



# Effect of adjuvant yoga therapy on stress, anxiety, and depression in participants of an alcohol de-addiction program.

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## Abstract:

**Introduction:** Alcohol-related disorders have disrupted the everyday life of the consumer gradually and led to a rise in alcohol-related diseases, violence, including homicide, suicide, sexual assault, and intimate partner violence. Long-term diseases, such as high blood pressure, heart disease, stroke, liver disease, and digestive problems are also rising due to excessive alcohol intake. Moreover, social problems, including lost productivity, family problems, unemployment are due to excessive alcohol intake. **Aim:** To study the effects of adjuvant yoga therapy on stress, anxiety, and depression in patients undergoing an alcohol de-addiction program at de-addiction clinic, department of Psychiatry, Mahatma Gandhi Medical College & Research Institute (MGMC&RI) in Pondicherry. **Settings and design:** Seventy-one male patients undergoing an alcohol de-addiction program were recruited as subjects and randomly divided into Group A, who received Yoga therapy as per the CYTER protocol, daily counseling, warm-ups (Jathis) along with standard medication for minimum 6-7 sessions of 1 to 1.5 hours each session, and Group B, who only received standard medical management. **Methods and materials:** The patients were administered the Perceived Stress Scale (PSS) and Hospital Anxiety & Depression Scale (HADS) before and after the intervention. **Statistical analysis used:** Statistical analysis was carried out using JASP-0.9.2.0 software. Wilcoxon test was performed for intragroup comparisons, and the Mann-Whitney test was performed for intergroup comparison to arrive at the p values. **Results:** The intervention group showed significant changes in stress ( $p=0.0319$ ), anxiety ( $p=0.0040$ ), and depression ( $p=0.0571$ ) in the intergroup comparisons, i.e., with the control group. In the intragroup comparisons, i.e., within the intervention group, stress ( $p<0.001$ ), anxiety ( $p<0.001$ ), and depression ( $p<0.01$ ) showed significant changes as well. **Conclusion:** The present study supports previous studies on the benefits of Yoga and concludes that yoga therapy helps in managing stress, anxiety, and depression levels of patients of Alcohol Dependence Syndrome (ADS).

**Keywords:** stress, anxiety, depression, Yoga, alcohol dependence, ADS, craving

**Key message:** In the management of ADS patients, the Yoga therapy procedure must be a mixture (i.e., a package) of yogic counseling, Pranayamas, Asanas, Kriyas, relaxation, and warm-ups (Jathis), along with prescription medicine. During the initial consultation, the medical fraternity should start prescribing yoga therapy to continue to reap the benefits from day one.

## Introduction:

Alcohol Dependence Syndrome (ADS) is a cluster of behavioral, perceptive, and physiological phenomena that develop after repeated substance use and that includes a strong desire to take the drug, pose difficulties in controlling its use, despite its damaging consequences. It affects day-to-day activities and responsibilities, and there is sometimes a physical withdrawal state. The dependence syndrome may be present for a specific psychoactive substance (e.g., tobacco, alcohol, or diazepam), for a class of substances (e.g., opioid drugs), or a more comprehensive range of pharmacologically different psychoactive substances (ICD-10).<sup>[1]</sup>

According to the World Health Organization, more than 5% of the overall disease burden is caused by the global disease problem related to alcohol and illicit substance abuse, and the adverse use of alcohol claims 2,5 million lives each year.<sup>[2]</sup> As relapse rates continue to stay as high as 95 percent in the first year following alcohol or tobacco withdrawal, there is rising concern about drug use disorders.<sup>[3][4]</sup> Anxiety, by interrelated cognitive, mental, physiological, and behavioral processes, precipitates alcohol relapse. Some of these mechanisms involve a conservative bias towards alcohol-related signs, repression of thought, weak ability to control emotion, and emotional reactivity that contributes to frequent drug-seeking actions.<sup>[5]</sup>

