

## Original Research

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## Effects of the Common Yoga Protocol on Anxiety, Sleep Quality, Emotional Regulation, and Respiratory Rate in Women: A Controlled Pre-Post Intervention Study

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### ABSTRACT:

#### Background:

Yoga is a mind-body discipline recognized for its potential to promote psychological and physiological well-being. The International Day of Yoga (IDY) protocol offers a standardized sequence suitable for population-wide adoption. This study evaluated the impact of a one-month IDY protocol on anxiety, emotions, sleep quality, and respiratory parameters in adult females.

#### Aim:

To assess the effect of a 30-day IDY Yoga intervention on state-trait anxiety, emotional affect, sleep quality, and respiratory rate among females.

#### Materials and Methods:

A total of 62 healthy female participants were enrolled in a pre-post-controlled study and randomly assigned to an experimental (IDY Yoga) group and a control group. The intervention group practiced the IDY protocol for 60 minutes daily over 30 days. State-trait anxiety (STAI), emotional affect (PANAS), sleep quality (PSQI), and respiratory rate were assessed at baseline and post-intervention. Data were analyzed using the Wilcoxon signed-rank test and Mann–Whitney U test.

#### Results:

Participants in the IDY group showed a significant reduction in anxiety ( $p < 0.001$ ), an increase in positive affect ( $p = 0.001$ ), and a reduction in negative affect ( $p = 0.018$ ) compared to controls. Changes in sleep quality and respiratory rate were observed but were not statistically significant.

#### Conclusion:

The one-month IDY Yoga protocol significantly improved emotional well-being and reduced anxiety among adult females. Further studies with larger samples and objective physiological assessments are warranted to explore its effects on sleep and respiratory health.

## INTRODUCTION

Yoga, derived from the Sanskrit root "Yuj" meaning "to yoke" or "to unite," is a timeless discipline that integrates physical, mental, and spiritual elements to promote holistic well-being. Originating in ancient India, yoga has evolved from a spiritual practice into a globally accepted complementary and alternative medicine approach. It encompasses postures (asanas), controlled breathing (pranayama), and meditative techniques (dhyana), all aimed at achieving physical stability, emotional resilience, and mental clarity. In recent years, yoga has gained significant attention from researchers and clinicians for its therapeutic effects on various psychosomatic and lifestyle-related conditions (Telles et al., 2009; Jayawardena et al., 2020).

Several scientific studies have documented the positive effects of yoga on psychological parameters such as anxiety, stress, and emotional dysregulation. The practice of pranayama and meditation has been shown to enhance parasympathetic nervous system activity while downregulating the stress-associated hypothalamic-pituitary-adrenal (HPA) axis, thereby reducing circulating cortisol levels (Streeter et al., 2012). This modulation of neuroendocrine pathways facilitates a state of relaxation and emotional stability. For instance, Javnbakht et al. (2009) demonstrated that a two-month yoga program significantly reduced anxiety and depression in women. Similarly, Ajami et al. (2022) reported enhanced emotional regulation and positive affect following mindfulness-based yoga interventions.

Sleep, an essential physiological process closely tied to emotional well-being and autonomic regulation, is often disrupted in individuals experiencing chronic stress or anxiety. Kusumawaty et al. (2021) found that regular yoga practice significantly improved sleep scores among university students, underlining its relevance in managing stress-induced sleep disorders.

Beyond psychological benefits, yoga also exerts profound effects on physical health markers. Studies have reported improvements in body composition, cardiovascular function, respiratory efficiency, and muscular strength following regular yoga practice (Yadav et al., 2012; Catela et al., 2024). These improvements are accompanied by reductions in fatigue, anxiety, and negative emotions, supporting yoga's role as an integrative health intervention. Additionally, combining yoga with naturopathic dietary approaches has shown synergistic benefits in obesity management and metabolic regulation (Agte & Chiplonkar, 2008; Dalwadi et al., 2018).

Recognizing the widespread acceptance of yoga, the United Nations General Assembly declared June 21 as the International Day of Yoga (IDY) in 2015. This initiative, led by India, aimed to promote yoga as a preventive and promotive public health measure. The Ministry of AYUSH, Government of India, developed a standardized IDY Yoga protocol comprising 60 minutes of carefully curated yoga practices, including loosening exercises, postures, pranayama, and meditation. This protocol has been widely used in schools, workplaces, and community settings, making it ideal for population-level studies on yoga's health benefits (Anand & Telles, 2016; Mane, 2015).

Despite these developments, there remains a scarcity of structured studies evaluating the effects of the IDY protocol on multiple psychological and physiological outcomes in women. Women, due to their unique biopsychosocial factors, are more susceptible to stress, anxiety, emotional dysregulation, and sleep disturbances. Moreover, there is limited research assessing the impact of yoga interventions delivered in an online format, which has become increasingly relevant in the digital age. The existing literature often lacks rigorous design, consistent outcome measures, or population-specific analysis, which limits the generalizability of findings.

Given this background, the present study was undertaken to evaluate the impact of a 30-day online International Day of Yoga (IDY) protocol on stress, anxiety, emotional regulation, sleep quality, and respiratory rate among adult women. It was hypothesized that regular participation in the IDY Yoga protocol would result in significant reductions in anxiety and negative affect, and improvements in positive affect, sleep quality, and respiratory efficiency compared to a control group with no intervention. This study seeks to contribute to the growing body of evidence supporting yoga as a non-pharmacological, holistic approach to women's mental and physical health.

## 2.1 Ancient Literature Review

### Anxiety

From Bhagavad Gita: Chapter 12 - Shloka 15th

यस्मान्नोद्विजते लोको लोकान्नोद्विजते च यः ।  
हर्षामर्षभयोद्वेगैर्मुक्तो यः स च मे प्रियः ॥ 15 ॥

*yasmānnodvijate loko lokānnodvijate ca yaḥ ॥*

*harṣāmārṣabhayodvegairmukto yaḥ sa ca me priyaḥ ॥*

॥ 12.15 ॥

Those who are not a source of annoyance to anyone and who in turn are not agitated by anyone, who are equal in pleasure and pain, and free from fear and anxiety, such devotees of Mine are very dear to Me. (Mukundananda, 2014)

Bhagavad Gita: (Chapter 1 - Shloka 28th)

दृष्ट्वेमं स्वजनं कृष्ण युयुत्सुं समुपस्थितम् ॥ 28 ॥  
सीदन्ति मम गात्राणि मुखं च परिशुष्यति ।

*dr̥ṣṭvemaṁ svajanaṁ kṛṣṇa yuyutsuṁ samupsthitam ॥*

*sīdanti mam gātrāṇi mukhaṁ ca pariśuṣyati ॥*

॥ 1-28 ॥

Arjun said: O Krishna, seeing my own kinsmen arrayed for battle here and intent on killing each other, my limbs are giving way and my mouth is drying up.

Bhagavad Gita: (Chapter 6 - Shloka 34th)

चञ्चलं हि मनः कृष्ण प्रमाथि बलवद्दृढम् ।

तस्याहं निग्रहं मन्ये वायोरिव सुदुष्करम् ॥ 34 ॥

*cancalaṁ hi manaḥ kṛṣṇa pramāthi balavaddṛḍham ॥*

*tsyāhaṁ nigrahaṁ manye vāyoriva suduṣkaram ॥*

॥ 6.34 ॥

The mind is very restless, turbulent, strong and obstinate, O Krishna. It appears to me that it is more difficult to control than the wind.

