Short Communication

Effectiveness of yogic breathing intervention on quality of life of opioid dependent users

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ABSTRACT

Introduction: The quality of life (QOL) of substance users is known to be impaired. Sudarshan Kriya Yoga (SKY), a yogic breathing program has potential to improve QOL and needs evaluation in an Indian setting.

Aims: Study aimed to assess changes in QOL in treatment seeking male opioid dependent users following practice of SKY program.

Settings and Design: Users were randomized into study (n = 55) and control group (n = 29). Study group besides standard treatment (long term pharmacotherapy with buprenorphine in flexible dosing schedule) underwent a 3 days, 12 h SKY program while control group received standard treatment alone.

Materials and Methods: World Health Organization QOL-brief scale was used to measure QOL and urine tested to assess recent drug use. Assessments were made at baseline and at 3 and 6 months.

Statistical Analysis: Data were analyzed using generalized estimation equation to assess within group change with time and the overall difference between groups for changes at assessment points.

Results: Overtime within study group, all four QOL domain scores were significantly higher at 6 months. Between group comparison showed significant increase in physical ($P < 0.05$); psychological ($P < 0.001$) and environment domains ($P < 0.001$) for study group while control group showed significant changes in social relationship domain only. Urine screening results were negative for study group indicating no drug use at 6 months.

Conclusion: SKY as a complementary therapy was found beneficial in improving QOL for group practicing it and is recommended for use as low cost and low-risk adjunct in substance treatment settings in India.

Key words: Effectiveness; India; quality of life; substance use; Sudarshan Kriya Yoga.

INTRODUCTION

Yoga as alternate complementary therapy has potential to help individuals with substance use disorders (SUDs) and its associated problems[1] as it places emphasis on adapting yogic techniques to address specific concerns of an individual[2] improves well-being;[3] and quality of life (QOL)[4] which is generally lower as compared to the general population.[5] Sudarshan Kriya Yoga (SKY), a simple rhythmic breathing technique benefits a wide range of clinical conditions including substance use.[6] Its practice improves physical health, psychological and social well-being thereby enhancing QOL.[5] Its role in promoting abstinence from substance use and improving QOL following treatment in Indian settings needs evaluation. The present study examined changes in the QOL among treatment seeking opioid dependent users following SKY breathing program.

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MATERIALS AND METHODS

Design

This was a randomized, controlled study, 84 users who satisfied inclusion criteria and provided written consent

to participate were recruited and randomized into study and control groups. The control group (n = 29) followed only the standard therapy while the study group (n = 55) followed the standard therapy and were taught group based SKY program conducted over a period of 3 days covering a total duration of 12 h.

Standard treatment

Comprised of opioid substitution therapy with buprenorphine, a partial agonist given as directly observed therapy[5] (average dose 6.0 mg) or buprenorphine-naloxone given as take home medication dispensed weekly or biweekly along with psycho-social therapy.[5]

Participant

They were Opioid dependent users seeking treatment at a community outreach clinic of a large hospital[7] functioning as a low cost treatment model for substance use with a doctor and nurse besides a psychiatric consultant visiting the clinic twice a week. The users were included if they were males, more than 18 years of age, satisfying DSM IV criteria for opiate dependence, already maintained on buprenorphine/buprenorphine-naloxone combination for at least 6 weeks during, which they are stabilized on the medication, willing to receive standard treatment as well as practice Yoga, currently using opiates by injecting route (last One month) or history of two failed abstinence attempts in case of non-injecting opiate users (following conventional treatment), were from a defined catchment area and provided informed consent. They were excluded if they had a severe physical illness or disability due to which they may be unable to participate in the program or unable to come for follow-up, presence of current psychiatric illness, impairment of cognitive functions as assessed clinically and refusal to participate in the study. No incentives were paid to the sample for participation in the study. The study was approved by the Institute Ethics committee.

The mean age of the control and study (SKY) group was 37.0 ± 9.6 years and 39.2 ± 10.4 years respectively. Heroin was the primary drug of use of more than 60% of the sample. The mean age of first use of primary drug was 22–23 years and duration of use was 13–14 years for both groups.

Yoga intervention

The yogic breathing SKY program was taught in a short course of 12 h over 3 days under the guidance of a certified teacher. The detailed schedule for 3 days is provided in Table 1. The study group practiced yoga together for 60 min under supervision in the clinic premises and was taught to practice the technique every day at home for about 30 min-Pranayama (10 min), Sudarshan Kriya (10 min), meditation (10 min). They also practiced it during their weekly follow-up to the clinic.

Assessments

Information on demographics (age, education, occupation, marital status, and employment status) including information on drug use history (duration of drug use, dependence, frequency and quantity of drug use) and physical examination at baseline only (iii) World Health Organization (WHO QOL-BREF scale) at baseline and at each follow-up assessment.

