

Comparative effect of Yogasana and pranayama on depression, anxiety and stress levels in adults practitioners

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ABSTRACT

Background: Yoga is very ancient and globally accepted practice. Raja yoga has eight limbs with aasan, *pranayama* and dhyana. Practice of yoga gives various physical and mental health benefits (Sengupta P.2012). However, the effect of *yogasana* and *pranayama* practices separately on mental health problems need to be explored. **Aim & Objective:** Therefore, the aim of the study is to investigate comparative effect of *yogasana* and *pranayama* on mental status of adult practitioners. **Method:** Investigations were conducted in MDNIY with 181 *Yogasana* and *Pranayama* Certificate course participants (18-50 years, Male: 74, Female: 107). After collecting the socio-demographic data, psychological (Depression, Anxiety and stress) parameters were estimated using a Depression Anxiety Stress (DASS) (Lovi bond and Lovi bond (1995)) self-report questionnaire before and after the 3 months yoga and *pranayama* practices (Pre- post). **Result:** Data analyses suggest that *Yogasana* practitioners significantly reduce their stress score, anxiety score and depression score. *Pranayama* practitioners showed significant reduction in their stress score. Practitioners of both *Yogasana* and *pranayama* showed non-significant reduction in their scores. **Conclusion:** *Yogasana* is comparatively more effective than *pranayama* to keep mental health.

Keywords: *Yogasana, Pranayama, Depression, Stress, Anxiety*

Yoga represents a body of practices with an ancient history originally derived from India. In Sanskrit, the word yoga derives from “yuj” meaning to yoke, referring to the discipline of aligning the mind and body for spiritual goals (Lasater J 1997; Woodyard C.2011). Yoga has also been practiced for potential health benefits, with increasing attention in popular culture to prevent illness and treat disease (Woodyard C.2011). The definition of yoga encompasses a variety of practices which may include postures (asanas), breathing exercises (pranayama), meditation, mantras, lifestyle changes (e.g., diet, sleep, and hygiene), spiritual beliefs, and/or rituals (Patanjali & Shearer A 2002). Different yoga styles utilize and/or emphasize different practices reflecting the varied practice of yoga in India and the United States.

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Now-a-days in all human being stress, depression and anxiety is increasing tremendously. Modern medicine has different drugs for the treatment of mental problems like anxiety and depression, but not that effective and has lots of side effects; therefore, researches are seeking for drugless therapies. Studies suggest that Yoga help to improve the variables of self-description, psychological status, and the quality of life. Yoga as an intellectual and mental exercise, improve health feeling (Shapiro et. al. 2007; Shohani et.al. 2018). Furthermore, yoga can improve the psychological conditions for monitoring and managing stress and negative emotions, increase positive emotions, and help mental balance (Shapiro et. al. 2007; Shohani et.al. 2018). However, despite the popularity and the positive psychological and physiological effects of yogasana and pranayama, it is not widely studied to find how much it really prevents and treats mental ailments. Additionally, different limbs of yoga may have different impact on mental disease; need to be investigated in detail. Hence the present study was conducted to investigate the comparative effects of yogasana and pranayama on stress, anxiety, and depression in human adults' yoga practitioners.

METHODOLOGY

Study Sample

181 Healthy yoga course practitioners (age group 18-50 yrs, both male 74 and female 107) of 3 months yogasana and pranayama course of Morarji Desai National Institute of Yoga (MDNIY), Delhi were recruited for participation in the present study. This study is a quasi-experimental study with pre-posttest that informed consent was obtained from the participants before starting the study.

Inclusion criteria: All participants of yogasana and pranayama course filled their informed consent. **Exclusion criteria:** Participants who are not willing to participate.

Study groups

The participants applied for yogasana course and pranayama & meditation 3 months course, but few participants applied for both. On this basis, 181 participants were divided into 3 experimental groups – yogasana (103 participants), pranayama & meditation course (35 participants) and both (43 participants). 30 Healthy subjects (non-yoga practitioners) were taken as control.