### Emotions

Emotion from Bhagavad Gita: (Chapter 1st - Shloka 29th – 31st )

वेपथुश्च शरीरे मे रोमहर्षश्च जायते ॥ 29 ॥

गाण्डीवं संसते हस्तात्त्वक्चैव परिदह्यते ।

न च शक्नोम्यवस्थातुं भ्रमतीव च मे मनः ॥ 30 ॥

निमित्तानि च पश्यामि विपरीतानि केशव ।

न च श्रेयोऽनुपश्यामि हत्वा स्वजनमाहवे ॥ 31 ॥

*vepathuṣṇa cārēre me romaharṣaḥ cā jāyate ॥*

॥ 1-29 ॥

gäëöévaà sraàsate hastättvakcai va parédahyate |  
na ca çaknomyavasthätuaè bhramatéva ca me manaù | |

|| 1-30 ||

nimittäni ca paçyāmi viparétāni keçava |  
na ca çreyo'nupaçyāmi hatvä svajanamāhave | |

|| 1-31 ||

Here Arjun has addressed Shree Krishna as *Keshava*, killer of a demon called Keshi. Yet, for Arjun the thought of killing his own relatives troubled him to such an extent that, his body started to tremble. He was unable to even hold his magnificent bow *Gandīn*, which could emit sounds that petrified even the most powerful enemies. Arjun had become so disillusioned that superstition started gripping him. He could only see bad omens indicating severe devastation. Thus, he felt it would be a sin to engage in such a battle. (Mukundananda, 2014b)

**Bhagavad Gita: (Chapter 2nd - Shloka 62th )**

ध्यायतो विषयान्नुंसः सङ्गस्तेषूपजायते |  
सङ्गात्सञ्जायते कामः कामात्क्रोधोऽभिजायते | | 62 | |

dhyāyato viñayānpuāsaù saigasteñüpajāyate |  
saigātsaijāyate kāmāù kāmātkrodho'bhiajāyate | |

|| 2.62 ||

While contemplating on the objects of the senses, one develops attachment to them. Attachment leads to desire, and from desire arises anger.

**Bhagavad Gita: (Chapter 2nd - Shloka 63th )**

क्रोधाद्भवति सम्मोहः सम्मोहात्स्मृतिविभ्रमः |  
स्मृतिभ्रंशाद् बुद्धिनाशो बुद्धिनाशात्प्रणश्यति | | 63 | |

krodhadbhavati sammohaù sammohatsmātivibhramaù |  
smātibhrançād buddhināço buddhinaçātpraëçyati | |

|| 63 ||

Anger leads to clouding of judgment, which results in bewilderment of memory. When memory is bewildered, the intellect gets destroyed; and when the intellect is destroyed, one is ruined.

**Sleep**

**Bhagavad Gita: (Chapter 6th – shloka 17th)**

युक्ताहारविहारस्य युक्तचेष्टस्य कर्मसु |  
युक्तस्वप्नावबोधस्य योगो भवति दुःखहा | | 17 | |

yuktāhāravihārasya yuktaceñōasya karmasu |  
yuktasvapṛāvabodhasya yogo bhavati duḥkhaḥ | |

|| 6.17 ||

But those who are temperate in eating and recreation, balanced in work, and regulated in sleep, can mitigate all sorrows by practicing yoga.

(Mukundananda, 2014)

## From Mandukya Upanishad

Upanishads are the treasure of knowledge. Mandukya Upanishad is the most difficult and smallest Upanishad among all the hundred and eight Upanishads, which comprises only twelve passages. It talks about an entire range of human consciousness beginning from the walking state and ending with the super conscious state.

According to Upanishads- Sleep is a state of mind. Vyuṭwan (Waking), and dreaming are other two states and a common man's mind keeps switching between these 3 states.

The yogi through practice reaches the fourth state – turīya. (Mandukya upanishad)

sarvāḥ hyatad brahma ayamātmā brahma so'yamātmā catuṅpāt ||

|| M. up 2 ||

- Every objects in this creation are nothing but Brahman. It is not only objective existence but the subjective self within (Atman) is also Brahman. Objective existence is nothing but an emanation of the Reality, which is present behind the subject. This Reality manifest in the subject in four conditions – walking state (jagrit), dreaming state (swapna), deep sleep (sushupti), super – consciousness / transcendent state (turiya).

## Physiology of sleep

Yadā tu manasi klānte karmātmanaḥ klamānvitāu |

Viñayebhyo nivartante tadā svapiti mānavaḥ || B.Gita-27-35 ||

When body and mind are fed up with the action, then the mind becomes incapable to focus on action and sense organs also getting fatigue because of too much workload. Which results in the body going into a state of sleep.

## Types of sleep

Tamobhavā ckleṇma samudbhavā ca manāḥ cāreraḥ cramasambhavā ca |

Agantuké vyādhyānuvartini ca rātrīsvabhāva prabhavā ca nidrā |

|| ca saḥ 21st chapter ||

Charaka Samhita explained about the six types of sleep, they are as follows

Tamobhava nidra - the sleep happening due to predominant of tamoguna in mind.

Clenmasamudbhava nidra – the sleep happening due to excess kapha dosha in the body.

Cramasambhava nidra – state of sleep due to tiredness in both mind and body.

Agantuki nidra – sleep due to the injury to the body.

Vyadhyānuvartine nidra – sleep due to particular diseases.

Rātrīsvabhavaprabhava nidra – the sleep which we are getting daily at night.

## Patanjali Yoga Sutras

### Symptoms of stress

Patanjali describes the symptoms of mental distraction:

दुःखदौर्मनस्याङ्गमेजयत्वश्वासप्रश्वासा विक्षेपसहभुवः 1-31.

Duḥkhadaurmanasyāṅgamejayatvaçvāspracvāsā vikṣepasahabhuvāḥ | pa yo su 1-31 ||

Mental distraction leads to pain or unhappiness; unhappiness leads to depression, because of depression shaking of the body comes and due to the shaking of the body unrhythmic breathing or breathlessness comes.

## Causes of pain

In Patanjali Yoga Sutra Maharshi Patanjali described about five kleshas or causes of pain:

Avidyāsmītarāgadveṇābhiniveśāu paścakleṣāu

|| pa yo su- 2-3 ||

Stresses are originated from different mental and emotional hindrances like ignorance of our true nature, i-ness or egoism, liking, disliking and fear of death. But this is not our original state, our original state is totally stressed free and blissful, which is the source of knowledge, creativity, and freedom. Even though we are getting stress due to lack of awareness, misconception, ego, desire, anger, greed, jealousy, attachment etc. Maharshi Patanjali beautifully describes the basis of pain:

## व्याधिस्त्यानसंशयप्रमादालस्याविरति भ्रान्तिदर्शनालब्धभूमिकत्वानवस्थितत्वानि चित्तविक्षेपास्तेऽन्तरायाः (1/30)

Vyādhistyānaśaṅkayapramādālasyāvīratibhrāntidarśanālabdhabhūmatvānavasthitatvāni cittavikṣepāste'ntarāyāu || pa yo su 1-30 ||

Disease, dullness, doubt, carelessness, laziness, craving for worldly pleasure, delusion, inability to achieve the final stages and instability are the nine obstacles for the mental peace which leads to stress or pain.

Maharshi Patanjali gave the solution to remove from obstacles:

Svāpnaḥśāntirānāmbhānāpāyau su 1-38.

Svapnanidrāṇānāmbhānāpāyau su 1-38 ||

Mind can be made stable by the knowledge of dream and sleep for support.

## AIMS AND OBJECTIVE

### Aim

To study the effect of IDY Yoga practices on state trait anxiety, emotions, sleep quality and respiratory parameters among general population- Females

### Objective

To observe the change in STAI score, Pittsburgh sleep questionnaire scale, PANAS scale, Respiratory rate, after practicing IDY yoga practices

### Hypothesis

IDY practice for 60 minutes effect trait and Trait Anxiety, emotions, sleep quality, Respiratory rate in Females.

### Null-Hypothesis

IDY practice for 60 minutes will not affect trait and Trait Anxiety, emotions, sleep quality, Respiratory rate, in Females.

