

A Randomized Control trial of the Effect of Yoga on Quality of Sleep, Self-esteem and Depression in Substance Abuser

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ABSTRACT:

The objective of the study was to see the efficacy of yoga on Quality of sleep, depression and self-esteem of substance abusers. 66 drug abused men, from two de-addiction centers, with the mean of age 32.50 ± 9.86 years participated in the randomized control trial study for 4 weeks yoga intervention. BDI, RSES and PSQI were used to assess depression, self-esteem and sleep quality of the subjects. Wilcoxon signed rank test and Mann Whitney test were used to compare within the group and between the groups. There was significant reduction after yoga intervention in depression scores (BDI-II) ($p=0.000$) and quality of sleep (PSQI) scores ($p=0.000$) and significant increment was found in Self-esteem (RSES) scores ($p=0.005$). Regarding wait list control group, after the intervention programme, there was significant reduction in depression score, ($p=0.040$) and quality of sleep (PSQI) scores ($p=0.026$). However no significant increase was observed in self-esteem scores. Thus this study has shown that yoga practice as an adjunct therapy can help in improving self-esteem, quality of sleep and depression in substance abuser.

INTRODUCTION:

Substance abuse refers to the harmful or hazardous use of psychoactive substances(1). It leads to health problems, social problems, morbidity, injuries, violence, accidents, homicides, suicides, physical dependence or psychological addiction (2). There is a high rate of suicide in drug abusers. The reasons believed to cause the increased risk of suicide include the long-term abuse of drugs causing physiological distortion of brain chemistry as well as the social isolation. Another factor is the acute intoxicating effects of the drugs may make suicide more likely to occur(3). Severe psychological problems which commonly induced by sustained alcohol abuse can be reduced with prolonged abstinence(4). Drug abuse makes central nervous system (CNS) effects, which produce changes in mood, levels of awareness or perceptions and sensations. Most of these drugs also alter systems other than the CNS. Some of these are often thought of as being abused. Some drugs appear to be more likely to lead to uncontrolled use than others (5). A study which was done in Manipur (6) concluded that prevalence of tobacco and alcohol use was high among students. Familial use of substances was associated with the behavior of adolescents.

Yoga has been practice in India since time immemorial. It is considered to be the means for physical, mental and spiritual growth of an entity. With increasing research evidence, yoga has been emerging as a powerful tool to achieve good state of health both at physical and mental levels(7). Several studies have supported that yoga improved mental health. A study (8) showed that mindfulness meditation improve psychological well being and reduced stress related problems, illness and anxiety. Another study (9) was done on brief lifestyle intervention, based on yoga, on anxiety level in normal and diseased subjects. There was remarkable reduction in anxiety score within a period of ten days. Yogic breathing

(pranayama) relieves post traumatic stress disorder (PTSD) and depression (10). Some of the studies have documented that yoga improved self-esteem in healthy volunteers(11) and in cancer patients(12). Another study showed that after 6 months of yoga, sleep quality had improved, whereas depression, sleep disturbances, and daytime dysfunction had decreased significantly(13). Similarly it was reported that long-term yoga practice is associated with significant psycho-biological differences, including better sleep quality (14) as well as a modulatory action on the levels of cortisol (15). Yoga has been used as a tool for stress management that can assist in alleviating mental and physical health.

OBJECTIVES:

To study the efficacy of yoga on Quality of sleep, depression and self-esteem of drug abusers.

METHODS AND MATERIALS:

Subjects: 66 drug abused male with the mean of age 32.50 ± 9.86 years participated in the study.

Inclusion criteria:

- Drug abuse 18 – 40 years old.

Exclusion criteria:

- Complicated medical condition.

Source of Subjects:

Study participants were obtained from two de-addiction centers in Imphal, Manipur.

Place of Study:

This study is conducted at the following two drug de-addiction centers

Newlife drug de-addiction centre and Devine light drug de-addiction centre, Imphal, Manipur.

Food and other restrictions

The participants were served both vegetarian and non-vegetarian food at the de-addiction centers. Alcohol, tobacco and other intoxicating drugs are strictly prohibited by the rules of the de-addiction centre.

Ethical Considerations:

The study was approved by the IRB of S-VYASA University. Signed informed consent of all subjects was obtained after explaining the study in detail.

