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Research Article

Impact of Yoga on Anxiety, Depression and Cognitive abilities among youth

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Abstract:

AIM: Yoga is a holistic practice which fosters mental, physical and spiritual wellness. In today's world where stress is a major contributor of mental health problems in young adults, there is a grave need to eliminate mental restlessness and maintain cognitive health in students. We have found that students benefit greatly from practicing yoga that improve their cognitive health and overcome their depression and anxiety. It is the fruit of penance of our sages that we have inherited these wonderful practices. So, they can easily overcome the struggles in life. This study aims to assess the effectiveness of Yogic interventions for cognitive ability.

METHODS: A total of 54 students [26 females & 28 male] aged between 19 and 26 participated in the study. They underwent daily yoga session over a period of 30 days. To evaluate changes in cognitive abilities and emotional functioning, assessments were conducted both before and after the intervention using the short Bhatia Battery Performance Tests of Intelligence, Beck Depression Inventory and Sinha's comprehensive Anxiety test were used.

RESULTS: The results showed Yogic interventions have positive effects on mental health, improving cognitive performance, anxiety and Depression.

CONCLUSION: Stress is inevitable in human life. But overcoming it and living a beautiful life is also in the hands of man. It is possible to reduce stress that students face through yoga. The sages have worked to awaken the power of the soul. But that power manifests itself in human life, through the mind. The work of radically changing the mind is done through yoga. Yoga changes the mind of the students and takes a constructive turn. The mind can be refreshed again and its lost strength can be regained by very scientific yoga .

Keywords: Yogic Intervention, mental health, Cognitive Ability, Emotional Wellness, Young Adults

Introduction

The Sanskrit term "yoga" comes from the root "yuj," which means "to yoke," "to bind," "to unite," or "to integrate." Yoga is revealing a perfect balance between mind and body, as well as between the individual and their environment. The ultimate goal of yoga is to achieve a state of health and harmony, enabling one to live as fully as possible. Yoga complements traditional therapies such as medication and psychotherapy. It can be a safe and effective way to enhance concentration and attention span. Studies have shown that yoga therapy can help alleviate stress and anxiety. One of the main reasons doctors recommend yoga is that its postures and breathing techniques are known to relax both the body and mind. Deep breathing and stretching may relieve symptoms of depression, such as insomnia, pain, and fatigue. These techniques can also provide relief from common mental health issues like anxiety and panic attacks. Physical activity, including yoga, stimulates the production of feel-good chemicals in the brain, such as endorphins and dopamine. These neurochemicals help elevate mood and promote a positive outlook, making it easier to combat mental health disorders like depression. Yoga enhances mental calmness, focus, and overall emotional well-being, which is why many therapists recommend it. It can also serve as a supportive treatment for bipolar disorder, which involves extreme mood swings. Moreover, yoga can help individuals struggling with low self-esteem, which is often a root cause of anxiety and unhappiness. Breathing techniques used in yoga can help dispel self-doubt and foster inner confidence. Traditional therapy methods have often been used to support children facing psychological challenges. However, such therapies can be costly, may have undesirable side effects, and are sometimes difficult to sustain. In contrast, yoga presents a safe and accessible long-term solution for children diagnosed with anxiety. The deep breathing practices involved in Surya Namaskar (Sun Salutation) poses help increase oxygen flow to the brain, inducing a calming effect. Yoga also benefits the nervous and endocrine systems, particularly the thyroid gland, which plays a key role in regulating mood and reducing anxiety and depression. Pranayama yoga has been shown to help with clinical depression and

anxiety. The benefits of pranayama have been linked to changes in brain activity and connectivity in regions associated with emotion (Jain et al., 2017). Breathing exercises like Kapalbhati and Bhastrika influence various physiological parameters. Slow breathing is associated with a reduced heart rate and lower systolic and diastolic blood pressure, while rapid breathing leads to a modest but consistent increase in heart rate. Bhastrika pranayama has been shown to lower blood pressure and heart rate, similar to the effects of slow breathing. Kapalbhati enhances key psycho-physiological stress indicators, such as respiratory function and cardiac balance. Although pranayama practices have been shown to improve self-regulation, mood, stress levels, and anxiety, there is still limited research on their effects on neurophysiological, psychological, and psychiatric variables.

Ancient texts and teachings have intricately explained the causes of mental illness. Teachings in the Patanjali Yoga Sutra provide identification, explanation and modification of causes to cure mental illness. According to Patanjali Yoga Sutra five Kleshas or afflictions are the main reasons for all mental sufferings.

1. Avidya (Ignorance)
2. Asmita (Egoism)
3. Raga (Attachment to material world)
4. Dvesa (Aversion or hatred)
5. Abinivesah (Fear of death and attachment for life)

Review of literature

Mind and body are best buddies both are dependent on each other. As a matter of fact they worked together rather than independently. According to WHO(2001), mental health is a state of well being in which every individual realizes his/her own potential, can cope with the normal stresses of life , can work productively and fruitfully and is able to make contribution to his/her own community.