Southeast Asia and the regions of the Western Pacific continue to display growing trends in alcohol consumption. Pure alcohol consumption per capita increased by more than 50 percent between 1980 and 2000 in the Southeast Asia region. Likewise, alcohol intake in India, per capita, increased alarmingly by 106.7 percent between 1970-1972 and 1994-1996. In 2005, India's total number of alcohol users was 62.5 million, 17 percent of them being addicted users, accounting for 20 percent-30 percent of hospital admissions due to alcohol-related problems.<sup>[6]</sup> In Gujarat's western part, the state-wise prevalence rate is the lowest (7 percent) and the highest (75.0 percent) in Arunachal Pradesh. The incidence of existing alcohol use has ranged between 33 percent and 50 percent in Southern India. In Pondicherry, the overall incidence of alcohol use among people aged 18 years was 9.7 percent, and it was 17.1 percent exclusively among males. The highest prevalence was in the age group aged 46-55 years (17.1 percent). The highest occurrence was for illiterates and educated to the primary level, decreasing with a rising education level. Before 20 years of age, one-third of users began drinking, and the most common explanation for alcohol use was to get relief from pain or exhaustion resulting from their professional work.<sup>[6]</sup>

Gitananda Yoga™ (classic Rishiculture ashtanga yoga): At Ananda Ashram Pondicherry, South India, the Yoga Parampara of ICYER is the Rishiculture Ashtanga Yoga as synthesized by Dr. Swami Gitananda Giri, Yogamaharishi. Yogamaharishi Dr. Swami Gitananda Giri received the rich Vedic Rishi concepts from his Ashtanga Yoga master, Sri Swami Kakananda Ji, a Bengali saint, who initiated Swami Gitananda into this ancient Yoga teaching at the age of ten in Swamiji's ancestral childhood home in Maharajganj, Bihar. Up until Swami Kakananda's Samadhi on October 26, 1967, Swami Gitananda maintained his association with his Guru, who lived in Swamiji's ancestral home. The present resident Acharya are Yogacharini Meenakshi Devi Bhavanani (Ammaji) and her son Yogacharya Dr. Ananda Balayogi Bhavanani, supported by his dharampatni, Yogacharini Smt. Devasena Bhavanani<sup>[7]</sup>

## Subjects and Methods:

The sessions were held in the male ward, department of psychiatry, MGMC&RI. After meeting the inclusion and exclusion requirements, the patients were screened for the study. The subjects were told of the research, and their informed consent was obtained. Block randomization of subjects was carried out by department of Psychiatry, and the subjects were split into two groups consisting of Group A, i.e., the 38-subject intervention group (13 discontinued), and Group B, i.e., the 33-subject control group (8 discontinued). The Perceived Stress scale (PSS)<sup>[8]</sup>, and the Hospital Anxiety, and Depression scale (HADS)<sup>[9]</sup> were used for pre-and post-study evaluations. Minimum 6-7 customized yoga sessions of 1 to 1.5 hrs. each were provided to the intervention group (n=25) (as a package) along with daily counseling and standard medication, whereas the control group (n=25) received only standard medical management. The research was registered in the Clinical Trials Registry of India (CTRI/2019/06/019583).

