

Evaluating the Effectiveness of Yoga Interventions in Various Settings for Depression: A Narrative Review of Clinical Studies

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ABSTRACT

Background:

Yoga is found to be beneficial in depression and the symptoms associated with depression. The present review aims to analyse the benefits of yoga on reducing the depressive symptoms.

Methods:

Search was done on electronic database on PubMed, and RCTs which measured the effect of different yogic practices on depression measured with validated tools.

Results:

18 studies including 1108 participants of age group from 18 years to 65 were included in the study. Results showed that yoga is effective in reducing the depressive symptoms with significant heterogeneity among the studies.

Conclusion:

Yoga can be a promising intervention in depression and depression associated symptoms. However, there is a need of RCT with larger sample size and improved design to confirm the efficacy.

Keywords: Yoga, Depression, Depressive mood, Stress, Review.

INTRODUCTION

Depression is a chronic medical illness which affects mood, physical health, thoughts and behaviour. This is clinically characterised by loss of appetite, insomnia, lack of interest to do things, lack of energy, stress, anxiety or low mood^{1,2}. It is a common mental disorder that can affect all aspects of life which can lead to problems at living place and to the health². The development of depression is linked with other diseases or discomforts like pain of any kind, cancer, cancer surviving groups, stroke, post-surgery recovery period or old age. There are multiple therapeutic options for depression like drugs, somatic therapies, psychiatric therapies but it is found that the prevalence of depression is growing in all the age groups. The recent study has shown that depression is higher in students which is linked with suicidal tendencies³.

Yoga is known to be an ancient Indian practice which is also adapted to be a mind body therapy is of growing popularity in India as well as around the world^{4,5,6}. In a survey conducted by USA National Health Interview Survey, it is seen that those who have practised yoga reported that the reason of participation is for the general well-being and prevention of disease⁷. The present analysis builds on the works showing the effect of yoga in different forms of yoga like Hatha yoga^{7,8,9}, breathing trainings^{10,11}, kundalini yoga¹², iyengar yoga¹³, vinyasa yoga^{10,11,14}, sudarshan kriya yoga, mindfulness yoga¹⁵ over the effect of standard care provided for depression with drugs, counselling

and other methods. From this review, it is noted that yoga could be a considerable safer and cost-effective management for depression in people of different age groups. The main objective of this review is to focus on the benefits of yoga in depression which is safer and to identify the research gaps.

METHODS

We screened with the keywords, yoga, depression and depressed moods in PubMed index from inception to 2018 and found 671 studies. Looking for the full text papers the search resulted in 307, out of which 56 were the Randomised controlled trials and clinical trials. Studies were then removed based on the title and abstract screening. 18 studies were finally taken for this review which were only RCTs of distinct types. 1108 participants were involved in the studies from different regions. Systematic and other reviews were also excluded from the review. The review of literature was conducted following the “Scale for the Assessment of Narrative Review Articles” (SANRA) methodology for quality assessment¹⁶.

Description of the studies:

The common inclusion criteria were, participants of all genders, aged 18 years and above, with symptoms of depression and depression scores in validated questionnaires. Interventions included Yoga in different forms like Hatha yoga, Vinyasa yoga, Iyengar yoga, Mindfulness yoga, breathing trainings, with a control group either with the standard medical care or counselling sessions. Eligible comparative groups were antidepressants, waitlist, counselling or health education. The outcome measures were the reduction in the severity of depression with the validated tools used. Commonly the outcome measures were assessed through Beck Inventory Depression – II (BDI-II), Hospital Anxiety and depression Scale (HADS), Patient Health Questionnaire (PHQ), (QIDS), Beck Anxiety Inventory (BAI), Fatigue Symptom Inventory (FSI), Clinical intervention for depression (SCID), Hamilton Rating Scale for Depression (HAM-D) both 17 and 24 scores, Mini-Mental State examination scale (MMSE), Geriatric Depression Scale (GDS), and Centre for Epidemiologic Studies Depression Scale (CES-D).