## MATERIALS AND METHODOLOGY

### Study setting and Design

This study followed a pre-post case-controlled trial design conducted over a 30-day period. The participants were recruited from Delhi and Delhi NCR between January–February 2022.

### Participants and Sampling

A total of 62 healthy female volunteers, aged between 25 to 55 years, were enrolled using simple convenience sampling. Participants were randomly allocated into two equal groups (n = 31 each): the experimental group (Group A) and the control group (Group B), using a computer-based randomization tool (Research Randomizer).

## Inclusion Criteria

- Female participants aged between 25 and 55 years.
- Willingness to participate for the full 30-day duration and attend online yoga sessions regularly
- Ability to understand instructions in Hindi or English and provide informed consent
- No current participation in any other structured physical or mindfulness program.

## Exclusion Criteria

- Female participants aged below 25 and above 55 years
- Women currently undergoing psychological, psychiatric, or pharmacological treatment for anxiety, depression, or sleep disorders
- Individuals with chronic systemic illnesses
- Presence of acute musculoskeletal or respiratory conditions that contraindicate intervention like recent injury or severe asthma etc.
- Pregnant or lactating women
- Participants with a history of regular yoga practice (more than 2 days/week) in the past 6 months

## Sample Size

The sample size was calculated using G\*Power software (version 3.1.94) with an alpha level of 0.05 and power of 0.95, based on the BHT variable effect size reported in a previous study (Act, 2019). The required sample size was determined to be 62 participants (31 per group)

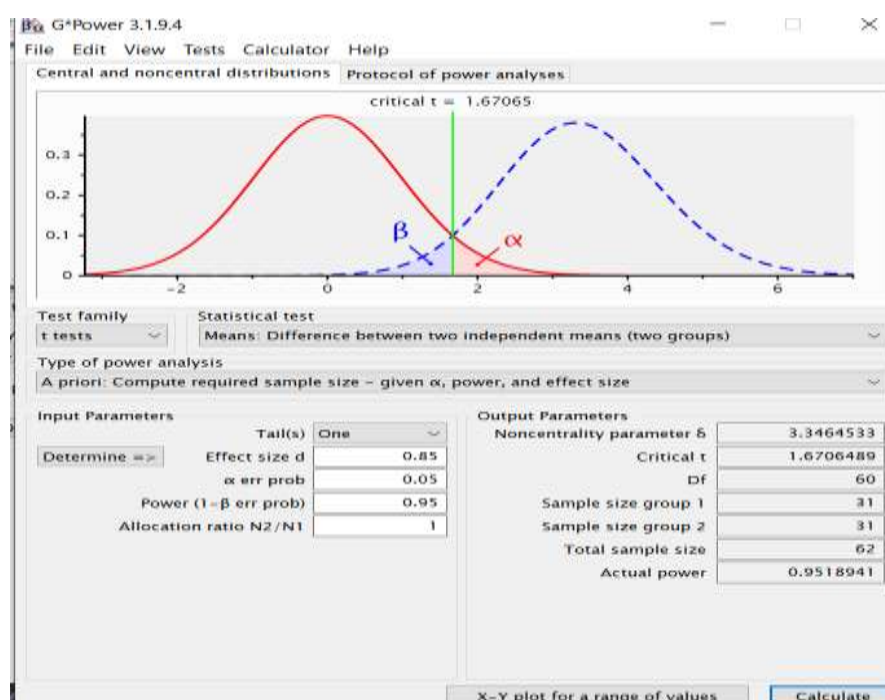


Figure 1: sample size calculation using Gpower software

## Study Tools

The following validated tools were used to assess the psychological and physiological parameters:

- **State-Trait Anxiety Inventory (STAI):** to measure state and trait anxiety levels
- **Pittsburgh Sleep Quality Index (PSQI):** to assess subjective sleep quality
- **Positive and Negative Affect Schedule (PANAS):** to evaluate emotional affect

**Respiratory Rate (RR):** measured manually by observing the number of breaths per minute at rest

All assessment tools were explained in detail to participants before the baseline evaluation.

Data collection was conducted twice: on Day 1 (pre-intervention) and on Day 30 (post-intervention).

## **Intervention**

Participants in Group A (Experimental group) underwent a 60-minute daily yoga session for 30 consecutive days based on the International Day of Yoga (IDY) protocol. The session included:

### **IDY yoga protocol**

**Duration: 60min**

| Sl. no | Practice Name                                                                                                                                                                                                                                                                                                                  | Time       |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 1      | Opening prayer                                                                                                                                                                                                                                                                                                                 | 30 seconds |
| 2      | Loosening practices<br>Neck bending<br>Neck rotation<br>Shoulder moment up & down<br>Shoulder rotation<br>Kati Shakti vikasaka<br>Knee rotation                                                                                                                                                                                | 6 minutes  |
| 3      | Yoga asanas<br>Standing posture<br>Tadasana<br>Vrikshasana<br>Padahasthasana<br>Ardhachakrasana<br>Trikonasana<br>Sitting posture<br>Bhadrasana<br>Vajrasana<br>Ardha-ustrasana & ustrasana<br>Shasankasana<br>Uttita mandukasana<br>Vakrasana<br>Prone posture<br>Makrasana<br>Ardha halasana<br>Pavanmuktasana (2 variation) | 28 minutes |

|   |                                                                                                                                                                      |            |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 4 | Pranayama<br>Kapalbhati (few repetition – 3 round)<br>Nadishudhi pranayama (12 repetition)<br>Shitali pranayama (9 repetition)<br>Bhramri pranayama (few repetition) | 15 Minutes |
| 5 | Relaxation in savasana                                                                                                                                               | 10 Minutes |
| 6 | Closing Prayer                                                                                                                                                       | 30 second  |
|   | Total time                                                                                                                                                           | 60 minutes |

All sessions were conducted online under the supervision of a certified yoga therapist.

Participants in Group B (Control group) did not receive any yoga intervention and were advised to continue their normal daily routines without any structured physical or mindfulness activity.

## Data Collection Timeline

**Day 1** : Pre-intervention data collected for both groups

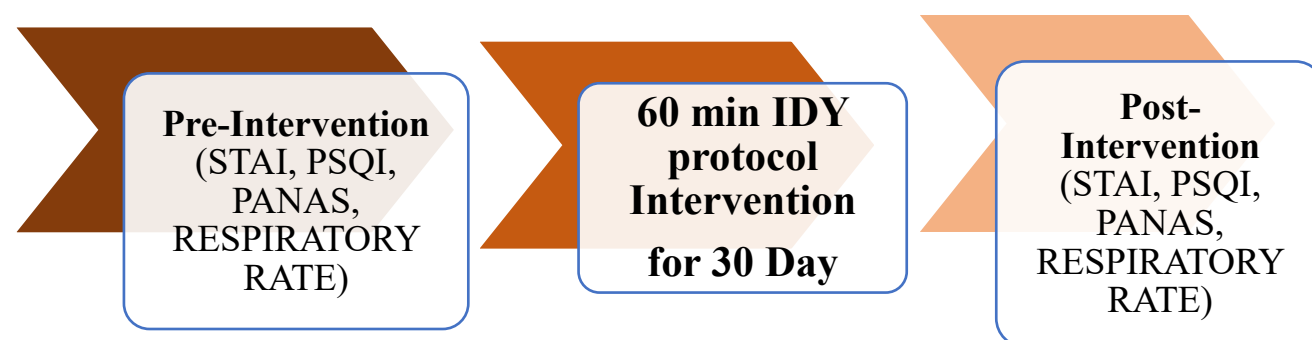
**Day 1-30** : Daily yoga intervention provided to

**Group A** (experimental group) though,

**Group B** (**control group**) maintained usual routine and kept waitlisted.

**Day 30** : Post-intervention data collected for both groups

## **EXPERIMENTAL GROUP**



## **CONTROL GROUP**



**Figure 2.** CONSORT Diagram

## Assesment Tools

### STAI SCALE:

The State- Trait Anxiety Inventory (STAI) is a generally used measure of particularity and state anxiety (Sydeman, 2018). It can be used in clinical settings to diagnose anxiety and to distinguish it from depressive runs. It also is frequently used in investigation as an index of caregiver distress Form Y, its most popular interpretation, has 20 particulars for assessing trait anxiety and 20 for state anxiety. State anxiety particulars include “I’m tense; I’m upset” and “I feel calm; I feel secure.” particularity anxiety particulars include “I worry too important over something that really does n’t matter” and “I’m happy; I’m a steady person. “All particulars are rated on a 4-point scale (e.g., from”nearly nothing”to” almost always. Advanced scores indicate lesser anxiety. STAI is applicable for those who have at least a sixth- grade reading position.

