



Assessment of the effectiveness of yoga therapy as an adjunct in patients with alcohol dependence syndrome

Abstract

Introduction: Substance use disorders, alcohol use in particular, are among the leading disorders in psychiatry in terms of prevalence. They put a lot of burden on health as well as family, society, and economic status of the patient. What more challenging is that such patients often suffer from comorbid anxiety and depression, which has the potential to perpetuate the alcohol use. Yoga is an alternative and complementary therapy which is widely practiced by people in India. However, its effectiveness in alcohol use disorders is not tested systematically. **Aims and objectives:** To study the effectiveness of yoga as an adjunctive therapy in patients of alcohol use disorders and to evaluate its ability to reduce comorbid depression, anxiety, and craving. **Materials and methods:** Hundred patients of alcohol use disorders as per the tenth revision of the International Classification of Diseases and Related Health Problems (ICD-10) were selected and were divided into two groups each containing 50 patients. The case group received structured yoga session in addition to standard pharmacotherapy while the control group received only pharmacotherapy. Assessment of depression (Hamilton depression rating scale [HAM-D]), anxiety (Hamilton anxiety rating scale [HAM-A]), and craving (Obsessive-compulsive drinking scale [OCDS]) was done at baseline, two weeks, and at one month. Results were compared between the two groups and statistical analysis was done. **Results:** Both the case and control groups were similar in HAM-D ($p=0.9634$), HAM-A ($p=0.7744$), and OCDS ($p=0.8626$) scores at baseline. There was significant reduction in HAM-A score at one month ($p=0.0091$), and OCDS score at two weeks ($p=0.0428$) and one month ($p<0.0001$) respectively in yoga group as compared to control group. Within case group, only reduction in HAM-A ($p<0.001$ and $p<0.01$) and OCDS ($p<0.0001$ and $p<0.0001$) scores were progressively better statistically at two weeks and one month while reduction in HAM-D score was significant only till two weeks ($p<0.05$). **Conclusion:** Yoga therapy significantly reduced 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.

Keywords: Depression. Anxiety. Craving.

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Introduction

Yoga therapy has been gaining popularity in the treatment of many psychiatric disorders both as adjunctive as well as single therapy. Yoga therapy has been found to help patients in many ways such as- increasing calmness, increasing awareness of self and surroundings, achieving higher levels of consciousness, increasing attention span, producing a sense of security, and reducing stress.[1] It has also been shown to produce neurochemical changes in the brain like increasing brain-derived neurotrophic factor (BDNF) levels, decreasing cortisol levels, and increasing plasma oxytocin levels.[2-4] On structural level it brings about neuroplasticity.[5]

Historically, yoga is a set of mind-body practice whose ultimate goal is achievement of higher level of consciousness. The three main yoga practices include meditation, breathing exercises, and physical postures.[6]

Alcohol use disorders are difficult to treat which is evident from high relapse rates and the current pharmacological options thus appear inadequate. The reason behind this helplessness of psychiatrists is not clearly known. But patients with alcohol use disorders have high comorbidity of depression and anxiety disorders.[7,8] Furthermore, alcohol users find it extremely difficult to control their craving. This study tries to examine a relatively less practiced modality of treatment- yoga, and will try to find out if this mode of treatment can significantly reduce comorbid depression, anxiety, and craving in patients of alcohol use disorders.

Aim

To study the effectiveness of yoga therapy as an adjunct in the treatment of alcohol use disorders.

Objectives

1. To assess the changes in anxiety and depressive symptoms in patients of alcohol dependence after yoga therapy.
2. To assess the changes in craving in these patients after yoga therapy.

Methodology

The study was conducted in a tertiary care hospital, Gauhati Medical College & Hospital, Department of Psychiatry. Total 100 numbers of patients of alcohol dependence syndrome diagnosed according to the tenth revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10)[9] criteria were taken for the study. After taking written informed consent, samples were divided into two groups each containing 50 patients. Both the groups (case and control) underwent detoxification for the required time period. After this phase was over both the groups were given anticraving drugs as per the suitability. The anticraving drugs used in this hospital are acamprosate, naltrexone, topiramate, and baclofen. Additionally, the case group was given thrice weekly yoga therapy (Monday, Wednesday, and Friday) by a professional yoga teacher employed at this hospital. Both groups also attended once weekly Alcoholic Anonymous (AA) sessions as well as group therapy.