Data Extraction and Quality assessment:

Data was independently extracted by two authors, using a standardised protocol format. Disagreements were resolved by arbitration, and consensus was reached after discussion. The following data was extracted: study title, authors, sample size, country of study, sample size, study design, intervention details, observational parameters, outcome measures. Methods of randomisation, blinding, any sources of bias, self-reporting tools, incomplete outcome and other bias were assessed in all studies.

Characteristics of studies included:

Out of 18 studies included in this review, 7 studies involved recruitment of patients with depression as their main concern¹⁷⁻²³. 3 studies involved patients with prenatal depression²⁴⁻²⁶, 2 studies on depression in cancer patients^{27,28}, 2 studies on stress and anxiety associated with depression^{29,30}, 3 papers were on patients having depression because of back pain³¹, cognitive disturbances³² and dementia³³. One study reported the general wellness through the yoga breathing program which reported the depression levels in the participants³⁴.

Only 3 studies used standard medical care as the effective control group^{21, 26, 31}. Health education and counselling was used as the intervention in 5 studies^{17, 22, 24, 28, 30}. Memory enhancement training was used as the control intervention method in one study³². One study used just a simple relaxation in the armchair as the intervention for control group³⁴. A study which involved 3 arms (Yin-Yang Yoga, Yin-Yang Yoga with Mindfulness and Control group), used no intervention methods for the third arm as the control group²⁹. Other 7 studies used waitlisted control group or similar yoga intervention in a different dose, or attention control as their control arm^{20, 25, 27, 19, 33, 18, 23}.

Impact of Yoga Intervention:

Impact on Clinical Outcomes:

Among 3 studies using standard medical care as the control group intervention, all the studies proved yoga as an effective method in relieving the depressive symptoms and improvement in the scores were found. One study where patients with chronic back pain were included in the study, yoga was seen to improve not only the depressive symptoms³¹, but also the reduced the pain intensity which helped in the reduction in the use of analgesics. But this was not properly recorded and so not presented statistically. In study with prenatal women, participants in the interventional group found improvement in the gestational age and birth weight when compared with the standard prenatal care²⁶.

Yoga perceived to be almost similar to attention control, in one study where attention control was used as the intervention for control group, it was found that yoga had a better score in reducing the depressive symptoms¹⁸ and there was a significant change in the depressive scores in BDI-II and MINI Neuropsychiatric Interview reports^{18, 23}.

Most studies which had a waitlisted group, it was found that yoga group had significant improvement in the depression scores when compared to the waitlisted group. Kirtan kriya which is a form of yoga where yoga bhajans are used, was found to be better than the meditation. In this study it was attributed to the dynamic involvement of the depressed patients which have improved their mood³³. Iyengar yoga have compared the benefits of yoga in different dose, high, low, and found that both groups showed good improvement in the clinical symptoms. The high dose group have produced much improvement in the BDI-II scores than the Low dose group¹⁹. In sudarshan kriya practice, the participants showed lowered degree of depression, anxiety and stress when compared to the participants who just relaxed in arm chair³⁴.

Impact on economic outcomes:

There are several factors when it comes to the economic factor in Yoga training, administration and practice. Yoga as well known to be a tool of self-care and effectively practised in home by anyone, still the instructor or the administrator role plays a significant role along with the environment. Even then, yoga can be a cost effective tool^{35, 36, 37}, in self-care management when compared to any other standard care for depression which involves a cost attached with their own side effects or long-term benefits.