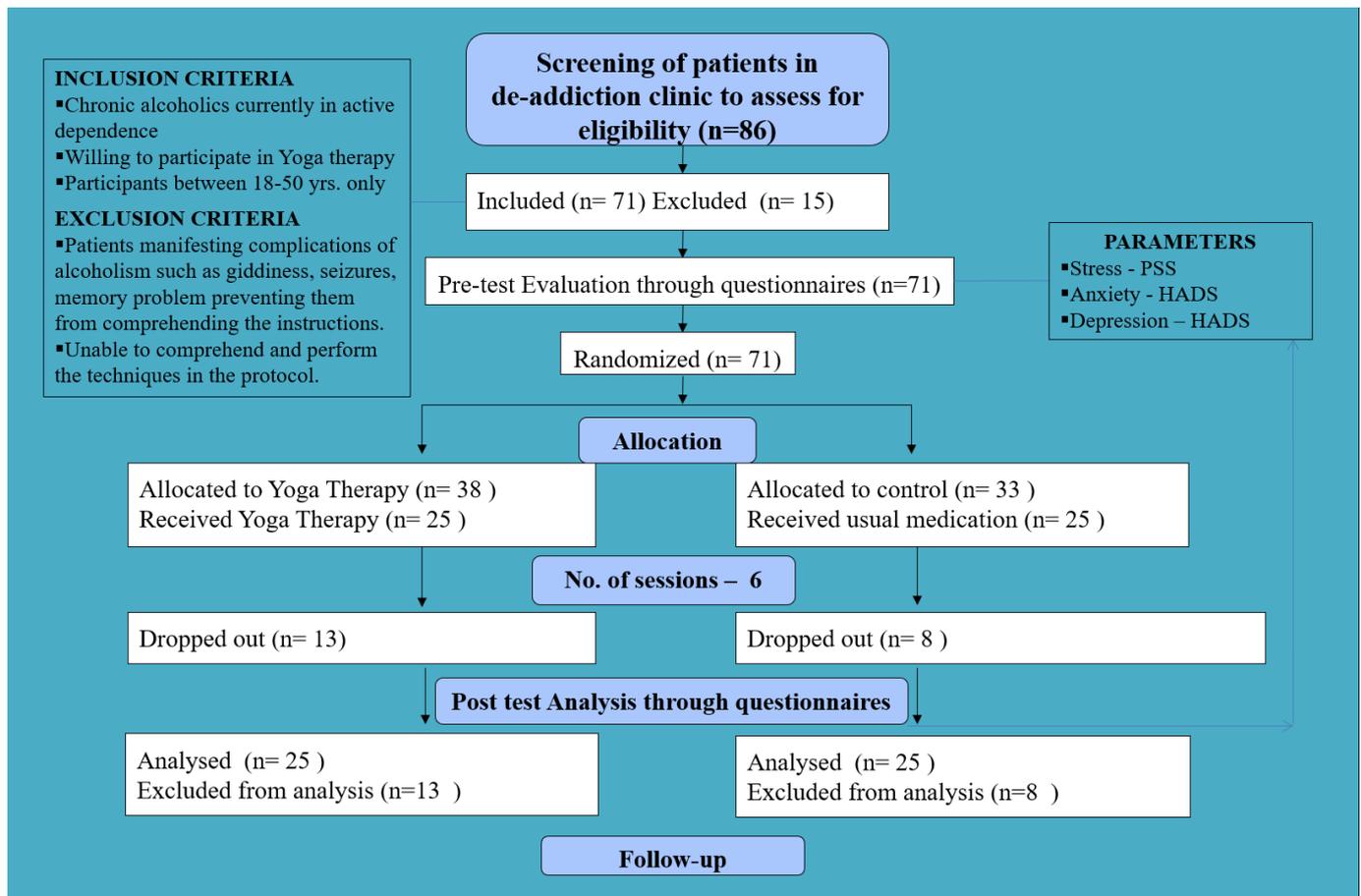


Fig.1: Algorithm about the randomized allocation of patient

Yoga Therapy was given as per validated protocol to the patients in the experimental group. Some small modifications of practices were made based on individual needs.

The following procedures were common to all practices:

- Resting between each practice for 1 to 3 minutes
- All practices are done with slow and controlled movements
- Taking support (of the wall, a pillar, chair, and cushion)
- Drinking water at regular intervals
- The Therapist was 'normally' dressed (without the 'Apron') such that the patients feel comfortable and get the feeling of a friend and were able to approach him in case of discomfort or doubts.
- The yogic counselling, warm-up techniques (Jathis), and yogic relaxation formed a significant part of the overall package.