Researchers, philosophers, neuroscientists, linguistics and Psychologists- from ancient to modern times have always shown a keen interest in unveiling the many layers of the mind. What intrigues them is perhaps the very nature, complexity, novelty and functions of the mind, which determines human behavior, emotions and cognitions.

In 2017, study was conducted by Institute of health metrics and evaluation reported in their flagship of global burden of disease study that approximately 792 million people across the world suffer from mental health disorders and that leads to poor quality of life. Among the mental disorders, depression is most common among people (www.ourworldindata.org/mentalhealth)

Ananya S.(2021), done a study on two groups, one was administered psychotropic medication along with kriya Yoga and another only psychotropic medication using depression scale. The result was that the depression scores of the intervention group were found to be significantly lesser than that of the control group by the end of 8 weeks.

Similar studies was done by Lin Y. H & Wang JQ (2010) on anxiety and was found that there was a significant difference in anxiety in depression scores between the two groups.

A line of research studies (systematic review and meta-analysis) demonstrated that yoga is found to be an effective practice to enhance cognitions (Bhattacharyya, Andel, & Small, 2021; Gothe & McAuley, 2015). In a randomized control study, there was significant improvement in psychomotor speed of the elderly following 1 month of trataka - candle flame meditation (Jagannathan, Raghuram, & Talwadkar, 2014). In another study, practice of kapalbhati, bhastrika, and nadisodhana improved cognitive functions of healthy volunteers (Subramanian, 2014).

Methodology

Aims & Objective: The aim of this study was to evaluate the evidence on the effectiveness of special yoga protocol on depression, anxiety and cognitive ability among youth (pre & post).

Hypothesis

H11: There is a significant effect of Yoga protocol on pre anxiety and post anxiety among youth
H12: There is a significant effect of Yoga protocol on pre depression and post depression among youth
H13: There is a significant effect of Yoga protocol on pre cognitive ability and post cognitive ability among youth
H01: There is no significant effect of Yoga protocol on pre anxiety and post anxiety among youth
H02: There is no significant effect of Yoga protocol on pre depression and post depression among youth
H03: There is no significant effect of Yoga protocol on pre cognitive ability and post cognitive ability among youth

Inclusion criteria:

- Age group selected were between 19 to 26 years
- Unmarried youths were selected
- Youths without having any psychological disorders were selected
- Students were selected

Exclusion criteria:

- Age above 26 and below 19 were not selected
- Married youths were excluded
- Working professionals were excluded

Tools Used

a) Beck Depression Inventory (BDI)

The Beck Depression Inventory (BDI) is a 21-item, self-report rating inventory that measures characteristic attitudes and symptoms of depression (Beck, et al., 1961). Internal consistency for the BDI ranges from .73 to .92 with a mean of .86. (Beck, Steer, & Garbin, 1988). Similar reliabilities have been found for the 13-item short form (Groth-Marnat, 1990). The BDI demonstrates high internal consistency, with alpha coefficients of .86 and .81 for psychiatric and non-psychiatric populations respectively (Beck et al., 1988).

b) Sinha's comprehensive Anxiety Inventory (SCAT)

Sinha's Comprehensive Anxiety Inventory (SCAT) consists of a 90-item self-report test by L.N.K. Sinha and A.K.P. Sinha, used to assess anxiety levels in English or Hindi, especially for college students, with 'Yes'/'No' answers yielding scores indicating extremely high to extremely low anxiety. The manual covers administration, scoring (points for 'Yes'), reliability, validity (correlated with Taylor's Scale), interpretation into five categories (e.g., hyper-anxiety, under-motivated), and identifying physical, emotional, and cognitive symptoms, guiding potential counselling. The test-retest reliability was 0.85 and internal consistency reliability was 0.92, the validity of the test was 0.62.

c) Short Bhatia Battery of Performance test

A "short Bhatia battery" refers to a condensed version of the full Bhatia Battery of Performance Tests of Intelligence, an Indian intelligence test developed by C.M. Bhatia in 1955, often using just the Koh's Block Design Test and Alexander Pass-Along Test, or sometimes other combinations, to quickly assess non-verbal intelligence, especially for literate/illiterate individuals, by focusing on visuospatial skills and problem-solving. The split-half reliability was between 0.55-0.84 and the validity was 0.77.

Statistical Analysis: Wilcoxon Signed Ranks test (Non-Parametric test) was used for statistical analysis using SPSS version 21

Procedure

For the present study data were selected randomly after screening of any psychological problems among the samples. Consent was taken. Scales of anxiety and depression along with cognitive performance test were administered before applying the Yoga protocol, after that for a period of 30 days yoga protocol was administered on the selected sample, after 30 days again the tests were administered on the same sample .