The psychiatry department of this hospital has general wards as well as a separate drug-deaddiction ward. Patients with substance use disorders are usually admitted in drug deaddiction ward but sometimes due to non-availability of beds some patients are randomly admitted in general wards. The case group consisted of the patients who were admitted in drug deaddiction ward while the control group consisted of patients admitted in general wards. Additionally, some of the patients who had medical comorbidities and who were unsuitable for yoga sessions were kept in control group.

Yoga sessions were administered to the case group for one hour duration on every alternate day for one month. The patients were instructed to practice yoga on rest of the days on their own. The standard yoga session consisted of different 'asanas' and meditation. Following are the 'asanas'- 'Surya Namaskar', 'Hasthamudra', 'Padamudra', 'Grivamudra', 'Singhasana', 'Bhujangasana', 'Shalabhasana', 'Dhanurasana', 'Pavanmuktasana', 'Tadasana', 'Vrikshasana', 'Katichakrasana', 'Ardha-Mastyendrasana', 'Uddiyanbandhamudra', 'Sahajagnishei', 'Shavasana', 'kapalbhati', 'pranayam', and meditation.

Assessment of depressive symptoms, anxiety symptoms, and craving was done at baseline, at two weeks, and after one month of starting of sessions. Two independent assessors assessed the case and control groups. If the patients in the two groups were found to have anxiety or depression, they were given appropriate medications.

Inclusion criteria

1. Patients diagnosed as alcohol dependent syndrome as per ICD-10 criteria
2. Patients admitted in ward
3. After detoxification period was over.

Exclusion criteria

1. Patients in delirium, mental retardation, severe physical illness, or serious orthopaedic problems
2. Other axis I psychiatric diagnosis other than anxiety and depression.

Tools used

Hamilton depression rating scale (HAM-D):[10] The 17-item HAM-D was used to assess depressive symptoms and score the severity of depression. This scale was developed by Max Hamilton in 1960 to monitor the severity of depression, with a focus on somatic symptomatology. It is an observer-rated scale consisting of 17 items and the score ranges from zero to 52. It offers an advantage of comparing severity after administering treatment.

HAM-D score interpretation guide:

- 0-7: No depression
- 8-17: Mild depression
- 18-25: Moderate depression
- ≥26: Severe depression

Hamilton anxiety rating scale (HAM-A):[11] This scale was used to assess anxiety symptoms. Developed in late 1950s this scale has 14 items with a total score of 56. It is clinician administered with good reliability and validity. Similar to HAM-D, this scale is also used to see the treatment response.

HAM-A score interpretation guide:

- 0-13: No anxiety
- 14-17: Mild anxiety
- 18-24: Moderate anxiety
- ≥25: Severe anxiety

Obsessive compulsive drinking scale (OCDS):[12] The OCDS is a tool which was made to elicit obsessions and compulsions related to drinking. Measuring obsessive behaviour in turn elicits craving for drinking. The tool has been found both sensitive and specific in measuring the obsessive thoughts and compulsive behaviours related to drinking. This tool has also been found sensitive for predicting relapse drinking. The scale consists of 14 questions reflecting both obsessive and compulsive characteristics of drinking. It is a self-administered type of scale and takes about five to ten minutes to evaluate the total score, which in turn is obtained by simply adding the scores of each of the 14 items. The tool is both reliable and valid. To meet the needs of local population it was translated in Assamese. Reliability and validity was established.

Statistical analysis

Socio-demographic variables were analysed with Fisher test. Data related to alcohol use pattern was analysed using Chi-square test. Mean scores of HAM-D, HAM-A, and OCDS at each of the three intervals were compared between the two groups with the help of analysis of variance (ANOVA). Similarly to compare the effect of yoga with respect to time (two weeks vs one month) mean scores within case group were compared using ANOVA. Free version of Graphpad Instat statistical software was used for this purpose.