### PITTSBERG SLEEP SCALE:

The Pittsburgh Sleep Quality Index (PSQI) is a tone- report questionnaire that assesses sleep quality over a 1- month time interval. The measure consists of 19 individual particulars, creating 7 factors that produce one global score, and takes 5 – 10 moments to complete. Developed by experimenters at the University of Pittsburgh, the PSQI is intended to be a standardized sleep questionnaire for clinicians and experimenters to use with ease and is used for multiple populations. The questionnaire has been used in numerous settings, including exploration and clinical conditioning, and has been used in the opinion of sleep diseases. Clinical studies have set up the PSQI to be trustworthy and valid in the assessment of sleep problems to some degree, but more so with tone- reported sleep problems and depression- related symptoms than actigraphy measures (Buysse, Reynolds, Monk, Berman,&Kupfer,1989).

### PANAS SCALE:

One constantly used measure for general affective countries is the Positive and Negative Affect Schedule. Actors completing the PANAS are asked to rate the extent to which they sustained each out of 20 feelings on a 5- point Likert Scale ranging from" veritably slightly" to" veritably important". The exact instructions may vary according to the purpose of the study Actors may be asked how they feel right now or during longer ages of time (e.g. during the once time). Half of the presented emotion words concern negative affect (worried, worried, shamed, guilty, hostile, perverse, nervous, jittery, frightened, scared), Another half positive affect (interested, alert, attentive, agitated, enthusiastic, inspired, proud, determined, strong, active). The PANAS has been regarded as a largely dependable measure for non-clinical populations. Independent confirmation studies indicate that the measure demonstrates excellent construct validity. Anyhow of its wide use, PANAS has several limitations that experimenters should be apprehensive of in the selection process. As the original proposition suggests, affect is a bipolar construct with a mixture of valence and thrill. still, the categorization of positive emotion and negative emotion displays unipolarity that's contrary to its theoretical base. Another issue could be seen as the literal constraints. Firstly, developed as a measure for moods, The particulars in PANAS represent a blend of different constructs like affect, emotion and mood. Some particulars don't fall into any of the orders, for sample, upset and nervous (Magyar- Moe, 2009).

## RESPIRATORY RATE:

Manually counted by observing thoraco-abdominal movement per minute in a resting state.

## DATA COLLECTION, EXTRACTION AND ANALYSIS

### Data collection

All data were collected using structured Google Forms. Participants completed the questionnaires on Day 1 and Day 30. Assistance was provided by the research team to ensure understanding of the questions and accurate responses.

### Data Extraction and Scoring

Data were downloaded from Google Forms and compiled in Excel format. Scores were computed based on respective tool guidelines and verified for completeness before analysis.

### Handling of Missing Data and Bias Prevention

Incomplete or improperly filled questionnaires were excluded. Participants were guided at both data collection points to reduce reporting bias. No missing data remained at final analysis.

### Statistical Analysis

Data analysis was performed using JASP software (version 0.16.0.0).

- Normality was assessed using the Shapiro–Wilk test. Data were found to be non-normally distributed.
- Hence, non-parametric tests were used:
- Wilcoxon signed-rank test for within-group (pre–post) comparisons
- Mann–Whitney U test for between-group comparisons
- Statistical significance was set at  $p < 0.05$ .

### Quantitative Variable Handling

Scores were retained as continuous variables (e.g., mean  $\pm$  SD). No categorical cutoffs were applied. Where relevant (e.g., PANAS Negative), pre-post differences were calculated and tested across groups.

## RESULT

Demographic details of the participants

All of the Sixty participants were participated in this study. There was only Female (n=18, 45%) participant.

**Table 1** Demographic Distribution

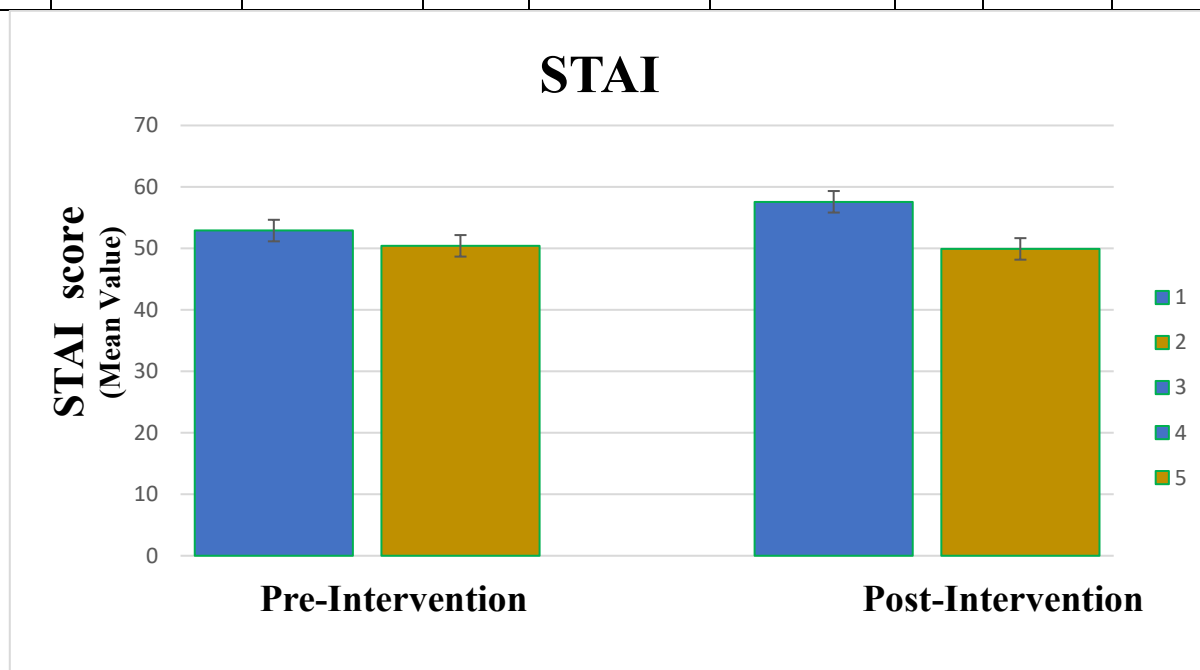
| Particulars       | Distribution (number of subjects) | Distribution (in percentage) |
|-------------------|-----------------------------------|------------------------------|
| <b>Gender:</b>    |                                   |                              |
| Female            | 62                                | 100%                         |
| <b>Age range:</b> |                                   |                              |
| 25-40             | 52                                | 83.87%                       |
| 41-55             | 10                                | 16.13%                       |

## STAI

In the within-group assessment, since the data was found to be not normally distributed in the baseline, Wilcoxon signed-rank t-test was conducted. Mean pre STAI ( $47.903 \pm 7.735$ ) was found to have decreased considerably post the practice of Yoga ( $45.161 \pm 10.730$ ) which is statistically significant ( $p < 0.001$ ). Whereas the analysis conducted on the data obtained from control group showed increased in anxiety. The mean pre STAI is ( $47.290 \pm 10.007$ ) and mean post STAI is ( $57.581 \pm 3.063$ ) with statistically significant p value ( $p < 0.001$ ). In between group t-test analysis conducted using Mann Whitney, the anxiety was found with a considerable change across the groups as indicated by a significant p-value ( $p < 0.001$ ) (Table 3) and (Graph 2). This clearly indicates that IDY Yoga practices are beneficial in reducing the stress and anxiety in the practicing group whereas the non-practicing people showed increased stress and anxiety.