Study Parameters and Tools

To collect data, a predesigned validated questionnaire [DASS 21-Depression Anxiety Stress Scale 21] was used to collect the information on, Anxiety, stress and depressive tendencies in practitioners. Identification data was collected separately. The Measures used DASS scale developed by Lovi bond and Lovi bond (1995) was used to assess depression, anxiety and stress of the male and female yoga practitioner. The scale compresses of 21 items design to capture depression ($\alpha=.89$; I felt that I had nothing to Look forward to), anxiety ($\alpha=.94$; I was aware to dryness of my mouth), and stress ($\alpha=.96$; I found it hard to wind down). With the 4 point answer scale ranging from 1(did not apply to me at all) to 4 (apply to me very much or most of the time). The validity and reliability of this standard questionnaire was examined by Sahebi et al. and Cronbach's alpha was estimated 0.7, 0.66 and 0.76 for depression, anxiety, and stress, respectively.

The questionnaire was tested 3 times (at 1-month intervals) to determine the reproducibility/test-retest reliability. In the present study population, the test-retest reliability was found to be 0.6 ($P=0.001$)

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Data Collection

In the present study data was collected from all male and female yoga practitioners. The sample was collected from the MDNIY institute, Certificate course participants. Consent form and self-report scales namely DASS scale were administered on them. Information relating to the respondents' personal factors like age, gender and dietary habit was also collected from the sample.

Identification of Stressed, anxious and depressed subjects

As per the scoring on the scale, students were divided into 3 groups. The DASS-scores of the self-report questionnaire (ranging from 0 to 63) provide an estimate of psychological behaviour in an individual subject. Children with low DASS-scores (between 0-21) can be broadly categorized as low; those with

OA-scores 22-49 as moderately and children with OA-scores 50-63 as highly anxious, stressed and depressed.

Administration of Yogasana and Pranayama & meditation

Yogasana group: Surya namaskar, tadasana, vrikshasana, Garudasana, katichakrasana, ardh-chakrasana, pada-hastasana, trikonasana, parivrita trikonasana, parshva konasana, veera bhadrasana, dandasana, padmasana, uttitha-padamasana, yoga mudra, bhadrasana, vajrasana, ushtrasana, shashankasana, janushirasana, paschimottanasana, suptavajrasana, vakrasana, ardh-matsyendrasana, mandukasana, uttana-mandukasana, gomukhasana, simhasana, kagasana, bhujangasana, shalabhasana, dhanurasana, naukasana, uttanpadasana, ardh-halasanana, pavanmuktasana, setubandhasana, sarvangasana, halasana, matsyasana, chakrasana, bakasana, mayurasana, shirshasana (Certificate course (Yogasana) prospectus, MDNIY 2018)

Pranayama & meditation Group: Recitation of hymns and shanti mantra, introductory breathing practices: abdominal, thoracic, clavicular, yogic deep breathing, kriyas relevant for pranayama: kapalbhanti, agnisara, neti, concept of purak, rechak and 66 kumbhak, anulom-vilom pranayama, nadishodhana pranayama, chandrabhedhi, suryabhedhi pranayama, ujjayi pranayama, shitali, shikari, bhramari, bhasrika, pranav, pranav jap and soham japa, mediatation –vipasana and preksha dhyana. (Certificate course (Pranayama) prospectus, MDNIY 2018)

Both Group: Above mentioned all yogasana, pranayama and meditation.

Yoga exercises and training sessions were held 3 time/weeks; 60-70 min each (postures, breathing techniques, meditation) by a specialist. Before the intervention, questionnaires were completed filled by all practitioners. The intervention lasted 3 months. At the end of the 12th session, the questionnaire of DASS-21 was again completed by women.

Statistical analysis of data

After collection of data on printed data sheets, it was double entered in Microsoft Excel Sheet and validated. A clean database was generated and copied into SPSS sheet (version 20.0). The data was analyzed using SPSS (version 20.0) (IBM, Armonk, NY, USA). Mean difference of pre-post intervention were examined for statistical significance using paired t-test, p-value ≤ 0.01 was considered significant.