Design:

Randomized control trial (Yoga and wait list control groups). The yoga group had undergone yoga intervention program for 4 week. Participants in the control group have undergone day to day regular activities. Assessments were made before and after the 4 weeks program in two groups.

Assessments:

Assessments were made on two groups before and after the 4 weeks of intervention. The following Psychological variables were assessed:

Pittsburgh Sleep Quality Index (PSQI)

The Pittsburgh Sleep Quality Index (PSQI) is an effective instrument used to measure the quality and patterns of sleep in older adults. It differentiates “poor” from “good” sleep by measuring seven areas: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction over the last month. It has 10 items. The PSQI has internal consistency and a reliability coefficient (Cronbach’s alpha) of 0.83 for its seven components. Numerous studies using the PSQI in a variety of older adult populations throughout the world have supported high validity and reliability (16).

Rosenberg self-esteem scale (RSES)

It is used for measuring self-esteem which has 10 items (4 points Likert scale). Convergent validity Pearson r of 0.83 with Health Self-Image Questionnaire (Heath1965); reliability 2-week test-retest coefficient of 0.85 (17).

Beck Depression Inventory (BDI-II)

The Beck Depression Inventory (BDI) is a 21-item, self-report questionnaire that assesses depressive symptoms experienced in the past two weeks. Scores range from 0 to 63, with higher scores indicating higher levels of depressive symptoms (18). The BDI-II is positively correlated with the Hamilton Depression Rating Scale with a Pearson r of 0.71, showing good agreement. The test was also shown to have a high one-week test–retest reliability (Pearson r =0.93)(19).

Intervention:

The intervention was for 4 weeks and consisted of one hour and ten minutes of Yoga practices every day. The schedule for 1 week (6 days) is detailed in Table 1 below. Table 2 shows the demographic data.

Table 1: DAILY YOGA PRACTICES

Name of practice	Duration
Warming up	10 minutes
Surya Namaskara	15 minutes
Relaxation Techniques(QRT)- in Savasana	4 minutes
Asanas: Set 1: Standing – Ardha kati chakrasana, Ardha chakrasana, Trikonasana, Virabhadrasana 1 and 2, Parsvakonasana Set 2: Sitting – Vakrasana, Ardha matsyendrasana, paschimottanasana, ustrasana, vajrasana Set 3: Supine – Naukasana, viparitta karani, chakrasana, Setubandhasana. Set 4: Prone – Bhujangasana, Dhanurasana, Salabhasana.	20 minutes Each day only one set of Asanas are practiced
Relaxation techniques(DRT)- in Savasana	6 minutes
Pranayama Nadi sudhi, Brahmari, Ujjay	15 minutes

Table 2: Demographic data

GROUP CHARACTERISTICS	YOGA	CONTROL
AGE:	32.30±9.65	32.70±10.13
18 – 40	26(78.78%)	26(78.78%)
41 – 60	7(21.21%)	7(21.21%)
OCCUPATION:		
Student	6(18.18%)	1(3.03%)
Employed	19(57.57%)	30(90.90%)
Unemployed	8(24.24%)	2(6.06%)
MARITAL STATUS:		
Married	17(51.51%)	24(72.72%)
Single	16(48.48%)	9(27.27%)
RELIGION:		
Islam	5(15.15%)	0
Christian	4(12.12%)	4(12.12%)
Hindu	24(72.72%)	29(87.87%)
FAMILY MONTHLY INCOME:		
3,500 - 15,000	20(60.60%)	17(51.51%)
15,000 - 25,000	8(24.24%)	10(30.30%)
25,000 and above	5(15.15%)	7(21.21%)
ABUSED SUBSTANCE:		
Spasmo proxyvon	13(39.39%)	14(42.42%)
Alcohol	10(30.30%)	7(21.21%)
Heroin	9(27.27%)	11(33.33%)
Others	1(3.03%)	1(3.03%)
QUALIFICATION:		
Matriculation	14(42.42%)	18(54.54%)
P.U.	13(39.39%)	9(27.27%)
Graduate	6(18.18%)	6(18.18%)

DATA ANALYSIS

Data was analyzed using statistical package SPSS software (Version 16.0). Baseline value of were not significantly different. As the data was not normally distributed, Wilcoxon signed ranks' test was used to compare means within the group and the Mann Whitney U test to compare the means between the groups.

RESULTS AND DISCUSSION

There was significant reduction after yoga intervention in depression scores (BDI-II) and Sleep quality scores (PSQI) (p=0.000) whereas self-esteem scores (RSES) were significantly increased (P=0.005).

