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A clinical study on combined effect of *Padabhyanga* and *Pranayama* in *Nidranasha* (Primary Insomnia) - Research Article

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ABSTRACT

Sleep is one of the most significant human behaviour, occupying roughly one third of human life. It is the state of mind during which it blocks all the perception from the external world. Qualitative sleep is the essential component of good health. Disturbed sleep leads to discomfort and diseases, can be identified as longer time taken to fall asleep, more periods of wakefulness during the night, and time spent lying awake before rising in the morning. The reported prevalence of insomnia is 33% in the general population globally, and 16% in India and 18.6% in South India. *Padabhyanga* as a part of *Dinacharya* is said to induce sound sleep and *Pranayama* not only enhances *Pranashakti* but also calms down the stress on body and mind. Hence, in the current study, the combined effect of *Padabhyanga* and *Pranayama* practice among elderly population is attempted as remedial measures.

Key words: *Padabhyanga, Pranayama, Nidranasha, Primary Insomnia, Ayurveda*

INTRODUCTION

Sleep is one of the most significant human behaviour, occupying roughly one third of human life. It is the state of mind during which it blocks all the perception from the external world. Qualitative sleep is the essential component of good health. Disturbed sleep leads to discomfort and diseases, can be identified as longer time taken to fall asleep, more periods of wakefulness during the night, and time spent lying

awake before rising in the morning. The reported prevalence of insomnia is 33% in the general population globally,^[1] and 16% in India and 18.6% in South India.^[2]

Most commonly recommended tranquilisers and sedatives for the treatment of insomnia are associated with plethora of adverse effects such as confusion, psychomotor performance deficits, nocturnal falls, dysphoric mood, impaired intellectual functioning, muscle weakness and even coma.

Nidra being called as *Adharaneeya Vega* is also emphasized as sub pillar of human life as per *Ayurveda* perview.^[3] It is the special state of mind in which absolute detachment of all *Indriyas* from *Bahya Vishayas* due to tiredness in body and mind.^[4] *Padabhyanga* as a part of *Dinacharya* is said to induce sound sleep and *Pranayama* not only enhances *Pranashakti* but also calms down the stress on body and mind. Hence, in the current study, the combined effect of *Padabhyanga* and *Pranayama* practice among elderly population is attempted as remedial measures.

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METHODOLOGY

The present study was planned as Out Patient and in-patient, open label, single arm clinical study on combined effect of *Padabhyanga* and *Pranayama* in *Nidranasha* (primary insomnia) using the convenience (non-random) sampling technique at Sri Dharmasthala Manjunatheshwara College and Hospital, Hassan, after approval by Institutional Ethics Committee prior to the starting of the work.

The subjects aged group between 20 to 50 years having sleep disturbance occurs at least three times per week for at least one month with Insomnia severity index^[5] above 8 as per WHO approved Insomnia Severity Index were included in this study irrespective of gender, socio-economic status.

Study type - Interventional, open label single arm.

Sampling method - convenient (non-random) sampling technique.

Sample size - 30.

Duration - 18 months

15-20 ml of *Tila Taila* (having FSSAI approval) of 40° centigrade is used for *Padabhyanga* at bed time for a time period of 15 minutes with Brisk shaking movements & Flexion and extension of toes & Thumb poking techniques.

The following *Pranayama* practice module was taught and advised to be practiced once daily for 30 days.

Table 1: Pranayama practice protocol

| SN | Type of Pranayama | Count | Duration |
|----|-----------------------------------|-------------------|------------|
| 1. | A, U, M, OM Chants | 3 counts each | 10 minutes |
| 2. | <i>Anuloma Vilomana Pranayama</i> | 10 counts each | 5 minutes |
| 3. | <i>Nadishodana Pranayama</i> | 10 counts*1 round | 10 minutes |
| 4. | <i>Sheetali</i> | 10 counts*1 round | 5 minutes |

| | | | |
|----|---------------------|-------------------|-----------|
| 5. | <i>Sheetkari</i> | 10 counts*1 round | 5 minutes |
| 6. | <i>Bhramari</i> | 10 counts*1 round | 5 minutes |
| 7. | <i>Shavasana</i> | - | 5 minutes |
| 8. | <i>Shantimantra</i> | - | 2 minutes |