**Table 3:** Pre-Post Changes in State-Trait Anxiety (STAI) in Control and Yoga Groups

|      | Control             |                    |         | Yoga               |                     |         | Mann whitney |              |
|------|---------------------|--------------------|---------|--------------------|---------------------|---------|--------------|--------------|
|      | Pre Intervention    | Post Intervention  | P value | Pre Intervention   | Post Intervention   | P value | Pre vs pre   | Post vs post |
| STAI | $47.290 \pm 10.007$ | $57.581 \pm 3.063$ | $<.001$ | $47.903 \pm 7.735$ | $45.161 \pm 10.730$ | 0.190   | 0.955        | $<0.001$     |



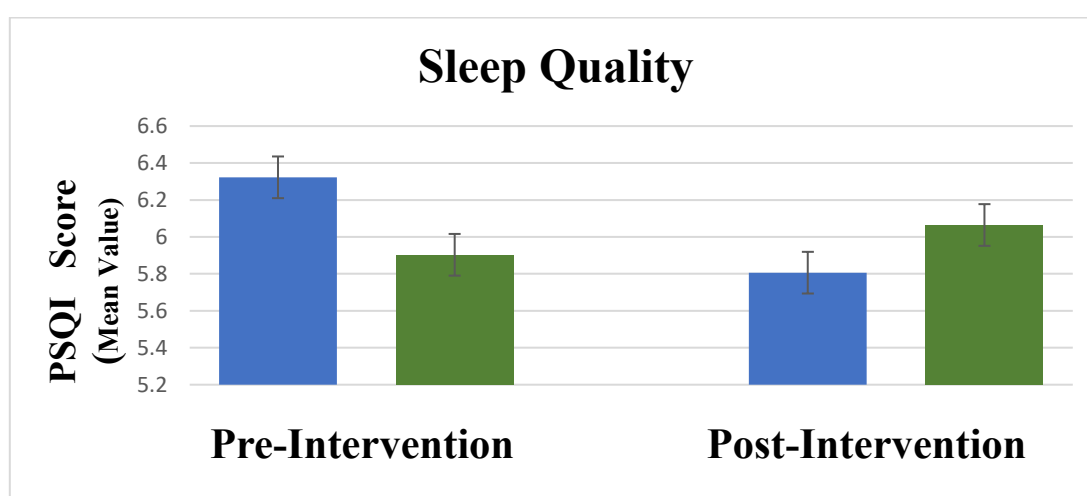
**Figure 3:** Pre-Post Mean Changes in Anxiety (STAI) Scores Among Study Participants

## PSQI SCORE

In the within-group assessment, since the data was found to be not normally distributed in the baseline, Wilcoxon signed-rank t-test was conducted. In the experimental group sleep quality Pre PSQI ( $5.903 \pm 2.495$ ) considerably decreased to Post PSQI ( $6.065 \pm 2.920$ ), which is statistically not significant ( $p = 0.740$ ). Whereas the analysis conducted on the data obtained from control group showed increased in sleep quality with Pre PSQI ( $6.323 \pm 2.688$ ) and Post PSQI ( $5.806 \pm 2.548$ ). P value is statistically non-significant ( $p = 0.542$ ). This indicates that the quality of sleep is not changed statistically significantly in any of the groups.

**Table 4:** Pre-Post Changes in Sleep Quality (PSQI) in Control and Yoga Groups

|                   | Control           |                   |         | Yoga              |                   |         | Mann whitney |              |
|-------------------|-------------------|-------------------|---------|-------------------|-------------------|---------|--------------|--------------|
|                   | Pre Intervention  | Post Intervention | P value | Pre Intervention  | Post Intervention | P value | Pre vs pre   | Post vs post |
| <b>PSQI SCORE</b> | 6.323 $\pm$ 2.688 | 5.806 $\pm$ 2.548 | 0.542   | 5.903 $\pm$ 2.495 | 6.065 $\pm$ 2.920 | 0.740   | 0.510        | 0.910        |



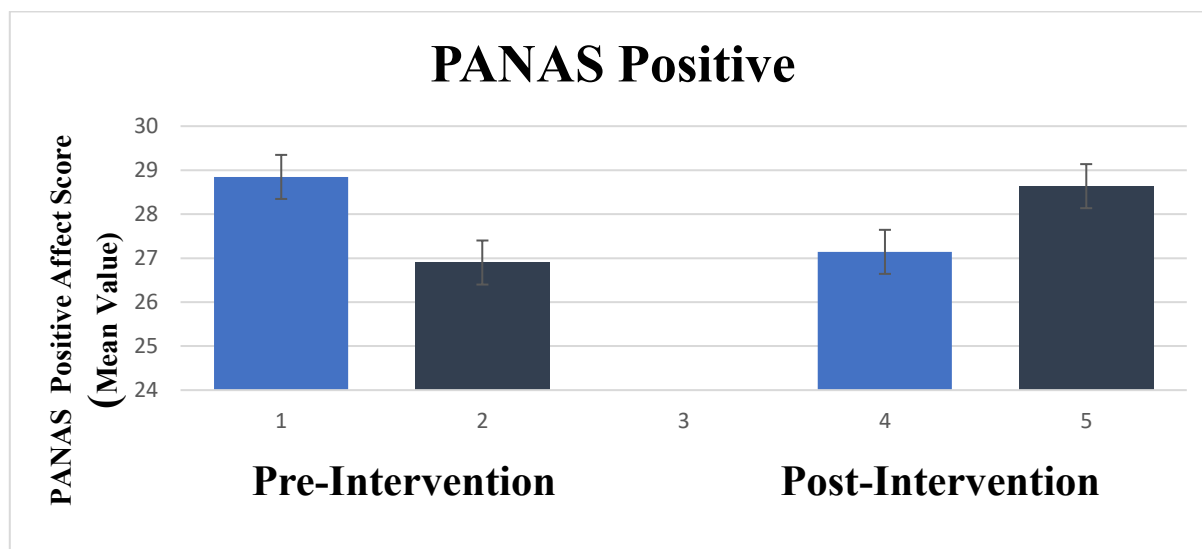
**Figure 4:** Pre-Post Mean Changes in Sleep Quality (PSQI) Among Study Participants

## PANAS +VE

In the within-group assessment, since the data was found to be not normally distributed in the baseline, Wilcoxon signed-rank t-test was conducted. In the experimental group PANAS positive affect Pre mean is (26.677  $\pm$  7.816) was found to have increase to Post (33.484  $\pm$  8.850). This is statistically significant with (p=0.001). Whereas the analysis conducted on the data obtained from control group showed slightly increased in positive affect. The pre PANAS positive is (26.613  $\pm$  5.708) and Post PANAS positive is (28.129  $\pm$  7.907) with statistically non-significant p value (p=0.369). In between group t-test analysis conducted using Mann Whitney, the positive effect was found with a considerable change across the groups as indicated by a significant p-value (p = 0.018) (Table 5) and (Graph 4). This clearly indicates that IDY yoga practices for one month is effective in improving the Positive thinking when compared to the controls.