The study was approved by the ethical committee of Gauhati Medical College & Hospital.

Results

The results are shown in following tables 1 to 6.

Discussion

Table 1 shows the socio-demographic variables of the two groups. Both case and control groups were comparable on all the parameters and no statistically significant difference existed. Maximum number of patients in the case group fall in age group of 18-39 years while in the control group, maximum number fall in 40-59 years age group. All the 100 enrolled subjects were males, majority of subjects in both groups were Hindu, married, educated below class ten, and belonged to rural areas. More number of patients in the case group were employed while more number of patients in the control group were unemployed. However, no significant difference was seen between the groups in terms of employment.

Table 2 depicts the alcohol use pattern of the two groups. Both the groups were comparable on parameters such as type of alcohol used, duration of alcohol used, frequency of alcohol used, amount of current daily use, family history of alcohol use, and past admission for alcohol use. The commonest anticraving drug used in both the groups was acamprosate.

Table 3 depicts that 30% and 26% of patients in case group and control group had depression respectively.

While 40% of case group patients and 50% of control group patients had comorbid anxiety respectively. A systematic review of 35 studies found median prevalence of comorbid depression and alcohol use in current or lifetime alcohol use as 16% (range five to 67%) and 30% (range ten to 60%), respectively.[13]

When both the groups were compared at baseline for scores of depression (HAM-D), anxiety (HAM-A), and craving they did not differ significantly (Table 4).

In case of comorbid alcohol dependence and depression, the HAM-D scores were not significantly different between the yoga group and non-yoga group when the two groups were treated till two weeks and one month. In another study which randomised patients of alcohol dependence (N=60) to either receive two weeks of Sudarshan Kriya (a type of yoga) or not, findings revealed that the group which received yoga intervention had significantly lower Beck's Depression Inventory (BDI) score at two weeks as compared to the controls. There was also reduction in plasma cortisol and adrenocorticotrophic hormone (ACTH) in the yoga group which correlated with reduction in BDI score.[14] However, it is not clear if the depressed patients in this study received antidepressant or not, while in our study patients in both the groups received antidepressants if they were found to be depressed.

Table 1: Descriptive analysis of socio-demographic characteristics of the sample

Socio-demographic variable	Case (N=50)		Control (N=50)		p-value	Test
	N	%	N	%		
Age group (years)						
18-39	28	56	20	40	0.1069	Fischer test
40-59	20	40	29	58		
60-79	2	4	1	2		
Sex						
Male	50	100	50	100		
Female	0	0	0	0		
Religion						
Hinduism	48	96	47	94		
Islam	1	2	3	6		
Sikh	1	2	0	0		
Marital status						
Married	40	80	44	88	0.4139	Fischer test
Unmarried	10	20	6	12		
Education						
Up to class five	11	22	10	20	0.17638	Chi square=8.943, degree of freedom=6
Class six to class ten	17	34	27	54		
Higher secondary	12	24	11	22		
Graduation and above	9	18	2	4		
Occupation						
Employed	26	52	21	42	0.423	Fischer test
Unemployed	24	48	29	58		
Locality						
Rural	40	80	37	74	0.635	Fischer test
Urban	10	20	13	26		

