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IMPACT OF YOGA INTERVENTION ON SPIRITUAL WELL BEING, SLEEP QUALITY AND GUNA IN YOUNG WIDOWS: A RANDOMIZED CONTROL TRIAL

***,[1]Naorem Jiteswori Devi, [2]Kambhampati Subrahmanyam and [3]Thongam Benji Singh**

[1]Bapu Nature Cure Hospital and Yogashram, Mayur Vihar Phase-1, Delhi -110091
[2]Division of Yoga and Humanities, S-VYASA, Bangalore, Karnataka, India
[3]Svyasa University, Eknath Bhavan, Gavipuram Circle, K G Nagar, Bangalore

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ABSTRACT

Objective of the study was to evaluate the efficacy of yoga on spiritual well being, sleep quality and Guna of young widows below 50 years of age. Eighty subjects were randomly allocated to two groups. Spiritual well being (SWB), Sleep quality (PSQI) and Guna (VPI) were assessed before and after eight weeks of intervention. The data analysis showed that quality of sleep was improved in both yoga group ($P < .001$) and control group ($P=0.026$). Religious well being scores were not significantly increased in both. Regarding existential well being, significant increment ($P < .001$) were observed in yoga group but, not ($P = .075$) in control group. There was significant increase ($P = 0.001$) in Sattva Guna only in yoga group. Rajas Guna score was decreased but not statistically significant in both the group. There were significant reduction in Tamas Guna scores in yoga group ($P < 0.001$) as well as in the control group ($P = 0.032$). This study suggests that yoga can improve spiritual well being, sleep quality and Sattva Guna, thus enhance balanced state of mind on young widows.

INTRODUCTION

Yoga has been practiced in India since ancient time to promote positive health and spiritual well being. With growing scientific evidence, yoga is emerging as an important behavior-modifying practice to achieve states of health, both at physical and mental levels (Deshpande, Nagendra, and Raghuram, 2008). Due to its strong scriptural and experiential knowledge base, yoga has the potential to become an essential baseline modality in all health work, be it for cure or prevention or for promotion of positive health (Deshpande, Nagendra, and Nagarathna, 2009). Yoga offers society a conscious process to solve the problems of unhappiness, restlessness, emotional upsurges, hyperactivity etc (Nagarathna and Nagendra, 2003). Many studies are available on the effect of yoga on mental and physical health in different dimensions which have shown the efficacy of yoga on intelligence (Bloomfield, Cain, and Jaffe, 1975), physical stamina (Dash andTelles,2001), memory (Telles, Hanumanthaiah, Nagarathna, and Nagendra, 1993), concentration (Nagendra and Nagarathna, 1983), performance (Telles, Ramaprabhu, and Reddy, 2000), stress (Michalsen *et al.,* 2005), anxiety disorder (Javnbakht, Hejazi Kenari, and Ghasemi, 2009) and depressive mood (Narayana and Gopal, 2008). Out of 245 million widows in the world, there are around 34 million in India. About 40 per cent of these widows are less than 50 years of age. India has the highest prevalence of widowhood in the world (Pandey, 2011). Entering into widowhood is hazardous, painful and humiliating to a widow specially in a patriarchal society (Reddy, 2004). They are missing from the statistics of many developing countries, and rarely mentioned in the multitude of the reports on women's poverty, development, health or human rights published in the last 25 years ("Widowhood: invsible women, secluded or excluded," 2001). In developed countries, widowhood is experienced mostly by elderly women, while in developing countries it also affects younger women (Trivedi, Sareen, and Dhyani, 2009). Some studies (Schuster and Butler, 1989); (Reddy, 2004) have found that impact of widowhood is adversely much greater on psychological well-being of women. Fasoranti *et al.,* (2007) concluded that after the death of the spouse, compared to men, women have higher levels of trauma, loneliness and low self-esteem. Similarly, Chen *et*

****Corresponding author: Naorem Jiteswori Devi,***
Bapu Nature Cure hospital and Yogashram, Mayur Vihar Phase-1, Delhi -110091.

al.,(1999) has shown that widows had higher mean levels of traumatic grief, depression and anxiety symptoms compared to widower. The role of yoga with regard to its effects on spiritual well being, sleep quality and *Gunas* in young widows has not been studied thus far. Hence, the present study was designed to find out the effect of a Yoga Module in young widows through a randomized controlled trial.