OBSERVATIONS AND RESULTS

Table 2: Result on Subjective parameters

| Parameters | N | 0 th Day | 15 th Day | 30 th Day | Cochran's Q | Df | Asymp. sig |
|--|----|---------------------|----------------------|----------------------|-------------|----|------------|
| Difficulty in sleep initiation | 30 | 23 | 22 | 7 | 30.125 | 2 | P<0.005 |
| Difficulty in staying asleep | 30 | 20 | 14 | 7 | 19.538 | 2 | P<0.0005 |
| Gets up in the middle of night and unable to fall asleep | 30 | 23 | 13 | 6 | 25.765 | 2 | P<0.05 |
| Early morning awakening | 30 | 15 | 12 | 5 | 15.800 | 2 | P<0.05 |
| On <i>Angamardha</i> | 30 | 15 | 15 | 9 | 12.000 | 2 | 0.002 |
| On <i>Apakthi</i> | 30 | 7 | 4 | 2 | 7.600 | 2 | 0.022 |
| On <i>Shirogourava</i> | 30 | 26 | 19 | 5 | 32.667 | 2 | P<0.05 |
| On <i>Jrumbha</i> | 30 | 18 | 12 | 6 | 18.000 | 2 | P<0.05 |

| | | | | | | | |
|------------|----|----|---|---|--------|---|-------|
| On Jadyata | 30 | 7 | 4 | 1 | 9.000 | 2 | 0.011 |
| On Glani | 30 | 13 | 9 | 5 | 12.000 | 2 | 0.002 |
| On Bhrama | 30 | 7 | 5 | 3 | 6.000 | 2 | 0.050 |
| On Tandra | 30 | 7 | 4 | 1 | 9.000 | 2 | 0.011 |

Table 2: Result on Objective parameters

1. On difficulty in falling asleep

| Parameter | Interval | N | Mean rank | Chi square | P Value | Remark |
|---------------------------|----------------------|----|-----------|------------|---------|--------|
| Difficulty falling asleep | 0 th day | 30 | 2.73 | 44.000 | <0.05 | S |
| | 15 th day | | 2.00 | | | |
| | 30 st day | | 1.27 | | | |

| Parameters | Negative Ranks | | | Positive rank | | | Ties | Total | Z value | P value | Remarks |
|--|----------------|-----|-----|---------------|-----|-----|------|-------|---------|---------|---------|
| | N | M R | SR | N | M R | S R | | | | | |
| 0 th - 15 th day | 15 | 80 | 120 | 00 | 00 | 00 | 15 | 30 | -3.873 | 0.000 | S |
| AT - 15 th day | 15 | 80 | 120 | 00 | 00 | 00 | 15 | 30 | -3.873 | 0.000 | S |

2. Difficulty in staying asleep

| Parameter | Interval | N | Mean rank | Chi square | P Value | Remark |
|---------------------------|----------------------|----|-----------|------------|---------|--------|
| Difficulty staying asleep | 0 th day | 30 | 2.33 | 32.667 | <0.05 | S |
| | 15 th day | | 1.87 | | | |

| | |
|----------------------|------|
| 30 st day | 1.63 |
|----------------------|------|

| Parameters | Negative Ranks | | | Positive rank | | | Ties | Total | Z Value | P value | Remarks |
|--|----------------|-----|-----|---------------|-----|-----|------|-------|---------|---------|---------|
| | N | M R | SR | N | M R | S R | | | | | |
| 0 th - 15 th day | 14 | 75 | 105 | 00 | 00 | 00 | 63 | 30 | -3.742 | P<0.05 | S |
| AT - 15 th day | 7 | 40 | 80 | 00 | 00 | 00 | 23 | 30 | -2.646 | P<0.05 | S |

3. How satisfied/dissatisfied are you with current sleep pattern?

| Parameter | Interval | N | Mean rank | Chi square | P Value | Remark |
|---|----------------------|----|-----------|------------|---------|--------|
| How satisfied / dissatisfied are you with current sleep pattern | 0 th day | 30 | 2.48 | 34.455 | <0.05 | S |
| | 15 th day | | 2.13 | | | |
| | 30 st day | | 1.38 | | | |

| Parameters | Negative Ranks | | | Positive rank | | | Ties | Total | Z value | P value | Remarks |
|--|----------------|-----|-----|---------------|-----|-----|------|-------|---------|---------|---------|
| | N | M R | SR | N | M R | S R | | | | | |
| 0 th - 15 th day | 7 | 40 | 280 | 00 | 00 | 00 | 23 | 30 | -2.646 | P<0.05 | S |
| AT - 15 th day | 15 | 80 | 120 | 00 | 00 | 00 | 15 | 30 | -3.873 | P<0.05 | S |