**Table 5:** Pre-Post Changes in Positive Affect (PANAS-Positive) in Control and Yoga Groups

|                  | Control            |                    |         | Yoga               |                    |         | Mann whitney |              |
|------------------|--------------------|--------------------|---------|--------------------|--------------------|---------|--------------|--------------|
|                  | Pre Intervention   | Post Intervention  | P value | Pre Intervention   | post Intervention  | P value | Pre vs pre   | Post vs post |
| <b>PANAS +VE</b> | 26.613 $\pm$ 5.708 | 28.129 $\pm$ 7.907 | 0.369   | 26.677 $\pm$ 7.816 | 33.484 $\pm$ 8.850 | 0.001   | <0.899       | 0.018        |



**Figure 5:** Pre-Post Mean Changes in Positive Affect (PANAS-Positive) Among Study Participants

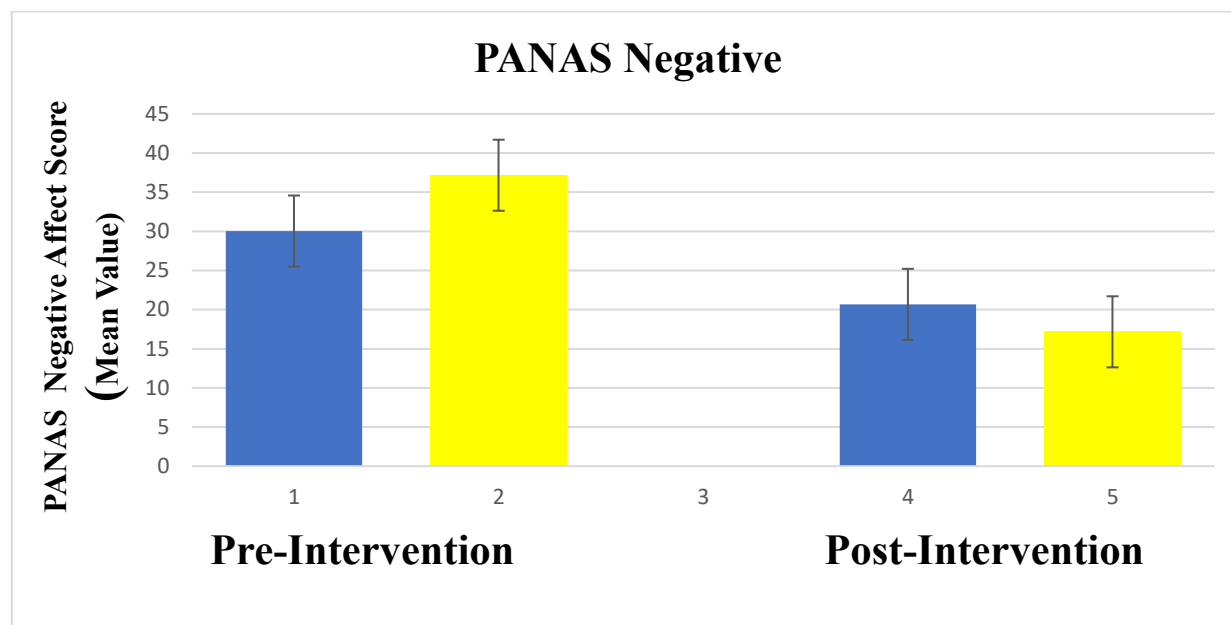
## PANAS -VE

In the within-group assessment, since the data was found to be not normally distributed in the baseline, Wilcoxon signed-rank t-test was conducted. The experimental group PANAS negative affect Pre is ( $20.323 \pm 7.296$ ) was found to have decreased to PANAS negative affect Post ( $19.806 \pm 8.344$ ). This is not statistically significant ( $p=0.992$ ). Whereas control group PANAS negative effect Pre is ( $17.161 \pm 3.850$ ) and PANAS negative effect Post is ( $24.0 \pm 9.216$ ). This is statistically significant increase in PANAS negative effect ( $p=0.003$ ). In between group t-test analysis conducted using Mann whitney, the negative effect was found with a considerable change across the groups as indicated by non-significant p-value ( $p = 0.212$ ) (Table 6) and (Graph 5).

The raw score is taken and pre-post difference in the PANAS negative effect is calculated on that for both control and experimental groups. Then these PANAS negative effect postvalues are subjected to Mann whitney test to get the significance of difference of pre-post difference in control and experimental groups. This ( $P<0.05$ ). This indicates that the experimental groups PANAS negative effect is reduce statistically significantly when compared to the control group. This clearly indicates that the IDY yoga practices decrease the negative thinking in practitioners for one month when compared to those who do not practice IDY Yoga whose negative thinking increased significantly.

**Table 6:** Pre-Post Changes in Negative Affect (PANAS-Negative) in Control and Yoga Groups

|                    | Control            |                   |         | Yoga               |                    |         | Mann whiney |              |
|--------------------|--------------------|-------------------|---------|--------------------|--------------------|---------|-------------|--------------|
|                    | Pre Intervention   | Post Intervention | P value | Pre Intervention   | Post Intervention  | P value | Pre vs pre  | Post vs post |
| <b>PANAS -- VE</b> | $17.161 \pm 3.850$ | $24.0 \pm 9.216$  | 0.003   | $20.323 \pm 7.296$ | $19.806 \pm 8.344$ | 0.992   | 0.058       | 0.212        |



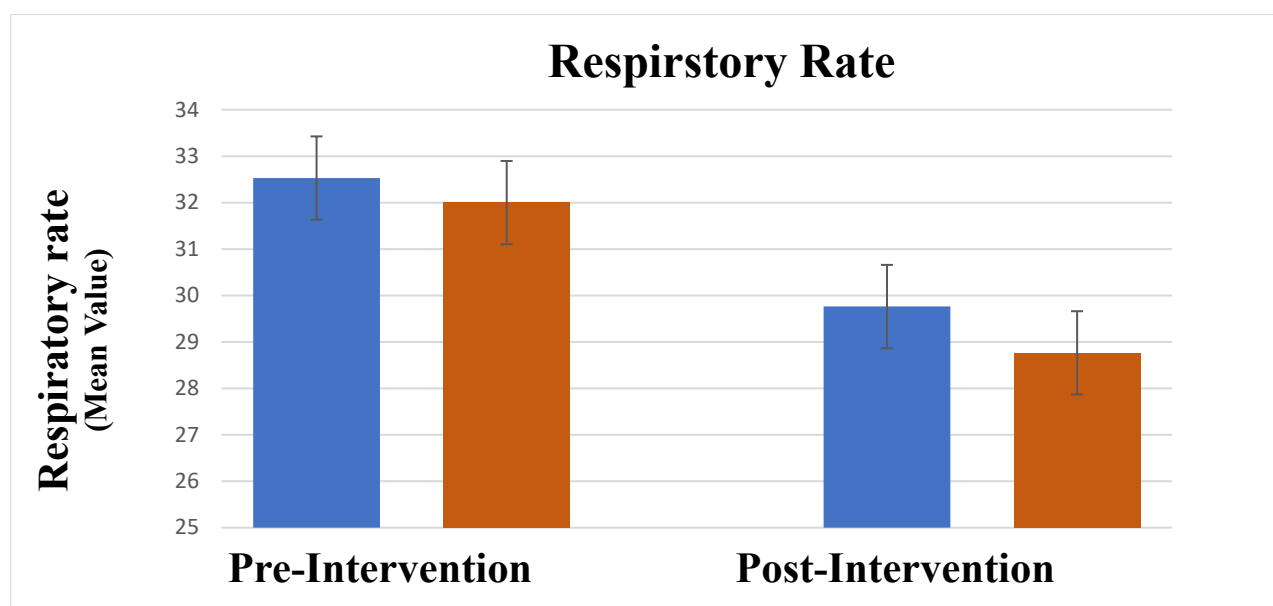
**Figure 6:** Pre-Post Mean Changes in Negative Affect (PANAS-Negative) Among Study Participants

## RESPIRATORY RATE

In the within-group assessment, since the data was found to be not normally distributed in the baseline, Wilcoxon signed-rank t-test was conducted. Respiratory rate which was  $(25.097 \pm 12.812)$  was found to have decreased considerably post the practice of Yoga on  $(21.484 \pm 9.763)$  which is not statistically significant ( $p=0.465$ ). Whereas the analysis conducted on the data obtained from control group showed increased in respiratory rate. Pre RR  $(22.387 \pm 14.486)$  and Post RR is  $(24.194 \pm 9.558)$ . And was not statistically significant p value ( $p=0.354$ ). In between group t-test analysis conducted using Mann whitney, the respiratory rate was found with a considerable change across the groups as indicated by a non-significant p-value ( $p = 0.337$ ) (Table 2) and (Graph 1).