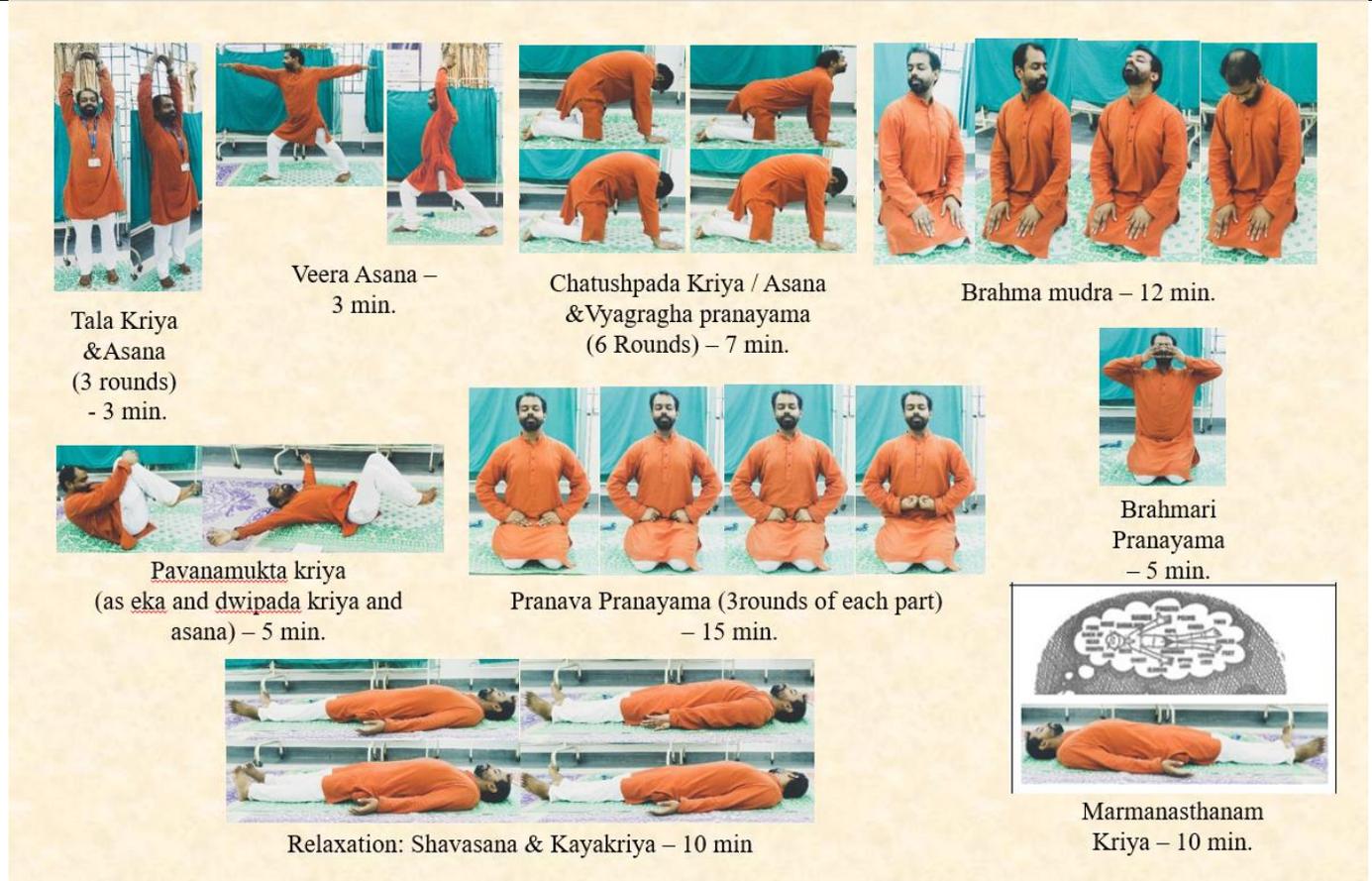


Fig.2: Different Yoga Therapy techniques used for the study (Author's demonstration)

### Demographic data:

The intervention group's median age was 38 years (22-55), while the control group's median age was 39 years (28-62). All the patients were male, mostly from the villages nearby. Some were wage earners daily, some were farmers, and some had small businesses. The monthly average income was in the range of about INR 10000-15000. The majority of them were married and had a house of their own. Most of them were either studying in schools or college with one or more children.

### Statistical analysis:

The data was evaluated using non-parametric tests because the data did not pass normality. In Tables 1- 4, the results are given. The Wilcoxon matched-pairs signed-ranks test gives the values for intragroup comparison as a median (range). The Mann-Whitney U test gives real P values for intergroup comparison. \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$  was considered to suggest significance in comparisons of intragroup and #  $p < 0.05$ ; ##  $p < 0.01$ ; ###  $p < 0.001$  in comparisons of intergroup. The following, along with the related graphs, are the results of the study given in tables.

### Results:

All the parameters have been individually analyzed and results are as follows:

**Perceived Stress Scale (PSS) - Stress:** When comparing the PSS (Stress) score, there was a significant change ( $p=0.0319$ ) in the stress levels in the intervention group when compared to the control group. The intragroup comparisons also showed significant changes ( $p<0.001$ ). The control group recorded no significant change. The Delta% change showed significance ( $p=0.0002$ ) [Table 1, 4].

**Hospital Anxiety and Depression scale (HADS) – Anxiety:** When comparing the HADS (Anxiety) score, there was a significant change (0.0040) in the anxiety levels in the intervention group when compared to the control group. The intragroup comparisons also showed significant changes ( $p < 0.001$ ). There was a marginal change recorded in the control group. The Delta% change also showed significance ( $p = 0.0145$ ) [Table 2, 4].