DISCUSSION AND LIMITATIONS

Primary purpose of this review was to describe the nature of studies to evaluate the efficacy of yoga in depression. The outcomes of this review shed light and provide evidence for the benefits explained for the depressive patients with yoga practice and the wide range of application of different yoga practises as in yoga is not just limited to asana practise. Each study in this review have shown a positive impact of yoga in depressive patients. A review has states that level of

depression was significantly reduced in integrated yoga group, but same was not found in exercise based yoga³⁸. Another review states that there is a weak support of evidence that states yoga as an adjunctive recommendation for post-traumatic stress disorder³⁹. An umbrella review of review summarises that rigorous evaluation with long term follow up periods are recommended to find the impact of yoga and substantiate the evidence.

Yoga having its roots in India, which is universally accepted, the clinical trial in Indian population is comparatively less when compared with the other parts of the world. To note the prevalence of depression in India^{40,41} evidence states high prevalence of depression found in postpartum mothers⁴², post stroke survivors⁴³, diabetes patients⁴⁴, medical students⁴⁵, caregivers for blind patients⁴⁶, rural population of older adults⁴⁷, and with adolescents with severe academic stress⁴⁸. Even though yoga has become a lifestyle habit for many patients with other psychosomatic illness⁴⁹, reportedly few studies speak about yoga and its effects on depression for the targeted groups.

These practises have become popular, yet the neurobiological effects of these practices are not well understood. Many studies have involved a self-administered questionnaires and the physiological markers analysis are not found. Most of the studies are also first of its kind in a minimal sample size which must be further studied with larger sample size. Some studies have focused only on women population. Evidence states that yoga under a wide umbrella of different terms benefit different age groups on their depressive symptoms, but lacks a well-designed study, blinding methods and proper randomisation methods⁵⁰. In most of the yoga studies, blinding would be an arduous task, and this would lead to an expectation in the participant about the positive outcome which can lead to subjectivity and expectation bias by the participants. Methodological limitations are found in most of the empirical studies till date, which also have a greater impact on the study.

CONCLUSION

This review contributes to the literature highlighting the impact of yoga and its positive outcomes on depression across diverse hospital setting and community centres in different geographic areas. There is a need to improve the quality of research design and method to support the evidence to set a standardised approach, so that Yoga, which is a cost effective and a potential tool for the management of depression can be used by population across the world.

REFERENCES

1. Cui, R. (2015). A systematic review of depression. *Curr Neuropharmacol*, 13(4), 480
2. World Health Organization. (n.d.). Depressive disorder (depression). World Health Organization. <https://www.who.int/news-room/fact-sheets/detail/depression>
3. Rotenstein, L. S., Ramos, M. A., Torre, M., Segal, J. B., Peluso, M. J., Guille, C., ... & Mata, D. A. (2016). Prevalence of depression, depressive symptoms, and suicidal ideation among medical students: a systematic review and meta-analysis. *Jama*, 316(21), 2214-2236.
4. Dr. S.G, & Dr .Ashok. (2023). The history and origin of yoga system. *International Journal For Multidisciplinary Research*, 5(3). <https://doi.org/10.36948/ijfmr.2023.v05i03.2908>
5. Pandurangi, A. K., Keshavan, M. S., Ganapathy, V., & Gangadhar, B. N. (2017). Yoga: past and present. *American Journal of Psychiatry*, 174(1), 16-17.
6. Basavaraddi, I. V. (2015). Yoga: Its origin, history and development. Ministry of External Affairs of Government of India.
7. Benvenuti, M. J., da Silva Alves, E., Michael, S., Ding, D., Stamatakis, E., & Edwards, K. M. (2017). A single session of hatha yoga improves stress reactivity and recovery after an acute

