

# Efficacy of *Sattvavajaya Chikitsa* in the form of relaxation techniques and *Guda Pippalimula Churna* in the management of *Anidra* (insomnia) - An open labelled, randomized comparative clinical trial

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## Abstract

**Background:** Condition of insomnia may not be a life-threatening illness, but it has tendency to damage the person's daily life. In the current era of modernization, most of the person are is suffering from stress either it is personal or professional. Stress may cause sleeping problems or make existing problems worse. *Sattvavajaya Chikitsa* is a specialized type of treatment influencing the psychological aspect of body. It can be applied in the form of *Yogic* practices and other mind control techniques. With this research interest, the present study has been undertaken to assess the efficacy of the *Sattvavajaya Chikitsa* in the form of relaxation techniques (RT) and *Guda Pippalimula Churna* in *Anidra* (insomnia). **Objectives:** The objective of the study was to evaluate the efficacy of *Sattvavajaya Chikitsa* in the form of RT and *Guda Pippalimula Churna* in *Anidra*. **Materials and Methods:** The study was an open-labeled randomized clinical trial in which sixty patients having symptoms of *Anidra* belonging to the age group of 20–60 years were enrolled and received *Sattvavajaya Chikitsa* (RT) and *Guda Pippalimula Churna* orally in 2gm dosage with jaggery for 28 days. The assessment of symptoms was done on the basis of relief in the scores given to signs and symptoms according to their severity. **Results:** Both the groups showed significant results in chief as well as associated symptoms of disease. Regarding overall effect of therapy in both the groups, marked improvement is high followed by moderate improvement. No adverse reactions were documented. **Conclusion:** *Sattvavajaya Chikitsa* and *Guda Pippalimula Churna* are effective on *Anidra*, but *Sattvavajaya Chikitsa* was found more effective in reducing *Manasa* symptoms such as *Chinta* (tension), *Bhaya* (fear) and *Krodha* (anger).

**Keywords:** *Anidra*, *Guda Pippalimula Churna*, relaxation techniques, *Sattvavajaya Chikitsa*

## Introduction

In this modern era of civilization, everyone is trying to gain good financial status and to fulfill all the physical desires; therefore, today's metaphysical society is facing unsteady, hard, weakened and everyday changing lifestyle. Due to this type of lifestyle, everyone appears to be stressed and confused. In this competitive and stressful era, sleep is proved as a divine gift to human beings, which refreshes and recharges an individual for the further struggle for survival. However, sound sleep in a peaceful state of mind is hardly possible in this modern world. It is one of the burning problems not only in India but also all over the world.

According to the statistics, 20%–40% of adults encounter insomnia problems during a year. Especially persons between 15 and 55 years of age are more affected.<sup>[1]</sup>

Ayurveda has considered sleep as one of the most important dimensions of health associated with happiness and good health and is considered as outcome of relax mental state.<sup>[2]</sup> In the Ayurvedic literature, three factors, namely *Ahara* (diet), *Nidra* (sleep) and *Brahmacharya* (abstinence) have been compared with the three pillars of a sub-support and have been termed as the three *Upasthambha*.<sup>[3]</sup> There is no definite treatment in modern medical science for insomnia. Sedatives

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and hypnotics used are having huge side effects after long-term use rather than relief. Here comes the relevancy of Ayurvedic principles to treat the disease insomnia. As, it is a disorder of stressful life and faulty dietary habits also, *Sattvavajaya Chikitsa* was planned in the form of relaxation techniques (RT) such as *Asana Yoga*, *Pranayama* and meditation with particular time and duration according to cause of disease found in patients. Psyche and soma are always interrelated.<sup>[4]</sup> They interact and influence each other and jointly venture in the manifestation of a very large group of disorders very aptly known as psychosomatic disorders.<sup>[5]</sup>

*Sattvavajaya*, in short, is a psychophysical exercise designed to achieve a regulatory mechanism over the human psyche in dealing with environmental stressors (*Indriyārtha*) and subduing and balancing emotional stressors (*Mano-Artha*), as improper incorporation of *Artha* is one of the three basic causes of disease.<sup>[6]</sup> Among several indigenous plants used in the treatment of insomnia, *Pippalimula* (root of *Piper Longum* Linn.) is one of those plants used to treat insomnia and digestive disorders. In addition to this, piperine present in *Piper Longum* Linn. elicits positive modulatory effects on GABA<sub>A</sub> receptors.<sup>[7]</sup> The whole study was designed with the hypothesis of finding out the effect of *Sattvavajaya Chikitsa* in the form of RT and *Guda Pippalimula Churna* in the management of *Anidra* (insomnia).