Results

Table:1 Descriptive Statistics

	N	Mean	SD	Minimum	Maximum
Pre depression	54	2.8333	.63691	2	4
Post depression	54	1.8184	.61657	1	3
Pre anxiety	54	4.0741	.66876	3	5
Post anxiety	54	3.0556	.65637	2	4
Pre cognitive ability	54	2.2778	.76273	1	3
Post cognitive ability	54	1.8889	.66351	1	3

Table:2 Wilcoxon Signed Ranks Test

Test Statistics			
	Post depression Pre depression	Post anxiety Pre anxiety	Post cognitive ability Pre cognitive ability
Z	-6.261b	-6.463b	-3.900b
Asymp. Significance (2-tailed)	.000	.000	.000

a- Wilcoxon Signed Ranks test
b- Based on positive ranks

Discussion

The present study results indicates that there is a significant differences between the pre and post-depression; pre and post anxiety and pre and post cognitive abilities among the samples after the administration of yoga .

The present study showed that regular sessions of regular yoga exercise for a period of 30 days significantly reduced stress, anxiety, and depression in youth. Changes in cognitive functioning was also noticed which is in unison with the study of J. Martínez-Calderon, et al., (2023). There have been several qualitative reviews that have examined the effectiveness of yoga and anxiety (Chugh-Gupta, Baldassarre, & Vrkljan, 2013; da Silva et al., 2009; Field, 2011; Kirkwood, Rampes, Tuffrey, Richardson, & Pilkington, 2005; Li & Goldsmith, 2012). These reviews have found preliminary support for yoga's effectiveness.

Conclusion

A recurrent theme in the yoga literature is the value of regular, long-term yoga practice, contributing to improvements in stress reactivity (Kiecolt et al., 2010)), markers of chronic stress and inflammation (kiecolt et al., 2010,Djalilova et al., 2019), emotional reactivity (Froeliger, 2012), as well as neurocognitive behavioral responses (Gothe 2015; Froeliger, 2012), collectively improving neurocognitive efficiency. Short-term practice may initially improve stress regulation in order to form the foundations of a more adaptive stress response (Gothe et al., 2016), reduce chronic stress, systemic inflammation and contribute to positive changes in brain structure and functional connectivity networks with consistent long-term practice. While regular, long-term yoga practice appears to be beneficial, determining the optimal frequency and duration of yoga practice to improve brain health remains challenging to interpret from the yoga literature. Many of the studies included in this review present cross-sectional findings with expert practitioners with at least 3 years of experience, or interventional studies typically lasting 12 weeks; therefore, yoga practice effects on cognition between these study durations remain to be investigated. Additionally, there is a need for more nuanced studies examining the differential effects of specific postures and breathing/meditation practices. Bidirectional signaling pathways, along with exploration of stylistic differences and optimal dosage effects, present an exciting avenue for future yoga-cognition research.

We conclude that yoga practice may represent an effective improvement in patients with anxiety, depression and cognitive functioning. Different yoga practices can be encouraged to be used as non-pharmacological remedies to reduce anxiety, depression and improve the quality of life.

Limitation and future direction

Further difficulties arise from lack of appropriate controls in some studies. These are imperative to validate the effectiveness of yoga in reducing stress and anxiety symptoms. Control subjects should experience the same camaraderie as the yoga intervention group to determine whether the results obtained were from the practice of yoga alone or from the personal friendships and support developed during yoga practice. Another useful control group would be a group involved in a different form of exercise, as any effects seen in a yoga group may simply result from the effects of physical activity of any kind. Standardization of interventions would also be of benefit in determining what effects, if any, the various forms of yogic practice have on stress and anxiety. Studies evaluating the different styles of yoga would be informative in determining which, if any, form of yoga (whether full yoga practice) would be the most effective at reducing stress and anxiety. Thus, researchers should consider recruiting experienced yoga practitioners as participants in future studies. Future research should also include economic considerations. The cost-effectiveness of managing anxiety with and without yoga practice compared to the use of medications alone should be investigated. In summary, the data thus far are suggestive of beneficial outcomes from the use of yoga as an intervention for stress and anxiety; yoga may be considered as a possible adjunctive therapy for sample size to be increased those experiencing stress and anxiety. Due to its good compliance and lack of drug interactions, yoga appears to be safe and could be encouraged to improve quality of life and, perhaps, the symptoms of stress and anxiety. Nonetheless, only when the benefits of yoga practice have been realized through thorough, valid research study should yoga be recommended as a method to decrease the pill burden or to replace pharmacologic treatment.

