivational deficits resulting from depression. SST has been shown to be as effective as CBT in reducing symptoms of depression and anxiety.¹³



Neurofeedback

Neurofeedback, an intervention strategy in which behavioral therapies are supplemented with feedback from real-time brain imaging techniques, is increasingly used in depression treatment to improve emotion regulation.^{14,15} Neurofeedback training targets brain regions that are important for emotional processing. When targeting the amygdala, neurofeedback training has been shown to improve symptoms of depression and help patients achieve remission at a rate similar to antidepressant medications and CBT.¹⁶



Transdiagnostic Therapies

People living with MDD frequently experience comorbid psychiatric conditions.¹⁷ Transdiagnostic therapies are single interventions that can alleviate multiple comorbid conditions, which can produce therapeutic effects comparable to single-disorder treatments.¹⁸ For example, CBT approaches can address comorbid depression and insomnia and can substantially alleviate symptom severity (e.g., by reducing the time needed to fall asleep from 40 to 20 minutes) and can sustain these benefits over the long term.¹⁹



Information on this fact sheet reflects both NIH- and non-NIH-funded research.

References and Definitions

- 1 Friedrich, M. (2017). [Depression is the leading cause of disability around the world](#). *JAMA*, 317(15), 1517. [\[Back\]](#)
- 2 Rush, A.J., Trivedi, M.H., Wisniewski, S.R., Nierenberg, A.A., Stewart J.W., Warden, D. Niederehe, G., Thase, M.E., Lavori, P.W., Lebowitz, B.D., McGrath, P.J., Rosenbaum, J.F., Sackeim, H.A., Kupfer, D.J., Luther, J., & Fava, M. (2006). [Acute and longer-term outcomes in depressed outpatients requiring one or several treatment steps: a STAR*D report](#). *American Journal of Psychiatry*, 163(11), 1905-17. [\[Back\]](#)
- 3 National Institute of Mental Health. (2022, January). [Major Depression](#). U.S. Department of Health and Human Services. National Institutes of Health. [\[Back\]](#)
- 4 Greenberg, P.E., Fournier, A.A., Sisitsky, T., Pike, C.T., & Kessler, R.C. (2015). [The economic burden of adults with major depressive disorder in the United States \(2005-2010\)](#). *Journal of Clinical Psychiatry*, 76, 155-162. [\[Back\]](#)
- 5 CBT is a common form of psychotherapy that aims to help patients reevaluate and change negative or unhelpful thinking patterns to enable the patient to respond to challenging or stressful situations more effectively.
—Definition adapted from the [Mayo Clinic](#) [\[Back\]](#)
- 6 Nakagawa, A., Mitsuda, D., Sado, M., Abe, T., Fujisawa, D., Kikuchi, T., Iwashita, S., Mimura, M., & Ono, Y. (2017). [Effectiveness of supplementary cognitive-behavioral therapy for pharmacotherapy-resistant depression: A randomized controlled trial](#). *Journal of Clinical Psychiatry*, 78(8), 1126-1135. [\[Back\]](#)
- 7 Cuijpers, P., Berking, M., Andersson, G., Quigley, L., Kleiboer, A., & Dobson, K. (2013). [A meta-analysis of cognitive-behavioural therapy for adult depression, alone and in comparison with other treatments](#). *Canadian Journal of Psychiatry*, 58(7), 376-385. [\[Back\]](#)