- psychological stress task—A counterbalanced, randomized-crossover trial in healthy individuals. *Complementary therapies in medicine*, 35, 120-126.
8. Riley D. (2004). Hatha yoga and the treatment of illness. *Alternative therapies in health and medicine*, 10(2), 20–21.
9. Huang, F. J., Chien, D. K., & Chung, U. L. (2013). Effects of Hatha yoga on stress in middle-aged women. *Journal of Nursing Research*, 21(1), 59-66.
10. Tay, K., & Baldwin, A. L. (2015). Effects of Breathing Practice in Vinyasa Yoga on Heart Rate Variability in University Students-A Pilot Study. *Journal of Yoga & Physical Therapy*, 5(4), 1.
11. Tay, K. S. (2015). Effects of Breathing Practice in Vinyasa Yoga on Heart Rate Variability in University Students.
12. Devi, S. K., Chansauria, J. P. N., & Udupa, K. N. (1986). Mental depression and kundalini yoga. *Ancient science of life*, 6(2), 112.
13. Khattab, K., Khattab, A. A., Ortak, J., Richardt, G., & Bonnemeier, H. (2007). Iyengar yoga increases cardiac parasympathetic nervous modulation among healthy yoga practitioners. *Evidence-Based Complementary and Alternative Medicine*, 4, 511-517.
14. Sherman, S. A., Rogers, R. J., Davis, K. K., Minster, R. L., Creasy, S. A., Mullarkey, N. C., ... & Jakicic, J. M. (2017). Energy expenditure in vinyasa yoga versus walking. *Journal of Physical Activity and Health*, 14(8), 597-605.
15. Pascoe, M. C., Thompson, D. R., & Ski, C. F. (2017). Yoga, mindfulness-based stress reduction and stress-related physiological measures: A meta-analysis. *Psychoneuroendocrinology*, 86, 152-168.
16. Baethge, C., Goldbeck-Wood, S., & Mertens, S. (2019). SANRA—a scale for the quality assessment of narrative review articles. *Research integrity and peer review*, 4(1), 1-7.
17. Uebelacker, L. A., Tremont, G., Gillette, L. T., Epstein-Lubow, G., Strong, D. R., Abrantes, A. M., ... & Miller, I. W. (2017). Adjunctive yoga v. health education for persistent major depression: a randomized controlled trial. *Psychological medicine*, 47(12), 2130-2142.
18. Prathikanti, S., Rivera, R., Cochran, A., Tungol, J. G., Fayazmanesh, N., & Weinmann, E. (2017). Treating major depression with yoga: A prospective, randomized, controlled pilot trial. *Plos one*, 12(3), e0173869.
19. Streeter, C. C., Gerbarg, P. L., Whitfield, T. H., Owen, L., Johnston, J., Silveri, M. M., ... & Jensen, J. E. (2017). Treatment of major depressive disorder with Iyengar yoga and coherent breathing: a randomized controlled dosing study. *The Journal of Alternative and Complementary Medicine*, 23(3), 201-207.
20. Sharma, A., Barrett, M. S., Cucchiara, A. J., Gooneratne, N. S., & Thase, M. E. (2017). A breathing-based meditation intervention for patients with major depressive disorder following inadequate response to antidepressants: a randomized pilot study. *The Journal of clinical psychiatry*, 78(1), 493.
21. Niemi, M., Kiel, S., Allebeck, P., & Hoan, L. T. (2016). Community-based intervention for depression management at the primary care level in Ha Nam Province, Vietnam: a cluster-randomised controlled trial. *Tropical Medicine & International Health*, 21(5), 654-661.
22. Kinser, P. A., Elswick, R. K., & Kornstein, S. (2014). Potential long-term effects of a mind-body intervention for women with major depressive disorder: Sustained mental health improvements with a pilot yoga intervention. *Archives of psychiatric nursing*, 28(6), 377-383.
23. Kinser, P. A., Bourguignon, C., Taylor, A. G., & Steeves, R. (2013). “A feeling of connectedness”: perspectives on a gentle yoga intervention for women with major depression. *Issues in mental health nursing*, 34(6), 402-411.
24. Uebelacker, L. A., Battle, C. L., Sutton, K. A., Magee, S. R., & Miller, I. W. (2016). A pilot randomized controlled trial comparing prenatal yoga to perinatal health education for antenatal depression. *Archives of women's mental health*, 19, 543-547.
25. Field, T., Diego, M., Delgado, J., & Medina, L. (2013). Tai chi/yoga reduces prenatal depression, anxiety and sleep disturbances. *Complementary therapies in clinical practice*, 19(1), 6-10.