**Hospital Anxiety and Depression scale (HADS) – Depression:** When comparing the HADS (Depression) score, there was a significant change (0.0571) in the depression levels in the intervention group when compared to the control group. The intragroup comparisons also showed significant changes ( $p < 0.01$ ). The control group recorded no significant change. The Delta% change didn't show significance ( $p = 0.1350$ ) [Table 3, 4].

## Tables:

Table 1. Comparison of the Perceived Stress Scale (PSS) values before and after Study period in yoga and control subjects; n=25

PSS - STRESS	Yoga median (range)	Control median (range)	p-value
Pre	22 (13,30)	20 (8,31)	<b>0.0243</b>
Post	17 (5,22) ***	21 (8,29)	<b>0.0319</b>
Delta% ( $\Delta\%$ )	-21.05 (-78.26,30.77)	0 (-40.91,64.29)	<b>0.0002</b>

Values are given as median (min. value, max. value). Delta ( $\Delta$ ) is the difference between pre- and post-values in yoga and control groups. Delta% is the percentage change in delta values. \*\*\*  $p < 0.001$  by Wilcoxon test for intragroup comparisons and actual p values given for intergroup comparison by the Mann-Whitney test.

Table 2. Comparison of the Hospital Anxiety and Depression Scale (HADS - Anxiety) values before and after the Study period in yoga and control subjects; n=25

HADS - ANXIETY	Yoga median (range)	Control median (range)	p-value
Pre	12 (2,17)	10 (2,19)	0.2769
Post	5 (0,12) ***	9 (2,13) *	<b>0.0040</b>
Delta% ( $\Delta\%$ )	-57.14 (-100,60)	-13.33 (-83.33,450)	<b>0.0145</b>

Values are given as median (min. value, max. value). Delta ( $\Delta$ ) is the difference between pre- and post-values in yoga and control groups. Delta% is the percentage change in delta values. \*  $p < 0.05$ , \*\*\*  $p < 0.001$  by Wilcoxon test for intragroup comparisons and actual p values given for intergroup comparison by Mann-Whitney test.

Table 3. Comparison of the Hospital Anxiety and Depression Scale (HADS - Depression) values before and after the Study period in yoga and control subjects; n=25

HADS - DEPRESSION	Yoga median (range)	Control median (range)	p-value
Pre	8 (3,16)	9 (1,19)	0.5800
Post	5 (0,10) **	7 (0,15)	<b>0.0571</b>
Delta% ( $\Delta\%$ )	-33.33 (-100,233.33)	-16.67 (-100,500)	0.1350

Values are given as median (min. value, max. value). Delta ( $\Delta$ ) is the difference between pre- and post-values in yoga and control groups. Delta% is the percentage change in delta values. \*\*  $p < 0.01$  by Wilcoxon test for intragroup comparisons and actual p values given for intergroup comparison by Mann-Whitney test.

Table 4. Comparison of delta percentage ( $\Delta\%$ ) values in yoga and control groups; n=25

PSS & HADS	Yoga ( $\Delta\%$ in median (range))	Control ( $\Delta\%$ in median (range))	p value
1- PSS	-21.05 (-78.26,30.77)	0 (-40.91,64.29)	<b>0.0002</b>
2- HADS – Depression	-33.33 (-100,233.33)	-16.67 (-100,500)	0.1350
3- HADS – Anxiety	-57.14 (-100,60)	-13.33 (-83.33,450)	<b>0.0145</b>

Values are given as median (min. value, max. value). Delta ( $\Delta$ ) is the difference between pre- and post-values in yoga and control groups. Delta% is the percentage change in delta values. Actual p values are given for intergroup comparison by Mann-Whitney test.

## Discussion:

The study was undertaken to understand adjuvant yoga therapy's effects on stress, anxiety, and depression of ADS patients at de-addiction clinic, department of psychiatry, MGMC&RI in Pondicherry. The patients were selected after randomization into two groups to make the study methodologically superior over similar studies. Yoga therapy, based on a validated protocol of 'Classical Rishiculture Ashtanga Yoga lineage,' was given by a trained personal to patients individually, using a very personalized approach along with modifications and support wherever necessary.

While accessing 'stress' using PSS, the Intervention group showed significant changes in intragroup and intergroup comparisons. The control group showed stress reduction but was not statistically significant. It could have been due to the effect of medical management. The stress level amongst patients covered mental, physical, and spiritual aspects and needed professional intervention. The communication with other parts of the body wasn't proper because the mind-body coordination was misaligned (Medical records & Yogic counseling). With the practices such as Brahma mudra, sparsha mudra, and mudras with nada (sound), they experienced a sense of stillness, stability, and balance within their mind and body. Also, many Jathis (warm-up) and whooshing out (releasing) practices helped them experience 'ease.'

