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## A comparative study of full and partial Sudarshan Kriya Yoga (SKY) in major depressive disorder

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With the aim of finding out whether partial SKY treatment (*Ujjai + Bhastrika + Yoganidra*) has as much antidepressant efficacy as full SKY treatment (*Ujjai + Bhastrika + cyclical breathing + Yoganidra*), we randomised thirty patients of major depressive disorder (diagnosed according to DSM-IV) in two groups. One group received daily full SKY treatment (n = 15) and the other, daily partial SKY treatment (n = 15) for four weeks. Both groups were administered at the beginning of study and weekly thereafter Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI) by the same psychiatrist who was blind to the treatment status of the patients. Total scores on both inventories significantly reduced in both groups without difference between them. Twelve of the full SKY group and seven of the partial SKY group achieved a reduction of over 50% in total BDI scores (responders). This difference missed statistical significance narrowly (p = 0.058). As SKY is an effective treatment for depression, its different components merit further investigation for their antidepressant efficacy.

**Key words:** Yoga, Major depressive disorder

Earlier studies on Sudarshan Kriya Yoga (SKY) in depression found it to be an effective alternative to antidepressant drugs and electroconvulsive therapy (ECT)<sup>1,2</sup>. However, SKY is a combination of three different types of *pranayama*, viz, *Ujjai* (slow inspiration, expiration and holding of breath), *Bhastrika* (vigorous breathing with forced expiration) and cyclic breathing (cycle of slow, medium and fast breathing)

followed by *yoganidra* (tranquil state)<sup>3</sup>. There has been no study regarding the relative antidepressant effects of these components of SKY in major depressive disorder. It is likely that antidepressant effects may be mediated selectively by one or more components. If so, clinicians then can increase the relative duration of that component to increase the overall efficacy of SKY, hence this study. The present study examines the

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† Reprint requests

relative antidepressant efficacy of SKY (*Ujjai + Bhastrika* + cyclical breathing + *yoganidra*) with that of partial SKY (*Ujjai + Bhastrika + yoganidra*) in major depressive disorder.

#### Materials and Methods

Consecutive patients (n=30, males = 15) attending psychiatric services of NIMHANS hospital with DSM-IV major depressive disorder<sup>4</sup>, were recruited on the following inclusion criteria: a) age between 18 and 60 years; b) a total score of 18 or more on 17-item Hamilton Rating Scale for Depression (HRSD)<sup>5</sup>; c) absence of conditions mandating alternative treatment (e.g. ECT), viz., psychotic, catatonic, high suicidal risk (score of 4 on suicide item of HRSD) and uncooperative patients; d) consenting for SKY treatment or SKY treatment without cyclical breathing component, as the sole treatment modality as well as stay in the hospital for four weeks; e) drug-naïve or off antidepressant medication for at least the preceding four weeks or prepared for a washout period of 4 weeks if taking antidepressants for less than a week; and f) absence of contraindications to SKY treatment such as, cardiac and pulmonary disorders, epilepsy or pregnancy. None had history of substance dependence or abuse.

Social drinkers were required to refrain from alcohol use during the study period.

After admission the patients were randomly assigned to receive full SKY treatment (n = 15) or partial SKY treatment group (n=15). The procedure was as documented by Yoga Research Group<sup>3</sup>. The patients did not know about their group membership and each group practised separately. During the next four weeks, the same psychiatrist (VR) who was blind to the treatment status of these patients took responsibility for their in-patient care and assessed them before starting treatment and weekly thereafter using Beck Depression Inventory (BDI)<sup>6</sup> and Beck Anxiety Inventory (BAI)<sup>7</sup>. Patients in full SKY treatment group practised the SKY procedure while the partial SKY treatment group practised *Ujjai* and *Bhastrika* but the cyclical breathing component was replaced with regular breathing so that the duration of treatment session remained the same for both groups. Both treatments were practised once daily in the morning under the supervision of the same yoga teacher. Patients in both groups were not given any drugs during the trial period except tablet lorazepam (upto 4 mg per day) or zopiclone (upt 7.5 mg/day) if they reported significant distress on

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Table 1

Table 1

Variable

Age (yrs)

Male: Female

Recurrent

Melancholia

Family history

Illness duration

HRSD-based

BDI-based

BAI-based

Cell content

variables

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account of insomnia. An outcome criterion adopted was reduction in BDI total score by 50% or more. Those meeting the criterion were regarded as responders.