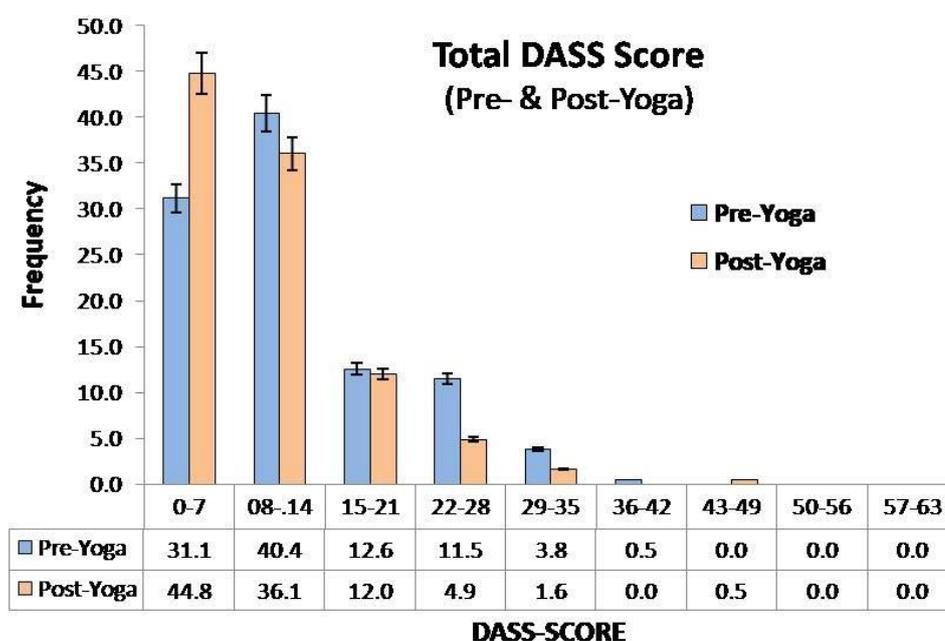
RESULTS

181 students (Male 74; Female 107) were regularly administered with Yogic Intervention (3 sessions/ week). The post-yogic DAS scores are taken after 3 months (session/week) of Intervention.

Yogic Intervention Response (on percentage of Practitioners)

Distribution of pre- and post- DAS-scores of practitioners, suggest among all; at pre-Intervention 84.1% were low DAS scorer and 15.8% was moderate DAS scorer and nobody was of highly depressive, anxious and stressful tendencies. After Yoga intervention 92.9% practitioners were fall into low category and 6.6 % of moderate category and 0.5% was of high category. The results show YPD reduces depressive, anxious and stress tendencies in majority of practitioners.

Figure 1 Effect of Yoga Practices on Total DAS-Score of Practitioners (Pre- and Post-Intervention)



Yogic-Intervention Response (On Average Stress Scores)

The pre & post -Intervention Average S-Scores of practitioners are given in Table 1. The DASS scale has 21 items but for stress tendencies has 7 items, thus on a 4 point scale, the minimum score is 0 and maximum is 21 for stress. The pre-intervention average S-score of the Yogasana practitioners (CCY, number =103) were 4.9 with a standard deviation of 4.0 which reduced to mean S-score of 3.7 with standard deviation of 3.0. The difference between Pre- and Post- Avg S-Scores are statistically significant (p-value =0.004) with the mean difference of 1.1. And for the Pranayama Practitioners (CCPM, number =35) pre-intervention score also reduce significantly (pre S-Score= 3.9 + 4.2; post S-Score = 2.2 + 3.7) with p-value= 0.02. However, the practitioners practiced both yogasana and pranayama (BOTH, number = 43) showed non-significant reduction.

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Table 1: Comparison of Average Stress Scores (S-Score) of Practitioners of Yogasana, Pranayama and Both practices (Pre- and Post- Intervention) with statistical analysis

Stress Score							
S.No.	Group	No. Of Subjects	Average S-Score		Mean Diff.	T-score (df)	P-value
			Pre-Yoga	Post -Yoga			
1	CCY	103	4.9±4.0	3.7±3.0	1.1±3.9	3.0(102)	0.004**
2	CCPM	35	3.9±4.2	2.2±3.7	1.7±4.1	2.5(34)	0.02*
3	BOTH	43	4.0±3.5	3.3±3.4	0.7±2.9	1.5(42)	0.14