Objectives

The objective was to study the effect of Yoga on sleep quality, spiritual well being and personalities (*Guna*) of young widow under 50 years of age.

MATERIALS AND METHODS

Eighty subjects, who agreed to participate in the study, were randomly allocated into two groups of equal size (40+40). Inclusion criteria included (a) young widows and, (b) age below 50 years. Exclusion criteria: (a) Substance abuse, (b) Concurrent treatment with psychotropic drugs or psychotherapy outside study, (c) Pregnancy and breast-feeding women, (d) Recent bereavement of less than 6 months, (e) Critical health implications, and (f) surgery less than six months.

Design

Randomized control trial (Yoga and wait list control groups). Eighty subjects who consented to participate in the study and who satisfied the inclusion and exclusion criteria were randomly allotted into two groups. Eighty identical small slips of paper were taken. Number 1 was written on 40 slips and on another 40, number 2 was written. All these papers were folded identically and the slips are thoroughly mixed and subjects were told to pick one slip each. Accordingly they were allotted into two groups- yoga=1 and control=2. The numbered envelopes were used to concealed sequence until the intervention was assigned. The yoga group had undergone intervention program for 8 weeks. Participants in the control group had undergone regular daily activities. Assessments were made before and after the 8 weeks of the program in the two groups. As this was an interventional study, double blinding was not possible. The answer sheets of the questionnaires were coded and analyzed only after the study was completed. The statistician who did the randomization and data analysis and the researcher who carried out assessment were blinded to the treatment status of the subjects. To prevent contamination, yoga group were told not to share their experience with others until post data were taken. It was ensured that there was no interaction between the two groups.
The experimental group was given Yoga practices for one hour and ten minutes daily (5 am to 6.10 am). The classes were conducted six days a week for eight weeks and attendance was maintained by the teachers. Two well trained yoga teachers had conducted the sessions.

Setting: Community hall - known to all the subjects, where the Yoga intervention was carried out, Manipur.

Ethical Considerations: Study was done at SVYASA University, Bangalore. The approval from Institutional Ethics Committee was obtained. Signed informed consents of all subjects were obtained after explaining the study in detail.

Assessment

Assessments were made on two groups before and after the 8 weeks of intervention.

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 (Smyth, 2012).

Spiritual Well Being (SWB)

It is composed of 20 items, 10 assess religious well being specifically and 10 of which assess existential well being. It has high test-retest reliabilities ($r = .73$ to $.99$), internal consistency reliabilities ($r = .78$ to $.94$) (Ellison and Smith, 1991). The Spiritual Well-Being Scale correlated significantly positively with Religious well-Being Scale ($r = .89$, $p < .0001$) and existential well-Being scale ($r = .90$, $P < .0001$) (Imam, Karim, Jusoh, and Mamad, 2009).

The Vedic Personality Inventory (VPI)

It is an inventory to assess three personality constructs (*Gunas*) based on their description in the most ancient Indian scriptures called Vedas. It measures the three G*unas—Sattva*, *Rajas* and *Tamas.* It has 15 items for the *Sattva Guna*, 19 for *Rajoguna* and 22 for *Tamoguna*. VPI has good internal consistency and reliability with Cronbach's alpha ranging from 0.850 for *Sattva*, 0.915 for *Rajas* and 0.699 for *Tamas*. In terms of discriminant validity, all but one facet had significant differences (Wolf, 1998).

Intervention

The intervention was for 8 weeks. Once a week (8 Sundays) there was one hour lecture session and interactive group session. For 6 days in a week, yoga practices are practiced as detailed below.

Table 1. Yoga schedule

Name of practice	Duration
Warming up	10 min
Surya Namaskara	15 min
Relaxation Techniques (QRT)- in Savasana	4 min
Asana	20 min
Relaxation techniques (DRT)- in Savasana	6 min
Pranayama	15 min

(Total duration 1 hour and 10 min)
Note: QRT: Quick Relaxation Technique; DRT: Deep Relaxation Technique.