**Table 2** Changes in Respiratory Rate Across Control and Yoga Groups

| Variable         | Control          |                   |         | Yoga             |                   |         | Mann whitney |              |
|------------------|------------------|-------------------|---------|------------------|-------------------|---------|--------------|--------------|
|                  | Pre Intervention | Post Intervention | P value | Pre Intervention | Post Intervention | P value | Pre vs pre   | Post vs post |
| Respiratory Rate | 22.387 ± 14.486  | 24.194 ± 9.558    | 0.354   | 25.097 ± 12.812  | 21.484 ± 9.763    | 0.465   | 0.338        | 0.337        |



**Figure 7:** Pre-Post Mean Changes in Respiratory Rate Among Study Participants

## DISCUSSION

The current study found that a 30-day IDY Yoga intervention effectively reduced stress and anxiety and increased positivity and reduced negativity in female population. These practices did not affect the sleep quality. Each participant received IDY yoga protocol, which resulted in improvements in a variety of physical and psychological parameters. The comprehensive yoga-based intervention was found to have positive benefits on emotional intensity, anxiety-related symptoms. Yoga has been shown to improve mental reduce negative behaviors and stress & anxiety levels and increase positivity in women practicing IDY Yoga protocol.

In line with our study, a study on Effect of yoga-based lifestyle intervention on state and trait anxiety shows that significantly decreased anxiety in patients of, psychiatric disorders, hypertensives, cad, obesity, cervical spondylitis (Gupta et al., 2006), whereas present study also shows reduction in stress & anxiety, negativity and increase in sleep quality and positivity in experimental group.

Although there was no assessment which would have allowed a better understanding of the mechanism involved but the possible mechanism behind the anxiety and emotions are the monoamines. The monoamines are the class of neurotransmitters including catecholamine that is epinephrine, dopamine and indoleamines are serotonin. The monoamine hypothesis suggests that individuals with depression have a “chemical imbalance”, particularly an imbalance of serotonin levels in the CNS. By the practicing the physical postures of yoga it has been shown to increase levels of gamma-aminobutyric acid (GABA), a neurotransmitter in the brain that can have anti-depressant and anxiolytic effects. Slow breathing patterns that stimulate the vagus nerve and also similar to those used in yoga, have been shown to increase levels of prolactin, dopamine and serotonin.

Moreover, recent studies underscore the broader physiological benefits of yoga. Research indicates that pranayama significantly enhances respiratory efficiency, reduces anxiety, and mitigates emotional distress. A short-term yoga and naturopathic diet intervention demonstrated notable improvements in body composition, postural stability, and hand grip strength (Catela et al., 2024; Yadav et al., 2012).

Furthermore, integrating yoga therapy with naturopathy has been shown to produce positive outcomes in obesity management by reducing BMI, waist-to-hip ratio, and lipid levels, along with enhancing mental well-being (Dalwadi et al., 2018). The integrated approach led to significant improvements in physiological markers, including BMI, lipid profile, and metabolic efficiency, while promoting holistic well-being (Amaranath et al., 2016; Bargal et al., 2022). A recent case study also highlighted improvements in BMI, blood pressure, and metabolic markers with a combined yoga and naturopathic diet intervention, further supporting the therapeutic efficacy of integrative, non-invasive methods (Lemay et al., 2019).

Furthermore, yoga therapy has been shown to improve sleep parameters, such as sleep onset latency, duration, and efficiency, making it a promising intervention for sleep-related issues (Nugraheni et al., 2024). Additionally, studies show Improvements in sleep quality have also been reported in yoga-based studies, including among stressed nursing students, who demonstrated significant increases in PSQI scores following yoga interventions (Kusumawaty et al., 2021). This aligns with yoga's known effects on autonomic regulation and stress reduction. These findings highlight the importance of yoga as a comprehensive, non-pharmacological strategy for enhancing both physiological and psychological health.

On the emotional front, recent findings revealed that yoga significantly improves positive affect while reducing negative emotional states. These outcomes are particularly relevant in addressing emotional dysregulation associated with obesity and stress-related conditions (Unniraman, 2023).

Additionally, evidence from previous research highlights the broader physiological benefits of yoga, particularly pranayama. Studies indicate that pranayama enhances respiratory efficiency, reduces anxiety, and mitigates emotional distress. Moreover, research on a short-term yoga and naturopathic diet intervention demonstrated improvements in body composition, postural stability, and hand grip strength. (Jayawardena et al., 2020) However, concerns regarding reductions in lean mass and water content underscore the necessity for long-term investigations to ensure sustainable benefits and mitigate potential risks.

Given these findings, future research should focus on high-quality RCTs to further evaluate the long-term effects of yoga and pranayama interventions, particularly their physiological and psychological impacts. Understanding the underlying mechanisms will help refine yoga-based therapies, making them more effective and tailored to specific populations.

The study highlights the significant role of yoga in mitigating stress and anxiety among women experiencing dysmenorrhea. The findings suggest that regular yoga practice can effectively regulate physiological and psychological responses, leading to reduced pain perception, improved emotional resilience, and enhanced overall well-being. By promoting autonomic balance and reducing menstrual discomfort, yoga emerges as a holistic, non-pharmacological intervention with promising applications in women's health. Future research should focus on large-scale clinical trials to validate these outcomes and explore the underlying neurophysiological mechanisms(Chhikara et al., 2023)

The study underscores the effectiveness of yoga-based lifestyle interventions in enhancing key physiological and psychological outcomes. The findings demonstrate a significant improvement in stress, anxiety, and emotional resilience among participants, highlighting the potential of this approach as a non-invasive and holistic strategy for stress-related conditions. By influencing the autonomic and neuroendocrine systems, the intervention facilitates improved metabolic function, reduced stress, and enhanced quality of life. These results advocate for broader implementation in clinical and community settings, with future research needed to validate long-term efficacy and explore mechanistic insights through larger, controlled trials (Bhagel & Saha, 2021)

The findings of this pilot study demonstrate the potential of yoga therapy as an effective non-pharmacological intervention to enhance the quality of life and reduce perceived stress among housewives. The eight-week yoga intervention, comprising asanas, pranayama, and meditation, yielded statistically significant improvements in both domains. The reduction in Perceived Stress Scale (PSS) scores and enhancement in WHOQOL-BREF scores suggest that yoga may help in modulating physiological and psychological stress responses, promoting overall well-being in women managing multiple roles at home. These results align with existing literature emphasizing yoga's role in stress management and psychosomatic health. While the sample size was limited, and generalizations should be made cautiously, this pilot study provides a foundation for further large-scale randomized controlled trials. Future research should also explore the long-term adherence and sustainability of yoga practices in home settings to optimize its benefits across diverse female populations (Nida Wajid, 2024)

The present study highlights the significant role of yoga as a holistic and integrative practice for effective stress management. The findings underscore yoga's capacity to bring about positive psychological and physiological changes through practices such as asanas, pranayama, and meditation. These techniques contribute to enhancing self-awareness, emotional regulation, and resilience, thereby promoting mental well-being and reducing stress-related symptoms. Yoga, as demonstrated in this study, not only helps in the alleviation of acute and chronic stress but also fosters a balanced lifestyle through the integration of body, mind, and spirit. The practice cultivates mindfulness and inner harmony, which are critical in today's fast-paced and high-stress environments. These outcomes suggest that yoga can be a valuable adjunctive approach in both preventive and therapeutic healthcare models. Future research with larger and more diverse populations, objective physiological markers, and long-term

follow-up is warranted to further validate and expand upon these findings. Nevertheless, the study affirms yoga's potential as a non-pharmacological intervention for stress reduction, supporting its inclusion in public health and clinical strategies aimed at enhancing quality of life and mental health outcomes (Rani & Rani, 2022).