It goes along with all the previous studies where Yoga acted as a catalyst in reducing the patients' stress levels. In a narrative review of various literature in 2017, Sarkar et al. found that using Sudarshan Kriya Yoga (Sri Sri Ravishankar tradition) and physical exercise showed extremely significant improvement in mood profile and stress levels of the patients.<sup>[10]</sup> In another RCT in 2014, Reddy et al. concluded that specialized Yoga plays a significant role in reducing PTSD levels.<sup>[11]</sup> In another review of literature, Kissen et al. said that Yoga's self-soothing effects lead to emptying the mind of ordinary thoughts and feeling and is both ego enhancing and stress-reducing.<sup>[12]</sup> Khalsa et al., in another study, found that Kundalini yoga showed improvement in the PSS scale.<sup>[13]</sup> Therefore, numerous studies show a reduction in stress levels with regular yoga practices, and this study added more stars to the previous results.

While accessing 'anxiety' using HADS, the Intervention group showed significant changes in both intergroup and intragroup comparisons. The control group did not show much change. Most of the ADS patients struggled with anxiety and had problems relating to public speaking or answering the questionnaire (Medical records & Yogic counseling). The anxiety within themselves was an indicator of an underlying diseases such as hypertension, diabetes, asthma, obesity and like or their emotions becoming excessive, thereby interfering with their daily lives. The HADS also showed persistent and excessive anxiety amongst patients, worrying about the activities or events in their lives. They were stressed-out due to the events' impact on their lives, inability to set aside worry, and restlessness. The yoga practices and counseling sessions for both the patients and caregivers were helpful and gave them hope. They started seeing the happier side of life in the 'present moment' and might have stopped thinking about the future! It was imminent from the way they communicated post-intervention.

Mina et al. also discovered that yoga intervention caused significant changes by lowering the state anxiety level of addicts in the rehabilitation period. Although the changes were not significant, both the researcher and the subject noticed them.<sup>[14]</sup> This study suffices the need for research, as suggested by Cappelli et al. in his review of various publications, where he was unable to determine the therapeutic benefits of Yoga for patients or individuals suffering from anxiety.<sup>[15]</sup> Telles et al. found that the analysis of variance (ANOVA) showed a significant difference in the state anxiety scores between yoga sessions and yoga theory groups.<sup>[16]</sup> Smith et al. also found both Yoga and relaxation helpful in reducing the anxiety levels in one of his RCTs.<sup>[17]</sup> In their RCT, Gupta et al. concluded that yoga-based lifestyle intervention showed a significant reduction in both state and trait anxiety levels. Among the diseased subjects, significant improvement was seen in patients' anxiety levels with hypertension, coronary artery disease, obesity, cervical spondylitis, and those with psychiatric disorders.<sup>[18]</sup>

While accessing 'depression' using the Hospital Anxiety and Depression scale (HADS), the intervention group showed significant changes in both intergroup and intragroup comparisons. The control group showed marginal improvement in the scores. Patients' depressive state could be due to their continuous drinking pattern, family and personal issues, work pressures, and lack of leisure activities (Medical records & Yogic counseling). They usually overreacted and became violent in many cases. They needed to open up a lot to

get out of that depressive state, and yoga practices such as ha-karas (ha sound), nada sound, shaking of the body, and whooshing out, helps them in getting out of that state, leading to cheerfulness and also unified communication with the people around.