Table 2. Theory schedule

Sundays	Topic	Notes
1st	Introduction to Yoga	Definition of yoga- Bhagavad Gita, Patanjali, Vasishtha and Swami Vivekananda and Shri Aurobindo.
2nd	Importance of Yoga practices	Asana, Pranayama, loosening exercise and breathing exercise
3nd	Four stream of Yoga	Jnana yoga, Raja Yoga, Karma yoga and Bhakti yoga.
4rd	Panca Kosa	5 sheaths of existence- Anandamaya kosa, vijnanamaya kosa, Manomaya kosa, Pranamaya kosa, Annamaya kosa.
5th	Concept of disease	Adhija-vyadhi, anadhija-Vyadhi- sara and samana.
6th	Concept of IAYT	Healing all the 5 layers of existence.
7th	Yogic Diet	Satvic food.
8th	Conclusion- Question and answers	Feedback and experiences

(Total duration-1 hour every sunday)

Statistical Analysis: Data was analyzed using SPSS version 16.0. A sample size was calculated based on previous study (Yoo and Kang, 2006) that showed an effect size of 1.47 with a power of 0.95 and alpha set to 0.05. The sample size was found to be 28. This calculation was done using G power software. The size of the sample that was actually used was 80. Independent samples't-test was done to check the homogeneity of baseline scores of the two groups. Paired t test was done to compare mean within the group and independent samples't-test was used to compare the means between the groups.

RESULTS

Out of 92 subjects who were willing to participate, only 80 satisfied the inclusion and exclusion criteria; they were selected and randomly allotted to yoga and control groups. The characteristics of the experimental and the control groups shows that the mean age of the experimental group was 41.05 years and that of the control group was 42 years. The mean duration of widowhood of experimental group was 6 years and that of control group was 6.30 years. Majority of the participants were not employed (90% in the experimental group; 97.5 % in the control group); income of majority was below Rs. 3000 (72.5% in the experimental group; 65% in the control group) (Table.3). There were no significant differences between two groups in baseline values of *Sattva, Rajas* and *Tamas* (Table 4).

Vedic Personality Inventory: The data analysis showed significant increase ($P < 0.001$) in *Sattva Guna* (balanced personality trait) in experimental group whereas in control group, there were no significant increase ($P = 0.178$). *Rajas Guna* (violent personality trait) score was decreased ($P = 0.085$) compared to the pre-test score in yoga group and in control group, it showed a slight increase ($P = 0.161$). However the increases were not statistically significant in both the cases. There were significant reduction in *Tamas Guna* (dull personality trait) scores in yoga group ($P < 0.001$) and control ($P = 0.032$). In addition, significant differences were observed between the two groups regarding *Tamas Guna* (dull personality trait) post test scores (p = .02). The decrement in the yoga group was significantly greater than in the control group (Table 5).

Quality of Sleep (PSQI): Quality of sleep was improved in both experimental group (P < 0.001) and control group (P=0.026). Significant differences were observed between the two groups post test scores. The decrement in the experimental group was significantly greater than in the control group (Table 5).

Table 3. Demographic data of young widows

Group characteristics:	Yoga	Control
Age	41.05±5.90	42±6.30
20-29	2(5%)	1(2.5%)
30-39	12(30%)	11(27.5%)
40-49	26(65%)	28(70%)
Duration of widowhood (years):	6± 3.87	6.3±4.12
1-5	18(45%)	19(47.5%)
6-10	18 (45%)	16 (40%)
11≤17	4 (10%)	5 (12.5%)
Education:		
Illiterate	14(35%)	11(27.5%)
Below High school	13(32.5%)	15(37.5%)
High school	6 (15%)	4 (10%)
Pre-University	5 (12.5%)	5 (12.5%)
Graduate	2(5%)	5 (12.5%)
Nature of Husband's death:		
Accident (road, drown etc.)	9(22.5%)	11(27.5%)
Liver/ kidney failure	14 (35%)	11(27.5%)
Sleep Apnea (breathing problems during sleep)	9 (22.5%)	7 (17.5%)
Cancer	2(5%)	4(10%)
Others	6(15%)	7(17.5%)
Family income/month(in Rs.):		
1000-3000	29 (72.5%)	26 (65%)
3000-6000	11 (27.5%)	12(30%)
6000-9000		2 (5%)
Occupation		
Labour/farmer	19(47.5%)	18(45%)
Selling vegetable/ rice/fish	6 (15%)	13 (32.5%)
weaving/knitting/ embroidery	3 (7.5%)	4 (10%)
Others	12(30%)	5(12.5%)