## LIMITATIONS

This study is subject to certain limitations. The use of convenience sampling introduces selection bias and limits generalizability. The online mode of delivery, while accessible, may have affected participant adherence and engagement. Moreover, the use of self-reported tools introduces potential measurement bias and lacks objective confirmation of outcomes. The short intervention duration may have limited observable changes in physiological measures like sleep and respiratory rate. These factors should be considered when interpreting the magnitude of effects.

### Generalizability

While the findings are encouraging, they are primarily applicable to relatively healthy women who can access and engage with online yoga programs. Thus, the results may not be generalizable to males, older adults, or populations with chronic physical or psychological conditions. Further multicenter studies across diverse demographic groups are warranted.

## CONCLUSION

The study concludes that a structured, 30-day International Day of Yoga (IDY) protocol significantly improves psychological outcomes such as anxiety, emotional resilience, and positivity among adult females. These findings affirm yoga's role as an effective, non-pharmacological strategy for mental wellness. While physiological outcomes like sleep and respiratory rate showed limited change, the psychological benefits underscore the importance of integrating yoga into daily routines and mental health strategies. Future studies should assess age-specific effects and include objective biomarkers such as HRV and salivary cortisol to enhance scientific validity.

### Strengths of the Study

- First study to evaluate the impact of online IDY yoga on psychological health in adult females.
- Demonstrated significant improvements in anxiety, emotional regulation, and positive affect.
- Provides evidence for yoga's scalability via digital platforms.

### Suggestions for Future Research

- Use randomized controlled trials (RCTs) to establish causal links
- Include objective physiological measures (e.g., HRV, cortisol)
- Conduct long-term follow-up to assess sustained impact
- Explore implementation among specific age groups, especially in schools and colleges

### Limitations

- Convenience sampling may limit representativeness
- Intervention was limited to 30 days
- Outcomes based solely on self-reported questionnaires
- Online-only format may limit interaction and monitoring

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## REFERENCES

- [1] Amaranath, B., Nagendra, H., & Deshpande, S. (2016). Effect of integrated yoga module on positive and negative emotions in home guards in Bengaluru: A wait list randomized control trial. *International Journal of Yoga*, 9(1), 35. <https://doi.org/10.4103/0973-6131.171719>
- [2] Bargal, S., Nalgirkar, V., Patil, A., & Langade, D. (2022). Evaluation of the effect of left nostril breathing on cardiorespiratory parameters and reaction time in young healthy individuals. *Cureus*, 14(10), 108. <https://doi.org/10.7759/cureus.22351>

- [3] Bhagel, P., & Saha, M. (2021). Effects of yogic intervention on pulmonary function and respiratory muscle strength parameters: A systematic literature review and meta-analysis. In *Journal of Biosciences*, 46(3), 10. Springer. <https://doi.org/10.1007/s12038-021-00192-0>
- [4] Catela, D., Santos, J., Oliveira, J., Franco, S., & Mercê, C. (2024). Heart rate variability, blood pressure and peripheral oxygen saturation during yoga Adham and Mahat breathing techniques without retention in adult practitioners. *Journal of Functional Morphology and Kinesiology*, 9(4), 184. <https://doi.org/10.3390/jfmk9040184>
- [5] Chhikara, A., Jain, M., Vats, S., Kashoo, F. Z., Chahal, A., Guliya, S., Vajrala, K. R., Sidiq, M., & Rai, R. H. (2023). Role of yoga in minimizing stress and anxiety in women experiencing dysmenorrhea. *Journal of Lifestyle Medicine*, 13(2), 90. <https://doi.org/10.15280/jlm.2023.13.2.90>
- [6] Dalwadi, P. P., P.S., Dr. V., & B. Bhatt, Dr. J. (2018). To study the integrated yoga therapy (IAYT) effect on quality of life and positive and negative emotions in tribal adolescent girls: A single group and pre-post design. *International Journal of Advanced Ayurveda, Yoga, Unani, Siddha and Homeopathy*, 7(1), 498. <https://doi.org/10.23953/cloud.ijaayush.356>
- [7] Gupta, N., Khera, S., Vempati, R. P., Sharma, R., & Bijlani, R. L. (2006). Effect of yoga-based lifestyle intervention on state and trait anxiety. *Indian Journal of Physiology Pharmacology*, 50(1), 45
- [8] Jayawardena, R., Ranasinghe, P., Ranawaka, H., Gamage, N., Dissanayake, D., & Misra, A. (2020). Exploring the therapeutic benefits of Pranayam (yogic breathing): A systematic review. *International Journal of Yoga*, 13(2), 99. [https://doi.org/10.4103/ijoy.ijoy\\_37\\_19](https://doi.org/10.4103/ijoy.ijoy_37_19)
- [9] Kusumawaty, I., Rispa, M., & Hindun, S. (2021). The effect of yoga exercises on sleep quality for the elderly. *Journal of Maternal and Child Health Sciences (JAKIA)*, 1(1), 12. <https://doi.org/10.36086/jakia.v1i1>
- [10] Lemay, V., Hoolahan, J., & Buchanan, A. (2019). Impact of a yoga and meditation intervention on students' stress and anxiety levels. *American Journal of Pharmaceutical Education*, 83(5), 749. <https://doi.org/10.5688/ajpe7001>
- [11] Mukundananda, S. (2014a). *Bhagavad Gita: The song of God*. Jagadguru Kripaluji Yog.
- [12] Wajid, N. (2024). A pilot study: Effectiveness of yoga therapy to improve quality of sleep and mental health among nursing students in selected nursing colleges at Uttar Pradesh. *African Journal of Biomedical Research*, 27(4S), 2597. <https://doi.org/10.53555/AJBR.v27i4S.4075>
- [13] Nugraheni, A. I., Rahmah, D. A., Prastyo, W.A., Azhari, R., Merisa, B.L., Ananda, A., & Syarfina, A. (2024). The effect of yoga on sleep quality and insomnia in women with sleep problems: A systematic review. *Journal of Advanced Research in Medical and Health Science*, 10(3), 333. <https://doi.org/10.61841/j5avzd57>
- [14] Rani, R., & Rani, S. (2022). Role of yoga and meditation in negative emotion among adolescents: A review. *Shanlax International Journal of Arts, Science and Humanities*, 9(3), 114. <https://doi.org/10.34293/sijash.v9i3.4497>
- [15] Unniraman, Y. P. (2023). Influence of the practice of yoga on positive and negative affect: A study. *Indian Journal of Positive Psychology*, 11(4), 820. <https://doi.org/10.25215/1104.147>
- [16] Yadav, R., Magan, D., Mehta, M., Mehta, N., & Mahapatra, S. (2012). A short-term, comprehensive, yoga-based lifestyle intervention is efficacious in reducing anxiety, improving subjective well-being and personality. *International Journal of Yoga*, 5(2), 134. <https://doi.org/10.4103/0973-6131.98235>