26. Field, Tiffany, Miguel Diego, Maria Hernandez-Reif, Lissette Medina, Jeannette Delgado, and Andrea Hernandez. "Yoga and massage therapy reduce prenatal depression and prematurity." *Journal of bodywork and movement therapies* 16, no. 2 (2012): 204-209.
27. Johns, S. A., Brown, L. F., Beck-Coon, K., Monahan, P. O., Tong, Y., & Kroenke, K. (2015). Randomized controlled pilot study of mindfulness-based stress reduction for persistently fatigued cancer survivors. *Psycho-Oncology*, 24(8), 885-893.
28. Raghavendra, R. M., Vadiraja, H. S., Nagarathna, R., Nagendra, H. R., Rekha, M., Vanitha, N., ... & Kumar, V. (2009). Effects of a yoga program on cortisol rhythm and mood states in early breast cancer patients undergoing adjuvant radiotherapy: a randomized controlled trial. *Integrative cancer therapies*, 8(1), 37-46.
29. Daukantaitė, D., Tellhed, U., Maddux, R. E., Svensson, T., & Melander, O. (2018). Five-week yin yoga-based interventions decreased plasma adrenomedullin and increased psychological health in stressed adults: A randomized controlled trial. *PloS one*, 13(7), e0200518.
30. Banerjee, B., Vadiraj, H. S., Ram, A., Rao, R., Jayapal, M., Gopinath, K. S., ... & Prakash Hande, M. (2007). Effects of an integrated yoga program in modulating psychological stress and radiation-induced genotoxic stress in breast cancer patients undergoing radiotherapy. *Integrative cancer therapies*, 6(3), 242-250.
31. Williams, Kimberly, Christiaan Abildso, Lois Steinberg, Edward Doyle, Beverly Epstein, David Smith, Gerry Hobbs, Richard Gross, George Kelley, and Linda Cooper. "Evaluation of the effectiveness and efficacy of Iyengar yoga therapy on chronic low back pain." *Spine* 34, no. 19 (2009): 2066.
32. Eyre, H. A., Siddarth, P., Acevedo, B., Van Dyk, K., Paholpak, P., Ercoli, L., ... & Lavretsky, H. (2017). A randomized controlled trial of Kundalini yoga in mild cognitive impairment. *International Psychogeriatrics*, 29(4), 557-567.
33. Lavretsky, H., Epel, E. S., Siddarth, P., Nazarian, N., Cyr, N. S., Khalsa, D. S., ... & Irwin, M. R. (2013). A pilot study of yogic meditation for family dementia caregivers with depressive symptoms: effects on mental health, cognition, and telomerase activity. *International journal of geriatric psychiatry*, 28(1), 57-65.
34. Kjellgren, A., Bood, S. Å., Axelsson, K., Norlander, T., & Saatcioglu, F. (2007). Wellness through a comprehensive Yogic breathing program—A controlled pilot trial. *BMC complementary and alternative medicine*, 7, 1-8.
35. Falsafi, N., & Leopard, L. (2015). Pilot Study: Use of Mindfulness, Self-Compassion, and Yoga Practices With Low-Income and/or Uninsured Patients With Depression and/or Anxiety. *Journal of holistic nursing : official journal of the American Holistic Nurses' Association*, 33(4), 289–297. <https://doi.org/10.1177/0898010115569351>
36. Andronis, L., Kinghorn, P., Qiao, S., Whitehurst, D. G., Durrell, S., & McLeod, H. (2017). Cost-Effectiveness of Non-Invasive and Non-Pharmacological Interventions for Low Back Pain: a Systematic Literature Review. *Applied health economics and health policy*, 15(2), 173–201. <https://doi.org/10.1007/s40258-016-0268-8>
37. Lin, C. W., Haas, M., Maher, C. G., Machado, L. A., & van Tulder, M. W. (2011). Cost-effectiveness of guideline-endorsed treatments for low back pain: a systematic review. *European spine journal : official publication of the European Spine Society, the European Spinal Deformity Society, and the European Section of the Cervical Spine Research Society*, 20(7), 1024–1038. <https://doi.org/10.1007/s00586-010-1676-3>
38. Gong, H., Ni, C., Shen, X., Wu, T., & Jiang, C. (2015). Yoga for prenatal depression: a systematic review and meta-analysis. *BMC psychiatry*, 15, 14. <https://doi.org/10.1186/s12888-015-0393-1>
39. Cramer, H., Anheyer, D., Saha, F. J., & Dobos, G. (2018). Yoga for posttraumatic stress disorder - a systematic review and meta-analysis. *BMC psychiatry*, 18(1), 72. <https://doi.org/10.1186/s12888-018-1650-x>
40. Sethi B. B. (1986). Epidemiology of depression in India. *Psychopathology*, 19 Suppl 2, 26–36. <https://doi.org/10.1159/000285129>