Table 4. Baseline values between yoga and control groups

VP Inventory	Yoga Mean±SD	Control Mean±SD	p value
Sattva	34.86±1.64	35.12±2.11	0.96
Rajas	34.71±1.167	34.52±1.24	0.82
Tamas	30.41±1.42	30.34±1.60	0.75
RWB	31.71±4.10	29.34±4.30	.873
EWB	24.61±4.76	24.59±4.78	.364
PSQI	12.35±2.56	12.53±2.20	.375

**p<0.001 and *p<0.05

Spiritual well being

Religious well being scores were not significantly increased in both the groups; however increment in yoga group was greater than in the control group (P = .001). Regarding existential well being, significant increment (P < .001) were observed in yoga group and there were no significant increase (P = .075) in control group (Table5).

Table 5. Comparison between pre and post intervention scores in the two groups

Variables	Group	Pre Mean(SD)	Post Mean(SD)	P value
PSQI	Yoga	12.35±2.56	7.16±1.37	<.001
	Control	12.53±2.20	11.91±2.33	.026
RWB	Yoga	31.71±4.10	32.97±3.58	.064
	Control	29.34±4.30	29.63±4.59	.300
EWB	Yoga	24.61±4.76	34.06±3.31	<.001
	Control	24.59±4.78	25.09±4.55	.075
Sattva	Yoga	34.863±1.647	39.408±2.214	<.001
	Control	35.126±2.11	35.305±2.269	.178
Rajas	Yoga	34.718±1.167	34.194±1.93	.086
	Control	34.525±1.240	34.76±1.19	.161
Tamas	Yoga	30.417±1.42	26.397±2.178	<.001
	Control	30.34±1.60	29.93±1.72	.032

**p<0.001 and *p<0.05

DISCUSSION

Previous studies have supported our findings. One of the studies showed that after 6 months of yoga, sleep quality had improved, whereas depression, sleep disturbances, and daytime dysfunction had decreased significantly (Chen *et al.,* 2010). Similarly it was reported that long-term yoga practice is associated with significant psycho-biological differences, including better sleep quality (Khalsa, 2004). A randomized controlled trial study on one hundred twenty eight breast cancer patients, observed that after 12 week yoga intervention, spiritual well being was improved in yoga group (p<.009). Similarly our study also showed that after eight week of yoga intervention on young widows, spiritual well being was improved.

A study conducted by Dasa (1999) showed that the *mahamantra* group had increased *Sattva guna* and decreased *Tamas* with no significant change in *Rajas Guna* scores after a month of chanting of *mahamantra*, 20 minutes daily for four weeks. Deshpande *et al.,* (2008) measured G*una* variables in a randomized control trial in normal healthy volunteers and found significant increase in *Sattva* in both the groups. Another study was done by Tikhe *et al.* (2012) to assess *Guna* (personality traits) in students undergoing Yoga Instructor's Course (YIC). The results showed decrease in *Tamas Guna*, *Rajas Guna*, and increase (P <0.01) in *Sattva Guna* scores. These findings are almost in line with the result of this study. The behavior of a human being is an expression of a combination of different *Gunas*. When we reduce *Tamas* through mastery over the mind, person become dynamic, sensitive, and sharp to move toward *Rajas* (Deshpande *et al.,* 2008). With further growth and mastery, one moves into *Sattva* a dominance that includes the qualities of truthfulness, stability, discipline, sense of control, sharp intelligence, preference for vegetarianism, truthfulness, gravity, dutifulness, detachment, respect for superiors, and staunch determination (Tikhe *et al.,* 2012). The mechanism of efficacy of yoga to increase *Sattva guna, spiritual well being and improved sleep quality* may be due to the calmness the mind achieved by doing regular yoga practice.

Conclusion

This study suggests that yoga intervention program can enhance *Sattva Guna* (balance personality trait), sleep quality and spiritual well-being among young widows. The improvement observed after eight weeks intervention showed the efficacy of yoga. It can be a cost effective treatment and bring sense of collectiveness among the young widows through this practice.

Suggestion for further research

Control group can undergo any physical activity to compensate for yoga practices. For further research, some of the physiological parameters can be monitored with longer term follow up with control engaged in some physical activity to see the results.

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