## Materials and Methods

A total of 64 patients irrespective of gender, caste, religion and socioeconomic status who were diagnosed with *Anidra* (insomnia) were selected from the outpatient department of Basic Principle, IPGT and RA, Jamnagar, Gujarat. The study was approved by Institutional Ethics Committee (No-PGT/7/-A/Ethics/2015-16/1470, Dt. 25/08/15). The study has been registered in Clinical Trial Registry, India (No. CTRI/2017/01/007742). Written informed consent from each patient was obtained before starting the course of treatment. The study was an open-labelled randomized clinical trial. Sampling technique was simple random sampling by computer generated method.

### Diagnostic criteria

Patients were diagnosed and assessed thoroughly on the basis of Ayurvedic classical signs and symptoms of *Anidra* (insomnia) and were examined on the basis of specially prepared proforma along with a detailed history. All the patients were subjected to routine hematological examination (hemoglobin%, total white blood cell, differential leukocyte count and total red blood cell count) and biochemistry investigations (random blood sugar, S. G. P. T., S. G. O. T, serum bilirubin, cholesterol, blood urea, creatinine and uric acid) and urine (routine and microscopic examinations) to rule out any other pathology before treatment.

### Inclusion criteria

- Patients suffering from signs and symptoms of *Anidra* (insomnia)
- Patients aged between 20 and 60 years
- Primary insomnia such as insomnia without identifiable cause

- Recent changes in sleep pattern
- Patients were selected without any bar of race, religion and sex.

### Exclusion criteria

- Patients aged <20 years and >60 years
- Patients having insomnia due to severe illness such as cardiac diseases, hypertension, diabetes and other chronic disorders
- Patients with secondary insomnia, alcoholism, exaggeration of previous psychiatric illness (major depression and mania)
- Acute systemic pathological conditions such as fever associated with insomnia, due to severe pain and orthopnea were excluded from the study.

### Grouping and posology

Patients were randomly divided into two groups. In Group A, patients were treated with RT and counselling, whereas in group with *Guda Pippalimula Churna* with the *Anupana* (vehicle) of *Mahishi Ksheera* (buffalo milk). *Pathya-Apathya* (do's and don'ts) were advised in both the groups. Details of the treatment protocol are mentioned below.

#### Group A (relaxation techniques)

Withdrawal of mind from unwholesome objects (*Ahita Artha*) is known as *Sattvavajaya Chikitsa* or it is a treatment by self-control. *Sattvavajaya* is not only victory over mind but also victory with upliftment of mind. Indulgence of mind in unwholesome objects plays a pivotal role in the manifestation of insomnia. Control of mind from *Ahita Artha* (unwholesome objects) can be done by practices of *Ashtanga Yoga* or relaxation technique adopted here. Relaxation training triggers the relaxation response in the body and promotes a sense of mastery and control. All the procedure used here are nothing but applied aspect of *Sattvavajaya Chikitsa* having ultimate goal of *Manasa Shuddhi* or upliftment of mind. This protocol was decided with the help of *Yoga* expert.

Relaxation therapy/*Yogic* techniques:

1. *Shithilikarana Vyayama* (relaxation exercise) - (3–5 min)
2. *Surya Namaskara* (sun salutation) - (2 rounds)
3. *Nadi Shuddhi Pranayama* (alternate nostril breathing) - (9 rounds)
4. *Bhramari Pranayama* (bee breathing technique) - (5 rounds)
5. *Aum* chanting - (9 times)
6. *Yoga Nidra* (*Yogic* sleep) - (20 min).

Time: Morning, total duration: 40 min.