References

1. Bhattacharyya, K. K., Andel, R., & Small, B. J. (2021). Effects of yoga-related mind-body therapies on cognitive function in older adults: A systematic review with meta-analysis. Archives of Gerontology and Geriatrics, 93, 104319. doi:10.1016/j.archger.2020.104319.
2. Broota, A., Dhir, R., 1990. Efficacy of two relaxation techniques in depression. *J. Pers. Clin. Stud*. 6 (1), 83–90.
3. Chugh-Gupta, N., Baldassarre, F. G., & Vrkljan, B. H. (2013). A systematic review of yoga for state anxi ety: Considerations for occupational therapy. *Canadian Journal of Occupational Therapy,* 80, 150–170. http://dx.doi.org/10.1177/0008417413500930

4. da Silva, T. L., Ravindran, L. N., & Ravindran, A. V. (2009). Yoga in the treatment of mood and anxiety disorders: A review. *Asian Journal of Psychiatry,*2,6–16. http://dx.doi.org/10.1016/j.ajp.2008.12 .002
5. Gothe NP, McAuley E. Yoga and Cognition: A Meta-Analysis of Chronic and Acute Effects. *Psychosom Med.* 2015;77(7):784–97. [PubMed: 26186435]
6. Gothe NP, Keswani RK, McAuley E. Yoga practice improves executive function by attenuating stress levels. Biol Psychol. 2016;121:109–16. [PubMed: 27794449]
7. Kiecolt-Glaser JK, Cristian L, Preston H, Houts CR, Malarkey WB, Emery CF, et al. Stress, inflammation and yoga practice. Psychosom Med. 2010;72:113–21. [PubMed: 20064902]
8. Djalilova DM, Schulz PS, Berger AM, Case AJ, Kupzyk KA, Ross AC. Impact of Yoga on Inflammatory Biomarkers: A Systematic Review. Biol Res Nurs. 2019;21(2):198–209. [PubMed: 30572710]
9. Field, T. (2011). Yoga clinical research review. Complementary Therapies in Clinical Practice 17,1–8.
10. Froeliger BE, Garland EL, Modlin LA, McClernon FJ. Neurocognitive correlates of the effects of yoga meditation practice on emotion and cognition: A pilot study. Front Integr Neurosci. 2012;6:1–11. [PubMed: 22319479]
11. Froeliger B, Garland EL, McClernon FJ. Yoga meditation practitioners exhibit greater gray matter volume and fewer reported cognitive failures: Results of a preliminary voxel-based morphometric analysis. Evidence-based Complement Altern Med. 2012; 2012:0–8.
12. Khumar, S.S., Kaur, P., Kaur, S., 1993. Effectiveness of Shavasana on depression among university students. *Indian J. Clin. Psychol.* 20 (2), 82–87.
13. Jagannathan, A., Raghuram, N., & Talwadkar, S. (2014). Effect of trataka on cognitive functions in the elderly. *International Journal of Yoga,* 7(2), 96. doi:10.4103/0973-6131.133872.
14. J. Martínez-Calderon, et al., (2023). Yoga-based interventions may reduce anxiety symptoms in anxiety disorders and depression symptoms in depressive disorders: a systematic review with meta-analysis and meta-regression, *Br. J. Sports Med*. 57 (22) 1442–1449.
15. Janakiramaiah, N., Gangadhar, B.N., Naga Venkatesha Murthy, P.J., Harish, M.G., Shetty, K.T., Subbakrishna, D.K., Meti, B.L., Raju, T.R., Vedamurthachar, A., 1998. Therapeutic efficacy of Sudarshan Kriya Yoga (SKY) in dysthymic disorder. *NIMHANS J.* 16 (1), 21–28.
16. Khalsa, S.B., 2004. Yoga as a therapeutic intervention: a biblio metric analysis of published research studies. *Indian J. Physiol. Pharmacol.* 48 (3), 269–285.
17. Kirkwood, G., Rampes, H., Tuffrey, V., Richardson, J., & Pilkington, K. (2005). Yoga for anxiety: A systematic review of the research evidence. *British Journal of Sports Medicine,* 39, 884–891. http:// dx.doi.org/10.1136/bjsm.2005.018069
18. Li, A. W., & Goldsmith, C. A. W. (2012). The effects of yoga on anxiety and stress. Alternative Medicine Review, 17, 21–35.
19. Rohini, V., Pandey, R.S., Janakiramaiah, N., Gangadhar, B.N., Vedamurthachar, A., 2000. A comparative study of full and partial Sudarshan Kriya Yoga (SKY) in major depressive dis order. *NIMHANS J* 18 (1–2), 53–57.
20. Subramanian, S. K. (2014). Effect of fast and slow pranayama practice on cognitive functions in healthy volunteers. *Journal of Clinical and Diagnostic Research*, 8(1):10-13 doi:10.7860/JCDR/2014/7256.3668.