Table 1: Yoga intervention schedule

Yoga description	Duration
Day 1 and day 2	
Kanishta Pranayama: Slow Ujjai breathing (long, deep breathing with mild constriction of throat) sequentially with hands in 3 different positions (hands above the hip bone, hands in front of the chest and hands on the scapula). In each position 8 rounds of a long breath in, holding breath and long breath out followed by brief holding of breath. After completing 8 rounds in each position, rest taken for 30 s with hands in maha-mudra	5 min
Bhastrika Pranayama: Fast, forceful breathing out through the nose, accompanied by pulling arms down from upward stretched position), done in three rounds of 20 breaths each. After each round rest for 30 s with hands in maha-mudra. After a few seconds while keeping the eyes closed position changed from Vajrasana to "Sukh asana" or Padmasana	5 min
Om chanting: Hands in *Mahamudra*, chanting Om 3 times, process involves long breath in and chanting Om with long and slow breath out taking attention upwards from abdomen to chest and head gradually with each intonation of "aa", "oo" and "mm" while keeping the eyes closed	
Long Sudarshan Kriya: Rhythmical breathing process done in a guided manner using a prerecorded rhythm (in soothing voice), three rhythms of long breath, medium breath (similar to normal breathing) and rapid breath and includes a period of rest and yoga nidra where attention is taken to each part of the body. The entire process is done with eyes closed	40 min
Meditation (observation of breath)/yoga nidra (rest with observation of body parts)	10 min
Day 3	
Kanishta pranayama	5 min
Bhastrika pranayama	5 min
Om chanting	
Short Sudarshan Kriya: Breathing process in three rhythms of long breath 20 times, medium breath (similar to normal breathing) 40 times and rapid breath 40 times (without use of prerecorded rhythm) 3 such cycles with period of rest	10 min
Meditation (observation of breath)/yoga nidra (rest with observation of body parts)	10 min

World Health Organization quality of life brief scale

The WHO QOL-BREF instrument[8] has 26 items, which measure four broad domains: Physical health, psychological health, social relationships, and the environment. It has good discriminant validity, test retest reliability, and internal consistency, which ranges from 0.66 to 0.87 (Cronbach's alpha co-efficient). A WHO QOL BREF Hindi translation[9] was used. Mean QOL score for each domain were calculated using SPSS syntax of Melbourne WHO QOL Field Centre and denoted the users' perception of QOL in each domain which scaled in positive direction, that is, higher scores denoted a higher QOL.

Urine testing

At baseline and each follow-up assessment, urine screening was carried out to assess recent drug use (up to 48 h after ingestion) in both study and control group. It was conducted using an opiate strip test method,[10] which is a simple and accurate one-step drug test for the rapid detection of opiates and their metabolites in urine.

Data analysis

All data were analyzed using Statistical Package for Social Sciences (SPSS) IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp. (SPSS Inc., 2010) /STATA by comparing study and control groups at baseline and each follow-up on the assessments used. Generalized estimation equation (GEE), which is an advanced statistical method for analyzing longitudinal data and better than conventional repeated measures[11] (RMANOVA) was used to assess within group change with time and overall difference between the groups to see any paired changes between baseline, 3 and 6 months follow-up. The significance criterion was set to $P < 0.05$.

RESULTS

Finally, 63.6% of study group completed the yoga intervention. No significant differences in the demographic characteristics of the group that completed the SKY program as compared to those who did not were observed. The domain scores of the two groups over time are given in Table 2. The GEE model results showed that between the two groups over time (study vs. control) the scores of physical ($P < 0.05$); psychological ($P < 0.001$) and environment domain ($P < 0.001$) were higher in the study group indicating a better QOL. Within the group, changes were compared for baseline as compared to 3 months follow-up and 6 months follow-up separately. For study group, compared to baseline, no differences in Physical domain scores at 3 months follow-up were observed, the scores however increased significantly at 6 months follow-up ($P < 0.01$). For psychological domain, compared to baseline, scores decreased significantly at 3 months follow-up ($P < 0.01$) but increased significantly at 6 months follow-up ($P < 0.001$). For social relationships domain, scores increased significantly at both three and 6 months follow-up ($P < 0.05$). For Environment domain, scores increased significantly at both three and 6 months follow-up ($P = 0.001$). For control group, no significant change in physical, psychological and environment domain scores over time were observed except for social relationships domain, which was significantly higher at 6 months [Table 2]. No statistical differences in urine screening results between study and control group were observed at baseline (Fisher exact test, $P = 0.226$) and 3 months follow-up ($P = 0.287$). At 6 months follow-up,