#### Group B (*Guda Pippalimula Churna*)

*Pippalimula* is one of the established medicines for insomnia. In Vangsen Samhita chapter 2 *Jwaradikara*, *Guda Pippalimula Churna* is mentioned for the patients of chronic insomnia. Acharya Bhavamishra has suggested the use of *Pippalimula*

under inumeration of *Nidrakara* (sedatives) drugs in *Chikitsa Sthana*. Authors of *Yogaratanakara* and *Bhaishajya Ratnavali* also appreciated the use of *Pippalimula* with jaggery at night, for the person who suffers from chronic insomnia.

### Guda Pippalimoola Churna

- Dose – 2 gm, in two divided doses
- *Guda* (jaggery) – 5 gm
- Route – oral
- Time of Administration–after meal
- *Anupana* (vehicle) – *Mahishi Ksheera* (buffalo milk)
- Duration – 28 days.

### Criteria for assessment

Improvement in condition was assessed on the basis of changes in scoring pattern developed for grading these clinical symptoms based on modern as well as classical symptoms of insomnia.

### Subjective criteria

#### 1. Difficulty in getting to sleep at bedtime

Grade	Description
0	No problem
1	Slightly delayed (½-1 h)
2	Markedly delayed (1-2 h)
3	Very delayed (>2 h) or did not sleep at all

#### 2. Awakenings after getting sleep

Grade	Description
0	No problem (not at all)
1	Minor problem (total hour of awakening is in-between ½ and 1 h)
2	Considerable problem (total hour of awakening is in-between 1 and 2 h)
3	Serious problem (total hour of awakening is >2 h or did not sleep at all)

#### 3. Waking up too early in the morning

Grade	Description
0	Not earlier
1	A little earlier (½-1 h)
2	Markedly earlier (1-2 h)
3	Much earlier (>2 h) or did not sleep at all

#### 4. Not getting enough sleep (total sleep duration)

Grade	Description
0	Sufficient (>6 h)
1	Slightly insufficient (5-6 h)
2	Markedly insufficient (3-5 h)
3	Very insufficient (<3 h) or did not sleep at all

#### 5. Overall quality of sleep (no matter how long you slept).

Grade	Description
0	Satisfactory
1	Slightly unsatisfactory
2	Markedly unsatisfactory
3	Very unsatisfactory or did not sleep at all

Associated complaint (for all associated complaints from mind not slowing down to *Alasya*)

Grade	Description
0	None
1	Mild
2	Moderate
3	Severe

#### 1. *Krodha* (anger)

Grade	Description
0	No violent tendencies
1	Violent thoughts very rarely
2	Violent, sadistic functions often
3	Frequent thoughts and functions of violence and sadistic

#### 2. *Bhaya* (fear)

Grade	Description
0	No depressed mood
1	Depressed mood only in reasonable cause
2	Depressed mood even in reasonable cause
3	Always in depressed and fearful emotions

#### 3. *Shoka* (mourning)

Grade	Description
0	No feeling of sorrowness
1	Feels inferiority and sorrow at occasion
2	Inferiority complexes and greedy often
3	Weeps and feels inferior very frequently

#### 4. *Chinta* (tension).

Grade	Description
0	No stressed mood
1	Stressed mood occasionally in reasonable cause
2	Stressed mood 3-4 days/week
3	Stressed mood more than 4 days

### General observation

A total of 64 patients were registered for the present study, among them sixty patients have completed their treatment and remaining four patients discontinued. Among them, maximum number of patients, i.e., 62.5% were female. Maximum number (51.56%) of the patients were homemakers. Maximum number of patients, i.e., 87.5% were from middle class. Maximum, i.e., 60.93% of patients were taking *Katu Rasa* (pungent taste) dominant diet. About 54.68% of patients had poor appetite, 57.81% of patients were having *Madhyam Koshtha* and 40.62% were having *Krura Koshtha*. About 75% of patients were not performing any kind of physical exercise. About 64.06% of patients were addicted to tea, 20.31% had addiction of tobacco and 10.94% had an addiction of chewing Pan and Masala. *Vata-Pitta Prakriti* (*Vata-Pitta Dosha* dominant constitution) was observed in maximum of 73.43% patients. About 60.93% were having *Avara Satva* (weak mental strength). In majority of patients (82.41%), insomnia started gradually. About 14.06% of the patients had