Regarding wait list control group, after the intervention programmed, there was significant reduction in depression score, ($p=0.040$) and Sleep quality (PSQI) scores, $p=0.026$, and no improvement was found in Self-esteem scores ($p=.194$).

Table 3: Wilcoxon signed rank test for Yoga group

Parameters	Pre(Mean \pm SD)	Post(Mean \pm SD)	P value
BDI II	32.03 \pm 10.65	18.57 \pm 10.59	<.001
PSQI	11.35 \pm 2.63	6.15 \pm 1.35	<.001
RSES	20.24 \pm 4.10	24.67 \pm 3.86	.005

** $p<0.001$ and * $p<0.05$

Table 4: Wilcoxon signed rank test for control group

Parameters	Pre (Mean \pm SD)	Post(Mean \pm SD)	P value
BDI	29.39 \pm 8.25	27.51 \pm 8.10	0.040
PSQI	11.46 \pm 2.24	10.05 \pm 2.20	.026
RSES	21.66 \pm 2.74	21.78 \pm 2.72	.194

** $p<0.001$ and * $p<0.05$

Table 5: Mann-Whitney test to show difference of depression scores between yoga and control after the intervention.

Parameters	Post yoga	Post control	P value
BDI II	18.57 \pm 8.10	27.51 \pm 8.10	<.001
PSQI	6.15 \pm 1.35	10.05 \pm 2.20	0.002

** $p<0.001$ and * $p<0.05$

The present study evaluated the effect of Yoga on drug addiction, depression and quality of life levels in drug abuse. The study has shown that there was a significant reduction after yoga practice in depression (BDI-II), PSQI scores and increased in self-esteem (RSES) scores.

Some of the previous studies have reported that yoga can be an adjunct therapy in rehabilitation of drug abusers. Substance abuse interventions based on yoga are believed to provide benefits on psychological and psychosocial factors. The practice of meditation was beneficial to decrease the degree of substance (marijuana) abuse, by strengthening the mental resolve and decreasing the anxiety (20). A study (21) on female heroin addicts showed that after yoga intervention a significant improvement in mood status and quality of life, compared with the control group. Simple yogic-style breathing exercises can reduce cigarette craving acutely in the laboratory(22). Similarly, a pilot study on Mindfulness training intervention to alcohol/cocaine users showed that mindfulness was a beneficial tool for reducing the stress.(23). Likewise, it was also reported the beneficial of mindfulness meditation as a useful additional strategy for reducing relapse(24). Another study was done on pilot treatment program for substance abuse that integrated a comprehensive array of yoga, meditation, spiritual and mind-body techniques. It showed improvements on a number of psychological self-report questionnaires including the Behavior and Symptom Identification Scale and the Quality of Recovery Index(25). This study is consistent with these findings, indicating that practice of the yoga can help in improving mental health in drug abusers.

CONCLUSION

Thus this study has shown that four weeks yoga practice as an adjunct therapy can help in reducing depression symptoms and improving quality of sleeps and self-esteem in drug abusers. To better evaluate the impact of yoga on prevention and the treatment of depression and the improvement of quality of sleep, self-esteem, further studies are needed which include long term follow up, larger sample sizes and controlled group should engaged in some physical activity. Some of the physiological and biochemical parameters can be used to see better results.