CCY: Certificate Course Yogasana ; CCPM: Certificate Course Pranayama & Meditation

Yogic-Intervention Response (On Average Anxiety Scores)

The pre & post -Intervention Average A-Scores of practitioners are given in Table 2. The pre-intervention average A-score of the Yogasana practitioners (CCY, number =103) were 4.2 + 2.9 which reduced to average A-score of 3.4+ 2.4. The difference between Pre- and Post- Average A-Scores are statistically significant (p-value =0.009). However, Pranayama Practitioners (CCPM, number =35) and practitioners practiced both yogasana and pranayama (BOTH, number = 43) showed reduction but non-significant.

Table 2: Comparison of Average Anxiety Scores (A-Score) of Practitioners of Yogasana, Pranayama and Both practices (Pre- and Post- Intervention) with statistical analysis

Anxiety Score							
S.No.	Group	No. Of Subjects	Average A-Score		Mean Diff.	T-score (df)	P-value
			Pre-Yoga	Post -Yoga			
1	CCY	103	4.2±2.9	3.4±2.4	0.8±3.1	2.7(102)	0.009**
2	CCPM	35	3.5±2.6	2.9±2.8	0.5±2.8	1.1(34)	0.28
3	BOTH	43	4.4±2.7	3.7±3.0	0.6±2.8	1.6(42)	0.12

Yogic-Intervention Response (On Average Depression Scores)

The pre & post -Intervention Average D-Scores of practitioners are given in Table 3. The pre-intervention average D-score of the Yogasana practitioners (CCY, number =103) were 3.7 + 2.7 which reduced to average D-score of 2.7+ 2.4. The difference between Pre- and Post- Avg D-Scores are statistically significant (p-value =0.002). However, Pranayama Practitioners (CCPM, number =35) and practitioners practiced both yogasana and pranayama (BOTH, number = 43) showed reduction in their scores but with non-significant change.

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Table 3: Comparison of Average Depression Scores (D-Score) of Practitioners of Yogasana, Pre-Pranayama and Both practices (Pre- and Post- Intervention) with statistical analysis.

S.No.	Group	No. Of Subjects	Depression Score		Mean Diff.	T-score	P-value
			Pre-Yoga	Post-Yoga			
1	CCY	103	3.7 ± 2.7	2.7 ± 2.4	1.1 ± 3.4	3.1 (102)	0.002*
2	CCPM	35	2.9 ± 3.2	2.4 ± 3.5	0.6 ± 3.2	1.1 (34)	0.30
3	BOTH	43	3.1 ± 2.6	3.7 ± 3.7	-0.7 ± 3.2	-1.5 (42)	0.15

DISCUSSION

The following discussion attempts to understand the key findings from the present data. The key findings are: Yoga administration significantly reduces the overall DAS scores. (i) The present study showed that 3 months of intervention of yogic practices significantly reduced stress, anxiety, and depression in practitioners with Yogasana practices. (ii) However, Pranayama practitioners showed significant reduction in their stress scores only and (iii) Practitioners practices both, showed non-significant reduction in all.

As far as our knowledge is concerned, this is the first study providing information about the comparative assessment of yogasana and pranayama to understand their effect on depression, anxiety and stress tendencies.

Many studies confirmed significant positive effects of yoga in reducing stress, anxiety (Javnbakht et. al.2009; Shapiro et.al. 2007), and depression but very few assessed the comparative effect of various limbs of yoga. Study suggests reduction in anxiety during 12 week of yoga intervention compared to control group (Streeter et al. 2010). Few of the studies did not observe any significant effect of yoga on improvement in mood in patients with MS (Oken et.al. 2004), the limitation of this study is the post intervention session.

Though it is clear from the textual references that pranayama provides better care for mental health. But at the same time, it is very difficult to fulfill all the requirements of ideal pranayama practice (frequency, duration, food, etc) and if wrongly practiced can create many health hazards (Hatha pradeepika 2-17). As per the yogic text yogasana gives controlled stretch to the muscles and improves the flexibility and relax the body and mind. Hatha pradeepika (Chp-1.58) narrates the sequence of hatha yoga practice. Practices of asanas are required before one go for the practice of Pranayamas. That may be lacking in our pranayama and both group intervention. Hatha pradeepika (Chp-2.10-11) says if one practices Pranayama 4 times a day for three months, one can get the promised results.