41. Sethi, B. B., Nathawat, S. S., & Gupta, S. C. (1973). Depression in India. *The Journal of social psychology*, 91(1), 3–13. <https://doi.org/10.1080/00224545.1973.9922640>,
42. Upadhyay, R. P., Chowdhury, R., Aslyeh Salehi, Sarkar, K., Singh, S. K., Sinha, B., Pawar, A., Rajalakshmi, A. K., & Kumar, A. (2017). Postpartum depression in India: a systematic review and meta-analysis. *Bulletin of the World Health Organization*, 95(10), 706–717C. <https://doi.org/10.2471/BLT.17.192237>
43. Das, J., & G K, R. (2018). Post stroke depression: The sequelae of cerebral stroke. *Neuroscience and biobehavioral reviews*, 90, 104–114. <https://doi.org/10.1016/j.neubiorev.2018.04.005>
44. Poongothai, S., Anjana, R. M., Radha, S., Sundari, B. B., Shanthi Rani, C. S., & Mohan, V. (2017). Epidemiology of Depression and its Relationship to Diabetes in India. *The Journal of the Association of Physicians of India*, 65(8), 60–66.
45. Iqbal, S., Gupta, S., & Venkatarao, E. (2015). Stress, anxiety and depression among medical undergraduate students and their socio-demographic correlates. *The Indian journal of medical research*, 141(3), 354–357. <https://doi.org/10.4103/0971-5916.156571>
46. Braich, P. S., Lal, V., Hollands, S., & Almeida, D. R. (2012). Burden and depression in the caregivers of blind patients in India. *Ophthalmology*, 119(2), 221–226. <https://doi.org/10.1016/j.ophtha.2011.07.038>
47. Sinha, S. P., Shrivastava, S. R., & Ramasamy, J. (2013). Depression in an older adult rural population in India. *MEDICC review*, 15(4), 41–44. <https://doi.org/10.37757/MR2013V15.N4.10>
48. Jayanthi, P., Thirunavukarasu, M., & Rajkumar, R. (2015). Academic stress and depression among adolescents: a cross-sectional study. *Indian pediatrics*, 52(3), 217–219. <https://doi.org/10.1007/s13312-015-0609-y>
49. Arankalle, D. V., & Kumar, M. S. (2013). Effect of yoga techniques practice in obese adults. *International Scientific Yoga Journal Sense*, 3(3), 22–29.
50. Marc, I., Toureche, N., Ernst, E., Hodnett, E. D., Blanchet, C., Dodin, S., & Njoya, M. M. (2011). Mind-body interventions during pregnancy for preventing or treating women's anxiety. *The Cochrane database of systematic reviews*, 2011(7), CD007559. <https://doi.org/10.1002/14651858.CD007559.pub2>