sudden onset which was followed by 3.12% of patients with insidious onset of the disease. Progressive course of disease was reported in 84.37% of patients and stationary course of disease was reported in 9.37% of patients, whereas relapsing was found in 6.25% of patients. Stress and *Vata Vriddhi* (increase of *Vata Dosha*) as a causative factor for insomnia were observed in majority (79.68%) of patients, whereas poor sleep hygiene, anxiety, *Vegadharana* (suppression of natural urges), *Dhatukshaya* (debility) and *Pitta Vriddhi* (increased state of *Pitta Dosha*) was found 12.5%, 35.29%, 14.06%, 17.18% and 20.31% of the patients, respectively. About 78.12% of patients were having symptoms of vitiation of *Rasavaha Srotas*, followed by 46.87% with *Annavaha Srotodushiti*.

Short duration of sleep and overall quality of sleep were found disturbed in 100% of patients.

In about 81.66% of patients, difficulty in sleep induction was found as predominant complaints, whereas awakenings from sleep during the night was found in 90% of patients and earlier awakening than desired was found in 43.33% of patients.

About 96.66% of patients had symptom that they does not fully feel refresh after sleep; reduced motivation was found in 90% of patients. *Tandra* (drowsiness) was found in 70% of patients. Fatigue was found in 93.33% of patients, *Akshigaurava* (heaviness in eyes) was found in 73.33% of patients. *Shirogaurava* (heaviness in head) was found in 90% of patients; *Apakti* (indigestion) and *Angamarda* (bodyache) was found in 78.33% and 73.33% of patients, respectively. *Jrimbha* (yawning) and *Alasya* (lethargy) was found in 73.33% and 85% of patients, respectively, whereas irritability and the symptom mind not slowing down were found in 86.66% and 85% of patients, respectively.

*Chinta* (stress) was found in maximum number of patients, that is, 85%, followed by *Krodha* (anger) in 82.81%. *Bhaya* (fear) was found in 70.31% of patients and *Shoka* (sorrow) was found in 60% of patients.

### Statistical analysis

To find individual effect of therapy, paired nonparametric data of before and after treatment were analyzed by Wilcoxon signed-rank test, and for comparison of the effect of both therapies, unpaired nonparametric data were analyzed by Mann–Whitney rank sum test. Test was performed using Sigma Stat 3.1 software (manufacturer is Systat Software, Inc., 501 Canal Blvd., Suite E, Point Richmond, CA 94804-2028, United States of America). The values were considered significant at the levels of  $P < 0.05$ ,  $P < 0.01$ , and  $P < 0.001$ .

## Results

In the present study, group A (relaxation technique) showed maximum (91.61%) relief in the symptom of final awakening earlier than desired. Effect of therapy on quality of sleep was 87.5%, and increase in total sleep duration was 83.87%, whereas 81.96% in awakenings during the night and increased in easy sleep induction, was observed in 74% of the patients.

Statistically, all the parameters of chief complaints in group A had highly significant result.

Effect of therapy on associated symptom such as mind not slowing down (71.42%), reduced motivation (79.31%), irritability or mood disturbance (78.26%), *Akshigaurava* (heaviness in eyes) (82.35%), *Shirogaurava* (heaviness in head) (84.61%), *Jrimbha* (yawning) (97.91%) and *Alasya* (lethargy) (90.74%) was statistically highly significant.

In group B (*Guda Pippalimula Churna*), effect on major symptoms of insomnia, i.e., awakening during the night (76.59%), sleep induction (73.68%) and final awakening earlier than desired (83.33%) resulted in significant improvement of total sleep duration and overall quality of sleep. Effect of therapy on mind not slowing down (58.97%), reduced motivation (58.82%), irritability or mood disturbance 57.89%, heaviness in eyes (89.65%), heaviness in head (76.59%), yawning (100%) and lethargy (78.125%) was statistically highly significant.