4. Total Insomnia Severity Index Score

| Parameter | Interval | N | Mean rank | Chi square | P Value | Remark |
|-------------------------------|----------------------|----|-----------|------------|---------|--------|
| Insomnia Severity Index Score | 0 th day | 30 | 14.93 | 50.876 | <0.05 | S |
| | 15 th day | | 13.83 | | | |
| | 30 st day | | 12.33 | | | |

| Parameters | Negative Ranks | | | Positive rank | | | Ties | Total | Z value | P value | Remarks |
|--|----------------|-------|-------|---------------|-------|-------|------|-------|---------|---------|---------|
| | N | M | SR | N | M | SR | | | | | |
| 0 th - 15 th day | 20 | 10.58 | 21.70 | 1 | 14.00 | 14.00 | 9 | 30 | -3.612 | P<0.05 | S |
| AT - 15 th day | 24 | 12.50 | 30.00 | 0 | 0.00 | 0.00 | 6 | 30 | -4.373 | P<0.05 | S |

DISCUSSION

Probable mode of action of Padabhyanga^[6]

In the centre of the feet 02 *Siras* are directly connected to eyes. These transmit the effect of the medicines applied over the feet in the form of *Abhyanga*. These *Siras* are vitiated by the accumulation of the *Malas* and cause the *Nidranasha*. The *Abhyanga* is exceedingly beneficial to the skin. The aggravation of *Vata* in *Pada* can be pacified by *Padabhyanga* and the practice of *Pranayama*. *Acharya Sushruta* in *Sarirasthana* explains that, out of the four *Tiryakgata Dhamanis*, each divide gradually hundred and thousand times and thus become innumerable. These cover the body like network and their openings are attached to *Romakoopa*. Through these the *Virya* of *Abhyanga* enters into the body after undergoing *Paka* with *Bhrajaka Pitta* in skin and shows its action. *Pada Abhyanga* nourishes the *Adhoga Dhamanis*, these in

turn nourish the *Urdwaga Dhamanis* and *Tiryak Dhamanis* and induce sleep.

According to modern view^[7]

The *Abhyanga* exhibits its action basically on three systems namely vascular system, Nervous system, and Lymphatic system. By fine touch and crude touch. *Abhyanga* stimulates the tactile receptors and mechano - receptors in the skin. The temperature in the skin increases thus causes kinetic motion in the receptors by which the axons get activated and conducts stimulus through first, second and third order of neurons to the sensory cortex in turn maintains the normal homeostasis of the body by exhibiting neuronal action. In other view, as there is kinetic motion it causes vasodilatation in the subcutaneous vessels by which the *Virya* of the drug gets absorbed there by improves circulation by increasing blood amino acids that is increasing plasma tryptophan in turn increases neurotransmitter activation causes the secretion of melatonin through which the serotonin is secreted, thus maintains normal mechanism as there is improved circulation there will be parallel improvement occurring in lymphatic circulation thus exhibits the defence action and removes the toxins from cells via blood. Hence, maintains the normal homeostasis. Probably by doing *Pada Abhyanga*, this increases the intensity of brain waves and decreases the brain cortisone and adrenaline level. Probably *Pada Abhyanga* normalises the two important neurotransmitters Serotonin and Norepinephrine, which regulates a wide variety of Neuropsychological process along with sleep. Thus, it induces relaxation and natural sleep; it impacts a positive effect on eyes.

Action of Pranayama in Nidranasha

Yogic breathing exercises can improve strength of the respiratory muscles which resulted in better tissue perfusion and improved oxygen saturation. Previous studies of *Yoga* on health volunteers have shown that after short term *Yoga* exercises, there is significant increase in the vagal tone, decrease of sympathetic discharge in the form of significantly decreased heart rate response on standing as well as decreased catecholamine levels in plasma. This decreased

physiological arousal effect of *Yoga* has been cited as one of the reasons for less sleep disturbances. Regular practice of *Yoga* might decrease autonomic over-activity and increase in parasympathetic activity with reduction of oxygen consumption and metabolic rate of prefrontal cortex cells. Thus, preventing the neuronal loss which might have the beneficial effect in arresting the decline in cognitive function.

CONCLUSION

The present study found the combined effect of *Padabhyanga* and *Pranayama* in *Nidranasha* in thirty subjects of primary insomnia as statistically significant in subjective parameters like difficulty in sleep initiation, difficulty in staying asleep, early morning awakening, *Angamarda*, *Apakthi*, *Shirogourava*, *Jirumbha*, *Jadyata*, *Glani* and *Tandra*. Combined effect of *Padabhyanga* and *Pranayama* in *Nidranasha* has statistically significant effect in reduction in objective parameters like difficulty in falling asleep, difficulty in staying asleep, satisfied with current sleep pattern and total insomnia severity index scale. *Padabhyanga* and *Pranayama* can be applied as routine activity to prevent falling prey to sleep disorders and also to control and resolve the same problem. These two tools are surely cost effective, safe and provide additional benefits to one's health.

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