Table 2: Descriptive analysis of alcohol use pattern

Variable	Case (N=50)		Control (N=50)		p-value/test
	N	%	N	%	
Type of alcohol used					
IMFL (Indian made foreign liquor)	17	34	10	20	0.2785
CML (Country made liquor)	23	46	29	58	Chi ² =2.555
IMFL+CML	10	20	11	22	DoF=2
Duration of alcohol use					
<5 years	6	12	5	10	0.6636
6-10 years	11	22	17	34	Chi ² =2.395
11-15 years	15	30	15	30	DoF=4
16-20 years	11	22	9	18	
>20 years	7	14	4	8	
Frequency of current use					
≤ 3 days	1	2	6	12	0.1085
4-5 days	18	36	22	44	Fisher test
6-7 days	31	62	22	44	
Amount of current daily use					
≤ 375 ml	12	24	7	14	0.3498
376-750 ml	14	28	12	24	Chi ² =3.284
751-1375 ml	14	28	14	28	DoF=3
≥ 1376 ml	10	20	17	34	
Withdrawal symptoms on abstinence					
Yes	49	98	50	100	
No	1	2	0	0	
Family history of alcohol Use					
Yes	17	34	20	40	0.6790
No	33	66	30	60	Fisher test
Past admission for alcohol use					
Yes	20	40	12	24	0.1328
No	30	60	38	76	Fisher test
Period of abstinence after past admission	20		12		
<1 month	8	40	3	25	0.5977
1-3 month	8	40	5	41.7	Chi ² =1.029
3-6 months	2	10	3	25	DoF=2
>6 months	2	10	1	8.3	
ICD diagnosis					
Alcohol dependence syndrome	11	22	9	18	
Withdrawal state (uncomplicated)	15	30	9	18	
Withdrawal state with convulsion	10	20	10	20	
Withdrawal state with delirium without convulsion	3	6	9	18	
Withdrawal state with delirium with convulsion	11	22	13	26	
Presence of Medical comorbidity					
Yes	0	0	24	48	
No	50	100	26	52	
Duration of detoxification					
5-7 days	38	76	43	86	
8-10 days	12	24	7	14	
Anticraving drug used					
Acamprosate	17	34	19	38	
Baclofen	13	26	10	20	
Naltrexone	8	16	8	16	
Topiramate	12	24	13	26	

DoF=Degree of freedom

Table 3: Descriptive analysis of prevalence of depression and anxiety in the sample

Variable	Case (N=50)		Control (N=50)		p-value
	N	%	N	%	
Depression (HAM-D)					
Mild	10	20	7	14	0.8240
Moderate	3	6	5	10	
Severe	2	4	1	2	
No depression	35	70	37	74	
Anxiety (HAM-A)					
Mild	15	30	20	40	0.4216
Moderate	5	10	5	10	
Severe	0	0	0	0	
No anxiety	30	60	25	50	

HAM-D=Hamilton depression rating scale, HAM-A=Hamilton anxiety rating scale

Table 4: Comparison of HAM-D, HAM-A, and OCDS scores between case and control groups

Scores	Case (N=50)		Control (N=50)		p-value
	Mean score	SD	Mean score	SD	
HAM-D at baseline	6.92	6.246	6.98	6.790	0.9634
HAM-D at 2 weeks	4.14	5.135	5	6.108	0.4478
HAM-D at 1 month	2.16	3.755	3.46	4.717	0.1306
HAM-A at baseline	11.44	5.828	11.78	6.001	0.7744
HAM-A at 2 weeks	7.38	5.252	8.7	5.729	0.2327
HAM-A at 1 month	3.68	3.909	6.12	5.173	0.0091
OCDS at baseline	20.42	4.482	20.26	4.733	0.8626
OCDS at 2 weeks	15	3.910	16.88	4.628	0.0428
OCDS at 1 month	10.02		13.92	4.232	<0.0001

HAM-D=Hamilton depression rating scale, HAM-A=Hamilton anxiety rating scale, OCDS=Obsessive compulsive drinking scale, SD=standard deviation

Table 5: Comparison of HAM-D, HAM-A, and OCDS scores within case group with respect to time

HAM-D				
	HAM-D at baseline	HAM-D at 2 weeks	HAM-D at 1 month	p-value
Mean score	6.92	4.14	2.16	<0.0001
SD	6.491	5.630	4.292	
HAM-A				
	HAM-A at baseline	HAM-A at 2 weeks	HAM-A at 1 month	p-value
Mean score	11.44	7.38	3.68	≤0.0001
SD	5.828	5.252	3.909	
OCDS				
	OCDS at baseline	OCDS at 2 weeks	OCDS at 1 month	p-value
Mean score	20.42	15	10.02	≤0.0001
SD	4.482	4.531	3.910	

HAM-D=Hamilton depression rating scale, SD=standard deviation, ANOVA=analysis of variance, HAM-A=Hamilton anxiety rating scale, OCDS=Obsessive-compulsive drinking scale