Therefore, yogasana give dual effect, relax physical body as well as mind. Practitioners practicing both yogasana and pranayama may feel cumbersome and therefore did not showed significant reduction with their mental problems. This may be the reason for more effectiveness of yogasana compare to pranayama. Further elaborated studies are recommended to confirm this result.

CONCLUSION

Yogasanas has an effective role in reducing stress, anxiety, and depression that can be considered. Given that, the reason behind the effect of yogasana on stress, anxiety, and depression is not clear for us and may be transient, and it is suggested that future studies are done to investigate the long-term effect of yogasana on stress, anxiety, and depression. So we conclude that major portion of yogasanas should be adopted as primary intervention for Stress, anxiety, depression.

REFERENCES

- Gururaja D, Harano K, Toyotake I (2011) Kobayashi H. Effect of yoga on mental health: Comparative study between young and senior subjects in Japan. *Int J Yoga*; 4(1):7–12. doi:10.4103/0973- 6131.78173
- Javnbakht M, Hejazi Kenari R, Ghasemi M (2009) Effects of yoga on depression and anxiety of women. *Complement Ther Clin Pract.* ;15:102–4
- Lasater J. The heart of pantajali. *Yoga J.* 1997; 137:134–44
- Lovibond, P.F., & Lovibond, S.H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33, 335–343.
- Monier-Williams MA(2005). *Sanskrit English Dictionary Deluxe Edition: Etymologically and Philologically Arranged with Special Reference to Cognate Indo-European Languages.* Delhi: Motilal Banarsidass, 2005; 1333
- Oken BS, Kishiyama S, Zajdel D, Bourdette D, Carlsen J, Haas M, et al. (2004) Randomized controlled trial of yoga and exercise in multiple sclerosis. *Neurology.*;62:2058–64.
- Patañjali & Shearer, A. (2002). *The Yoga Sutras of Patanjali.* New York: Bell Tower.
- Sahebi A, Asghari MJ, Salari R. (2005) Validation of depression, anxiety and stress (DASS-21) for Iranian population. *Iran Psychol.*; 1:50–60
- Selvamurthy W, Ray US, Hegde KS, Sharma RP. (2005) Physiological responses to cold in men after six months practice of yoga exercises. *Int J Biometeorol*; 32:188–93
- Sengupta P. (2012). Health Impacts of Yoga and Pranayama: A State-of-the-Art Review. *International journal of preventive medicine*, 3(7), 444–458.
- Shapiro D, Cook IA, Davydov DM, Ottaviani C, Leuchter AF, Abrams M. (2007) Yoga as a complementary treatment of depression: Effects of traits and moods on treatment outcome. *Evid Based Complement Alternat Med.*;4:493–502.
- Shohani M, Badfar G, Nasirkandy MP, et al. (2018) The Effect of Yoga on Stress, Anxiety, and Depression in Women. *Int J Prev Med.*, 9:21. Published 2018 Feb 21. doi:10.4103/ijpvm.IJPVM_242_16
- Streeter CC, Whitfield TH, Owen L, Rein T, Karri SK, Yakhkind A, et al. (2010) Effects of yoga versus walking on mood, anxiety, and brain GABA levels: A randomized controlled MRS study. *J Altern Complement Med*;16:1145–52.
- Swatmarama.(1998) Commentary by Swami Muktibodhananda. 3 rd ed. *Hatha Yoga Pradipika*, Munger, India: Yoga Publications Trust;. p. 150
- Usha Panjwani, Gupta HL, Singh SH, Selvamurthy W, Rai UC (1995). Effect of sahaja yoga on stress management in patients of epilepsy. *Indian J Physiol Pharmacol.*; 39:111–6.
- Woodyard C. (2011). Exploring the therapeutic effects of yoga and its ability to increase quality of life. *International journal of yoga*, 4(2), 49–54. <https://doi.org/10.4103/0973-6131.85485>

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Conflict of Interest

The author declared no conflict of interest.

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