- 8 Dimidjian, S., Hollon, S.D., Dobson, K.S., Schmalting, K.B., Kohlenberg, R. J., Addis, M.E., Gallop, R., McGlinchey, J.B., Markley, D.K., Gollan, J.K., Atkins, D. C., Dunner, D. L., & Jacobson, N. S. (2006). [Randomized trial of behavioral activation, cognitive therapy, and antidepressant medication in the acute treatment of adults with major depression](#). *Journal of Consulting and Clinical Psychology*, 74(4), 658-671. [\[Back\]](#)
- 9 Kuyken, W., Warren, F. C., Taylor, R. S., Whalley, B., Crane, C., Bondolfi, G., Hayes, R., Huijbers, M., Ma, H., Schweizer, S., Segal, Z., Speckens, A., Teasdale, J. D., Van Heeringen, K., Williams, M., Byford, S., Byng, R., & Dalgleish, T. (2016). [Efficacy of Mindfulness-Based Cognitive Therapy in Prevention of Depressive Relapse: An Individual Patient Data Meta-analysis From Randomized Trials](#). *JAMA psychiatry*, 73(6), 565–574. [\[Back\]](#)
- 10 Creswell, J. (2017). [Mindfulness interventions](#). *Annual Review of Psychology*, 68, 491-516. [\[Back\]](#)
- 11 Self-regulation is the ability to control one's behavior, emotions, and thoughts in pursuit of long-term goals.
—Definition adapted from [Verywell Mind](#) [\[Back\]](#)
- 12 Strauman, T., Vieth, A., Merrill, K., Kolden, G., Woods, T., Klein, M., Papadakis, A., Schneider, K., & Kwapil, L. (2006). [Self-system therapy as an intervention for self-regulatory dysfunction in depression: A randomized comparison with cognitive therapy](#). *Journal of Consulting and Clinical Psychology*, 74(2), 367-376. [\[Back\]](#)
- 13 Eddington, K., Silvia, P., Foxworth, T., Hoet, A., & Kwapil, T. (2015). [Motivational deficits differentially predict improvement in a randomized trial of self-system therapy for depression](#). *Journal of Consulting and Clinical Psychology*, 83(3), 602-616. [\[Back\]](#)
- 14 Emotion regulation is the ability to exert control over one's emotional state.
—Definition adapted from [Psychology Today](#) [\[Back\]](#)
- 15 Linhartová, P., Látalová, A., Kóša, B., Kašpárek, T., Schmahl, C., & Paret, C. (2019). [fMRI neurofeedback in emotion regulation: A literature review](#). *Neuroimage*, 193:75-92. [\[Back\]](#) <https://doi.org/10.1016/j.neuroimage.2019.03.011> [\[Back\]](#)
- 16 Young, K., Siegle, G., Zotev, V., Phillips, R., Misaki, M., Yuan, H., Drevets, W., & Bodurka, J. (2017). [Randomized clinical trial of real-time fMRI amygdala neurofeedback for major depressive disorder: Effects on symptoms and autobiographical memory recall](#). *American Journal of Psychiatry*, 174(8), 748-755. [\[Back\]](#)
- 17 Avenevoli, S., Swendsen, J., He, J.P., Burstein, M., & Merikangas, K. R. (2015). [Major depression in the national comorbidity survey—adolescent supplement: prevalence, correlates, and treatment](#). *Journal of the American Academy of Child & Adolescent Psychiatry*, 54, 37-44.e2. [\[Back\]](#)
- 18 Barlow, D.H., Farchione, T. J., Bullis, J.R., Gallagher, M.W., Murray-Latin, H., Sauer-Zavala, S., Bentley, K.H., Thompson-Hollands, J., Conklin, L.R., Boswell, J.F., Ametaj, A., Carl, J.R., Boettcher, H.T., & Cassiello-Robbins, C. (2017). [The unified protocol for transdiagnostic treatment of emotional disorders compared with diagnosis-specific protocols for anxiety disorders](#). *JAMA Psychiatry* 74, 875. [\[Back\]](#)
- 19 Lichstein, K., Scogin, F., Thomas, S., DiNapoli, E. A., Dillon, H., & McFadden, A. (2015). [Telehealth cognitive behavior therapy for co-occurring insomnia and depression symptoms in older adults](#). *Journal of Clinical Psychiatry*, 69(10), 1056-1065. [\[Back\]](#)