Many studies have proved the efficacy of Yoga in depressed patients. When Uebelack et al. reviewed around eight kinds of literature, he found out that medical settings were not enough for patients with depression. The aspects of Yoga, such as mindfulness, asanas, and kriyas, were an attractive alternative for treating depression. However, he suggested more research on the effects of Yoga on depression was required.<sup>[19]</sup> In their review of the literature, Sarkar et al. concluded that when compared to physical exercise, SKY yoga leads to a decrease in depressive symptoms.<sup>[10]</sup> In another RCT, Meena et al. found that yoga intervention caused a significant effect on depression levels of the addicts in the rehabilitation period. Earlier studies had also shown positive effects of yoga therapy on different parts of the body, especially the nervous and respiratory system, different glands, and hormones that release anti-depression hormones such as Serotonin, Dopamine, and Norepinephrine.<sup>[14]</sup> This study suffices for a study on depression and concludes that Yoga is a useful measure for its treatment. In another study, Vedamurthachar et al. found that SKY yoga had antidepressant effects on alcohol dependence patients. However, the antidepressant effects of SKY yoga demonstrated in early abstinence also had substantial spontaneous improvements.<sup>[20]</sup> In their RCT, Gupta et al. concluded that yoga practices positively affected psychiatric disorders such as depression.<sup>[18]</sup> Pilkington et al., in their review of several pieces of the literature, concluded that there were potential benefits of yoga intervention on depressive disorders. However, the methodological details such as randomization methods, compliance, and attrition rates were missing from those studies.<sup>[21]</sup> In another study in 2016, Bhagabati et al. concluded that Yoga therapy significantly reduces anxiety symptoms and craving in patients of alcohol dependence but not depressive symptoms. Secondly, practicing Yoga for a longer period of time has progressive benefits.<sup>[22]</sup> In contrast, the present study showed great potential in managing depression. However, the present study supports the need for practicing Yoga for longer period of time for progressive benefits.

## Conclusion:

In the present study, the PSS and HADS values have reduced significantly, both statistically and clinically, in the yoga intervention group. The study demonstrates Yoga acted as a stimulus and sought to transform the patients in the stipulated time as much as possible. It can be called an 'initiation' towards a better life. However, it all depends on the 4Rs, i.e., Regularity, Repetition, Rhythm towards the continuation of practices, and positive thinking with a valid Reason (let go, forgiveness, moving on). The practitioner should be dedicated and committed to what they are doing with a long-term approach. Moreover, a balanced sattvic diet is also the need of the hour.

The issue arises when they are not associated with their divine connections, their universal calling, and therefore their 'innate spirituality' is absent or are in 'conflict zones', and there is often no innate link with the higher self. That's where the real illness lies. Instead of working on the symptoms, it becomes the therapist's dharma to work on the root cause. There is a link between the patient, the therapist and the Universe in Yoga, such that spiritual giving and taking of divine energies takes place between them and the healing process begins. The intent of all three parties, however is the key and also depends on the efforts being placed in place. The therapist is just the medium to communicate with the Universe. Actual transfer of divine healing energies to the patients is from the Universe.<sup>[23]</sup>

Yoga, including counseling, Jathis, and standard medication (as a package), has shown positive results towards strengthening the patients' physical, mental, emotional, and spiritual aspects in all the three psychological parameters i.e., stress, anxiety and depression. This study was aimed to fill the lacunae in research on the effects of Yoga as adjuvant therapy in the management of the above parameters in Patients with ADS.

I hope this study 'spiritually' answered many questions and paved the way in the right direction for further research on the same topic. I hope my fellow researchers will come up with more innovative ideas to deal with stress, anxiety, and depression.

**Recommendations:**

- In ADS patients' care, the Yoga therapy protocol must be a mixture of yogic counseling, Pranayamas, Asanas, Kriyas, calming methods, Jathis, and regular medicine.
- To establish more definitive evidence, long-term effects of yoga intervention, and to be integrated into the AYUSH protocol for the treatment of ADS, a more rigorous and long-term study, perhaps for 3-6 months or even 1 year, with several follow-ups, is needed. Bhagabati et al. concluded that Yoga for a longer period of time has progressive benefits. [22]
- During the initial consultation of ADS patients, the medical fraternity should begin promoting Yoga so that patients begin to reap its benefits from day one.

**Limitations:**

- There is significantly less chance of the patient practicing yoga after being discharged, so long-term benefit assessment is a big issue.
- Due to work overload and family responsibilities, most patients didn't want to stay long (i.e., in a hospital set-up), so convincing them was a real challenge.
- Due to their work schedules, family, and financial pressures, there is no guarantee that lifestyle modifications, including dietary changes, is suitable for them.

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**Conflicts of interest:** There was no record of any conflict of interest.

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**Declaration:** This is part 1 of 4 of the same study.