Table 2: WHO quality of life domain scores at different points of assessment

Domains	Group	Baseline	3 months follow-up	6 months follow-up	Within group		Between group
					Baseline versus 3 months	Baseline versus 6 months	Effect size (95% CI)
Physical	Study	82.1±5.9	81.51±6.55	84.93*±6.27	0.56 (−1.9, 3.5) *P*=0.565	0.004 (1.37, 7.11) *P*<0.01	2.42 (0.500, 4.77) *P*<0.05
	Control	79.74±6.6	78.04±6.62	81.08±7.47	2.02 (−5.08, 1.02) *P*=0.193	1.01 (−1.63, 3.66) *P*=0.454	
Psychological	Study	82.1±7.7	81.99±6.86	87.24±7.84	4.24 (1.37, 7.09) *P*<0.01	9.46 (6.16, 12.76) *P*<0.001	6.05 (3.79, 3.82) *P*<0.001
	Control	75.73±6.2	75.93±5.46	76.85±6.47	0.12 (−2.5, 2.76 *P*=0.92	1.05 (−1.41, 3.52) *P*=0.402	
Social relationship	Study	71.12±7.2	71.81±7.95	72.77±8.45	3.26 (0.673, 5.86) *P*<0.05	4.05 (0.523, 7.59) *P*<0.05	2.18 (−0.535, 4.91) *P*=0.115
	Control	68.73±7.85	68.83±8.52	70.68±8.76	2.3 (−1.42, 6.02) *P*=0.226	4.09 (0.511, 7.67) *P*<0.05	
Environment	Study	69.57±6.2	69.94±6.97	73.73±6.09	4.4 (1.83, 6.98) *P*=0.001	8.15 (5.94, 10.37 *P*<0.001	3.53 (1.97, 5.1) *P*<0.001
	Control	66.06±3.7	65.28±2.65	67.01±5.08	−7.71 (−2.29, 0.867 *P*=0.37	1.02 (−0.78, 2.82) *P*=0.266	

CI = Confidence interval; WHO = World Health Organization

all users in the study group had negative urine test results ($P < 0.01$) indicating no recent (past 48 h) drug use.

DISCUSSION

This initial investigation examined the effectiveness of SKY[6] as an adjunctive intervention in opioid dependent individuals on substitution therapy.[5] Findings show that though the efficacy of being on standard treatment existed for both groups in improving QOL as a function of being in a treatment program. The addition of SKY further still improved QOL scores in all four domains – physical, psychological, social relations, and environmental for study group at 6 months indicating a causal relationship for these changes. Both study and control group showed lower domain scores at 3 months in physical well-being. This domain is characterized by pain, energy, sleep, mobility and activities and though being on treatment reduces pain, drug hunger, improves sleep patterns but probably this sense of improvement diminishes as treatment continues and they no longer feel any physical progress. Another possible reason for this may be that the internal standard by which patients appraise themselves shifts and the same items elicit fundamentally different answers over time. Higher and significant physical domain scores at 6 months probably indicate cumulative positive effects of SKY intervention. The psychological domain scores improved both at three and 6 months. This domain has items on positive feelings, cognitions, self-esteem, body image, negative feelings, and spirituality. It is likely that Yoga and meditation produces cognitive restructuring or change in perception of self and situations. The environmental domain has items on safety and security; home environment; finance; health social care; information, leisure; physical environment and transport. Scores showed improvement due to change in perception of the environmental situation evident both at three and 6 months. The effect size was highest for Psychological followed by environment and then physical domain. No between-group differences in social relationship domain scores probably indicates that following pharmacological treatment both groups had better personal relationships, regained trust from their families and relatives and were receiving social support. These initial study results indicate that participation in SKY program enhanced QOL of substance users undergoing the same and possibly support a biological mechanism of SKY in producing beneficial effects. Negative Urine drug screening[10] results at 6 months follow-up indicated no drug use, lapse/relapse for all in the study group. The addition of SKY breathing technique helped study group to emerge out of addiction and further possible relapses.

The strength of our study is that it is the first randomized control trial to see the effect of comprehensive yogic breathing in improving QOL and promoting abstinence among opioid dependent users. A limitation of our study is that the sample size was small; therefore, to further confirm the benefit, a larger sample size needs to be studied. Lastly, a 2:1 ratio of study and control group is not usually taken and can be avoided in the future.

CONCLUSION

The SKY intervention produced a significant change in the QOL of opioid dependent users as compared to control the group. The SKY program holds promise and can be used as a beneficial, low-risk adjunct for substance users undergoing treatment. Though proper training by a skilled teacher is essential for the safe and effective practice of SKY, its daily practice will maximize the benefits. Substance use treatment providers may be encouraged to use SKY as an adjunct to the treatment process of substance users.

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