**Analysis:** Chi-square and independent sample 't' test were used to test differences between the two treatment groups. Two-way repeated measure analysis of variance (RMANOVA) was used for change in total scores of BDI and BAI over assessment occasions as well as differences between the groups. Statistical significance ( $\alpha$ ) was fixed at 5% level.

### Results

Patients were comparable on demographic and clinical variables

(Table I). The illness duration, however, was longer in the full SKY group. Table II shows the baseline and weekly total scores of patients in full and partial SKY group on various tests. Total scores on both inventories reduced over treatment weeks in both groups but there was no significant group effect (Table II). Analysis of this data revealed that there was no statistically significant difference between the full and partial SKY treatment groups on BDI and BAI at baseline, 1,2,3 & 4 weeks respectively ( $p > 0.05$  for all). Twelve patients of the full SKY group but only seven of the partial SKY group responded and this was trendworthy ( $p=0.058$ ; OR=4.6; 95% CI = 0.9-23).

Table I  
 Demographic and clinical variables of the two treatment groups

Variable	Full SKY (n=15)	Partial SKY (n=15)
Age (yrs)	29.5 (8.2)	34.2 (11.7)
Male: Female*	9:6	5:10
Recurrent depression*	6	3
Melancholia*	7	4
Family history of depression*	2	5
Illness duration (months)	6.0(3.2)	3.5(2.6)
HRSD-baseline	29.0(4.5)	28.8(5.9)
BDI-baseline	32.8(6.9)	31.1(7.8)
BAI-baseline	15.5(5.3)	19.7(11.7)

Cell contents refer to mean (SD) or \*number of patients. The groups were comparable on all variables except illness duration ( $p < 0.05$ )

Table II

Mean (SD) total scores of full and partial SKY treatment groups during trial period.

Scale	Assesment weeks Groups	Wk-0	Wk-1	Wk-2	Wk-3	Wk-4
BDI*	Full SKY (n=15)	32.8(6.9)	30.7(5.0)	25.5(4.5)	17.1(4.0)	11.1(5.2)
	Partial SKY (n=15)	31.1 (7.8)	30.1(6.6)	26.1(5.2)	20.3(5.4)	15.6(7.7)
BAI**	Full SKY (n=15)	15.5(5.3)	14.2(5.6)	10.9(5.4)	6.3(6.1)	4.0(6.1)
	Partial SKY (n=15)	19.7(11.7)	17.5(10.1)	12.9(8.0)	9.7(6.6)	7.5(6.8)

Two-way RMANOVA

\* Group effect  $p > 0.05$ ; Occasion effect,  $p < 0.001$ ; Interaction effect,  $p > 0.05$ ;\*\* Group effect,  $p > 0.05$ ; Occasion effect,  $p < 0.001$ ; Interaction effect,  $p > 0.05$ 

### Discussion

The results of our study suggest that partial SKY and full SKY treatments are equipotent with regard to their antidepressant and antianxiety effects in patients of major depressive disorder. *Bhastrika* too has some, albeit small, hyperventilation effects and hence may have effects similar to cyclical breathing. This could have narrowed the difference. On the contrary, as suggested by the higher proportion of responders in the full SKY group, a type-II error is likely. It is hence premature to reject the possibility of a more potent effect of the cyclical breathing. However, if larger studies confirm equipotency, we will be justified in replacing the cyclical breathing component of SKY with

regular breathing in the treatment of depression. Yet another limitation of this study was lack of a placebo control group. Our present findings should hence be considered as provisional because of the small number of patients ( $n = 30$ ). In addition there was an over-representation of longer duration patient in full SKY group (Table I) which may signify a poorer prognosis. For this reason we repeated the two-way (RMANOVA) statistic using illness duration as a covariate. The results were not different however. These limitations may be overcome in future studies with larger samples. As there is evidence for the efficacy of SKY in the treatment of depression, further studies to define the role of its components are desirable.

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