In case of comorbid alcohol use and anxiety, HAM-A score was similar in the two groups at two weeks of treatment but at one month the patients in yoga group had significantly greater reduction in anxiety severity. A previous randomised controlled pilot study was conducted evaluating the effectiveness of 12-session yoga therapy in women of age 18-65 years. These women had comorbid posttraumatic stress disorder (PTSD) and alcohol use disorder. The Alcohol Use Disorder Identification Test (AUDIT) and Drug Use Disorder Identification Test (DUDIT) were done before intervention, immediately after intervention, and one month after intervention. The women in yoga group showed reduction in mean AUDIT, DUDIT scores, as well as reduction in PTSD symptoms.[15]

On parameter of craving, the yoga group reported significant reduction in OCDS scores both at two weeks and at one month. There are no previous studies which assessed the effectiveness of yoga therapy on craving in alcohol dependence. But there is systematic review of literature on the effectiveness of mind-body practices on smoking cessation. The systematic review included 14 clinical trials and reported that yoga and meditation based therapies are helpful in attaining drug-free smoking cessation.[16]

Another pilot study was conducted in Sweden on small number of patients of alcohol dependence (N=18), who were randomised to receive either the usual treatment (psychological and pharmacological treatment) or treatment as usual plus ten-week yoga therapy. The groups were assessed before treatment and six months after treatment. Alcohol consumption reduced more in the yoga group. However, the findings were not statistically significant and were limited by small sample size.[17]

Next, we tried to see if any improvement in the yoga group in terms of HAM-D, HAM-A, and OCDS scores varied with respect to time (Tables 5 and 6), i.e. whether the benefits continued to increase if yoga was practiced for longer time. The reduction in HAM-D scores after two weeks and one

Table 6: Comparison of HAM-D, HAM-A, OCDS scores with each other at different intervals

1 st variable	2 nd variable	p-value
HAM-D		
HAM-D (baseline)	HAM-D (2 weeks)	≤0.05
HAM-D (baseline)	HAM-D (1 month)	≤0.001
HAM-D (2 weeks)	HAM-D (1 month)	≥0.05
HAM-A		
HAM-A (baseline)	HAM-A (2 weeks)	≤0.001
HAM-A (baseline)	HAM-A (1 month)	≤0.001
HAM-A (2 weeks)	HAM-A (1 month)	≤0.01
OCDS		
OCDS at baseline	OCDS at 2 weeks	≤0.0001
OCDS at baseline	OCDS at 1 month	≤0.0001
OCDS at 2 weeks	OCDS at 1 month	≤0.0001

HAM-D=Hamilton depression rating scale, HAM-A=Hamilton anxiety rating scale, OCDS=Obsessive-compulsive drinking scale

month in case group was significant from baseline but not at one month as compared from two weeks. This means that the antidepressant effect of yoga therapy was maximum at two weeks and although the benefit continued to increase at one month, it was not statistically significant. However, the reduction in HAM-A and OCDS scores was significant both at two weeks and one month from baseline as well as at one month as compared to two weeks. In other words anxiety symptoms and craving continued to improve if yoga was practiced for longer duration.

Conclusion

Patients with alcohol dependence have high prevalence of comorbid depression and anxiety symptoms. This comorbidity can be both causal as well as an effect of alcohol use. Additionally patients of any substance dependence including alcohol report craving which limits their capacity to become abstinent even if they have adequate motivation. Our hospital is using yoga as an adjunctive mode of intervention in patients with alcohol dependence. This study tried to see if instituting a structured yoga regimen to these patients can benefit them in lowering the depressive and anxiety symptoms, and craving.

The study found benefit of yoga as an adjunctive method in reducing anxiety symptoms and craving for alcohol. In case of yoga group the reduction in depressive symptom was greatest at two weeks and no added benefit at one month as compared with the benefit at two weeks. The reduction in anxiety symptoms and craving was progressively better at two weeks and at one month.

Limitations of the study and future directions

There are certain limitations of the study. First, this was an open label study leading to potential bias and which may have impact on the results. Second, the study was done taking smaller number of cases. Similar studies can be conducted

taking larger sample size. It would also be interesting to see the effects of yoga in other substance use disorders.

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