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REFERENCES

- i. WHO | Substance abuse. WHO. World Health Organization; 2016;
- ii. Burke PJ, O’Sullivan J, Vaughan BL. Adolescent substance use: brief interventions by emergency care providers. *Pediatr Emerg Care*. 2005;21:770–6.
- iii. O’Connor RC, P. Sheehy N. Suicidal Behaviour. *Psychologist*. 2001;14(1):20–4.
- iv. Evans K, Sullivan JM. *Dual Diagnosis: Counseling the Mentally Ill Substance Abuser*. Guilford Press; 2001.
- v. Jaffe J. Drug addiction and drug abuse. In: Goodman LS, Gilman A, editors. *The pharmacological basis of therapeutics*. 5th ed. MacMillan publishers, New York; 1975. p. 284–324.
- vi. Ningombam S, Hutin Y, Murhekar M V. Prevalence and pattern of substance use among the higher secondary school students of Imphal, Manipur, India. *Natl Med J India*. 2011;24(1):11–5.
- vii. Devi NJ, Subrahmanyam K. Yoga as an Ancient Science of Healing: Its Impact on Mental Health of Women. *Int J Ayurveda Pharma Res*. 2015;2(3).
- viii. Carmody J, Baer RA. Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a mindfulness-based stress reduction program. *J Behav Med*. 2008;31(1):23–33.
- ix. Gupta N, Khera S, Vempati RP, Sharma R, Bijlani RL. Effect of yoga based lifestyle intervention on state and trait anxiety. *Indian J Physiol Pharmacol [Internet]*. 2006 ;50(1):41–7.
- x. Descilo T, Vedamurtachar A, Gerbarg PL, Nagaraja D, Gangadhar BN, Damodaran B, et al. Effects of a yoga breath intervention alone and in combination with an exposure therapy for post-traumatic stress disorder and depression in survivors of the 2004 South-East Asia tsunami. *Acta Psychiatr Scand*. 2010;121:289–300.
- xi. Raghuram N, Deshpande S, Nagendra H. A randomized control trial of the effect of yoga on Gunas (personality) and Self esteem in normal healthy volunteers. *Int J Yoga*

- [Internet]. Medknow Publications; 2009 ;2(1):13.
- xii. Kovacic T, Kovacic M. Impact of Relaxation Training According to Yoga in Daily Life System on Self-Esteem After Breast Cancer Surgery. *J Altern Complement Med*;2011 ;17(12): 1157-64
- xiii. Chen K-M, Chen M-H, Lin M-H, Fan J-T, Lin H-S, Li C-H. Effects of Yoga on Sleep Quality and Depression in Elders in Assisted Living Facilities. *J Nurs Res [Internet]*. 2010 Mar;18(1):53–61.
- xiv. Khalsa SBS. Treatment of Chronic Insomnia with Yoga: A Preliminary Study with Sleep-Wake Diaries. *Appl Psychophysiol Biofeedback [Internet]*. Kluwer Academic Publishers-Plenum Publishers; 2004 Dec;29(4):269–78.
- xv. Vera FM, Manzaneque JM, Maldonado EF, Carranque GA, Rodriguez FM, Blanca MJ, et al. Subjective Sleep Quality and hormonal modulation in long-term yoga practitioners. *Biol Psychol*. 2009;81(3):164–8.
- xvi. Smyth C. the Pittsburg Sleep Quality index (PSQI). *Best Pract Nurs Care to Older People*. 2012;(6.1).
- xvii. Silber E, Tippett JS. Self-esteem: Clinical assessment and measurement validation.
- xviii. Beck AT, Ward CH, Mendelson M, Mock. J, Erbaugh J. An inventory for measuring depression. *Arch gen Psychiat*. 1961;4:561–71.
- xix. Beck AT, Steer RA, Brown GK. Manual for the Beck depression inventory-II. San Antonio, TX Psychol Corp [Internet]. 1996;1–82.
- xx. Telles S, Naveen K V. Yoga for rehabilitation: an overview. *Indian J Med Sci*. 1997;51:123–7.
- xxi. Zhuang SM, An SH, Zhao Y. Yoga effects on mood and quality of life in chinese women undergoing heroin detoxification a randomized controlled trial. *Nurs Res*. 2013;62(4):260-8.
- xxii. Shahab L, Sarkar BK, West R. The acute effects of yogic breathing exercises on craving and withdrawal symptoms in abstaining smokers. *Psychopharmacology (Berl)*. 2013 Feb;225(4):875–82.
- xxiii. Judson A., Brewer, Rajita Sinha, Justin A., Chen, Ravenna N. Michalsen, et al. Mindfulness Training and Stress Reactivity in Substance Abuse: Results from a Randomized, Controlled Stage I Pilot Study. *Subst Abus*. 2009;30(4):307–17.
- xxiv. Breslin FC, Zack M, McMains S. An Information-Processing Analysis of Mindfulness: Implications for Relapse Prevention in the Treatment of Substance Abuse. *Clin Psychol Sci Pract [Internet]*. Blackwell Publishing Ltd; 2006 May 11;9(3):275–99.
- xxv. Khalsa SBS, Khalsa GS, Khalsa HK, Khalsa MK. Evaluation of a residential Kundalini yoga lifestyle pilot program for addiction in India. *J Ethn Subst Abuse*. 2008;7:67–79.