**References:**

1. International Statistical Classification of diseases and related health problems 10th revision (ICD-10) version for mental and behavioral disorders. 2010;5
2. World Health Organization. Resources for The Prevention and Treatment of Substance Use Disorders. [online] Available at: <[http://www.who.int/gho/substance\\_abuse/en/index.html](http://www.who.int/gho/substance_abuse/en/index.html)> [Accessed 30 September 2020].
3. Brandon TH, Vidrine JJ, Litvin EB. Relapse and relapse prevention. *Annu Rev Clin Psychol* 2007;3(1):257–284.
4. Miller WR, Westerberg VS, Harris RJ, Tonigan JS. What prevents relapse? Prospective testing of antecedent models. *Addiction* 1996;91(Suppl): S155–S172.
5. Tyagi A, Cohen M, Reece J, Telles S. An explorative study of metabolic responses to mental stress and yoga practices in yoga practitioners, non-yoga practitioners, and individuals with metabolic syndrome. *BMC Complement Altern Med* 2014;14(1):445.
6. Ramanan VV, Singh SK. A study on alcohol use and its related health and social problems in rural Pondicherry, India. *J Family Med Prim Care* 2016; 5:804-8.

7. Bhavanani AB. \*\*\* ICYER \*\*\*. [online] Icyer.com. Available at: <[http://www.icyer.com/The\\_Tradition.htm](http://www.icyer.com/The_Tradition.htm)> [Accessed 30 September 2020].
8. Cohen S, Kamarck T, & Mermelstein R. A global measure of perceived stress. *Journal of Health and Social Behavior*, 1983;24:385-396.
9. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatr Scand*. 1983;67:361–370.
10. Sarkar S, Varshney M. Yoga, and substance use disorders: A narrative review. *Asian Journal of Psychiatry*. 2017; 25:191-196.
11. Reddy S, Dick A, Gerber M, and Mitchell K. The Effect of a Yoga Intervention on Alcohol and Drug Abuse Risk in Veteran and Civilian Women with Posttraumatic Stress Disorder. *The Journal of Alternative and Complementary Medicine*, 2014;20(10):750-756.
12. Kissen M, Kissen-Kohn D. Reducing addictions via the self-soothing effects of Yoga. *Bulletin of the Menninger Clinic*. 2009;73(1):34-43.
13. Khalsa S, Khalsa G, Khalsa H, Khalsa M. Evaluation of a Residential Kundalini Yoga Lifestyle Pilot Program for Addiction in India. *Journal of Ethnicity in Substance Abuse*. 2008;7(1):67-79.
14. Marefat M, Peymanzad H, Alikhajeh Y. The Study of the Effects of Yoga Exercises on Addicts' Depression and Anxiety in the Rehabilitation Period. *Procedia - Social and Behavioral Sciences*. 2011; 30:1494-1498.
15. Louisa Cappelli M. Restorative and Therapeutic Benefits of Yoga in Addiction Recovery. *MOJ Addiction Medicine & Therapy*. 2017;3(5).
16. Telles S, Gaur V, Balkrishna A. Effect of yoga practice session and yoga theory session on state anxiety. *U. S. National of medicine* 2009;109(3):30-924.
17. Smith C, Hancock H, Mortimer JB, Eckert K. A randomized comparative trial of Yoga and relaxation reduces stress and anxiety. *Complementary therapies medicine* 2006; 15 (2):77-83.
18. Gupta N, Kera S, Vempati RP, Sharma R, Bijlan RL. Effect of yoga-based lifestyle intervention on state and trait anxiety. *U .S. National Library of medicine* 2006; 50(1):7-41.
19. Ubelacker L, Epsteinlubow G, Gaudiano BA, Tremont G, Battle CL, Miller IW. Hatha yoga for depression. *U.S. National library of medicine* 2010; 16(1):22-33.
20. Vedamurthachar A, Janakiramaiah N, Hegde J, Shetty T, Subbakrishna D, Sureshbabu S et al. Antidepressant efficacy and hormonal effects of Sudarshana Kriya Yoga (SKY) in alcohol-dependent individuals. *Journal of Affective Disorders*. 2006;94(1-3):249-253.
21. Pilkington K, Kirkwood G, Rampes H, Richardson J. Yoga for depression. *Journal of affective disorders* 2005;89(1-3):13-24.
22. Bhagabati D, Kumar A, Borbora SA, Bora U, Sharma H. Assessment of the effectiveness of yoga therapy as an adjunct in patients with alcohol dependence syndrome. *Open J Psychiatry Allied Sci*. 2017;8:40-5.
23. Gupta K. What is normal? An experiential perspective. Unpublished [Internet]. 2020; Available from: <http://rgdoi.net/10.13140/RG.2.2.35381.09449>