Effect of therapy in group A on *Manasa Bhava* such as *Krodha* (anger) was 73.93%, *Bhaya* (fear) (74.29%), *Shoka* (mourning) (68.75%), *Chinta* (stress) (74.359%) which was statistically highly significant, whereas in group B improvement in *Krodha* (anger) 45.45%, *Bhaya* (fear) (42.86%), *Shoka* (sorrow) (36%) and *Chinta* (stress) (56.75%) which was statistically significant but statistically insignificant in *Shoka* (mourning).

### Comparison between effects of therapies

#### Chief Symptoms

In Mann–Whitney rank sum test, percentage wise better results was found in all symptoms in group A than group B, but the difference between the groups was statistically insignificant [Table 1].

#### Associated symptoms

In Mann–Whitney rank sum test, statistically insignificant difference was found between the groups except the symptoms: mind not slowing down, irritability or mood disturbance and *Alasya* [Table 2].

#### Manasa symptoms

Statistically significant difference was found in *Manasa* symptoms (related to mind) such as anger, fear, sorrow and stress [Table 3].

### Overall effect of therapies

Overall effect of *Sattvavajaya Chikitsa* and *Guda Pippalimula Churna* was 79.19% and 73.43%, respectively [Table 4].

## Discussion

In a total of 64 patients registered for the present study, 60 patients completed their treatment and remaining four discontinued. Two patients were lazy to follow the *Yogic* techniques taught for the study and opted out after 3 days'



**Table 1: Comparison of effect of therapy on main symptoms between the groups**

Symptoms	Data of Group A			Data of Group B			Comparison of both groups	
	n	Df	Percentage	n	Df	Percentage	Mann-Whitney U statistic	Probability
Sleep induction	23	1.22	74	26	1.23	73.68	493	0.503
Awakenings during the night	29	1.66	81.96	25	1.66	76.59	305	0.02
Final awakening earlier than desired	9	0.366	91.661	17	0.4	83.33	566.5	0.05
Total sleep duration	30	1.733	83.87	30	1.9	75.41	537	0.141
Overall quality of sleep	30	1.33	87.5	30	1.93	77.41	312	0.018

n: Number of patients, Df: Difference in mean before treatment and after treatment

**Table 2: Comparison of effect of therapy on associated symptoms between the groups**

Associated symptoms	Group A			Group B			Comparison of both groups	
	n	Df	Percentage	n	Df	Percentage	Mann-Whitney U statistic	Probability
Mind not slowing down	26	1.66	71.42	25	0.766	58.97	596	0.012
Does not fully refresh after sleep	29	1.36	87.235	29	1.2	85.63	377.5	0.201
Reduced motivation	22	0.766	79.31	23	0.666	58.82	525.5	0.470
<i>Tandra</i> (day time attention, concentration, memory problem)	22	0.73	73.33	21	0.533	57.14	533	0.153
<i>Jadya</i> (fatigue)	28	0.56	76.47	28	1.2	76.59	408	0.047
Irritability or mood disturbance	27	0.46	78.26	25	0.73	57.89	624	0.002
<i>Akshigaurava</i> (heaviness in eyes)	21	0.93	82.35	23	0.866	89.65	426	0.691
<i>Shirogaurava</i> (heaviness in head)	25	1.1	84.61	29	1.1	76.59	554.5	0.943
<i>Apakti</i> (indigestion)	21	0.8	70.58	26	0.866	75.41	476.5	0.020
<i>Angamarda</i> (body ache)	24	1.33	78.43	20	1.3	81.25	479	0.103
<i>Jrumbha</i> (yawning)	24	1.266	97.91	20	0.933	100	554	0.808
<i>Alasya</i> (lethargy)	27	1.166	90.74	24	0.83	78.125	322.5	0.671

n: Number of patients, Df: Difference in mean before treatment and after treatment

**Table 3: Comparison of effect of therapy on *Manasa* symptoms between the groups**

Symptoms	Data of Group A			Data of Group B			Comparison of both groups	
	n	Df	Percentage	n	Df	Percentage	Mann-Whitney U statistic	Probability
<i>Krodha</i> (anger)	27	1.66	73.93	26	0.5	45.45	695.5	<0.001
<i>Bhaya</i> (fear)	24	0.867	74.29	21	0.4	42.86	258	0.001
<i>Shoka</i> (sorrow)	19	0.733	68.75	17	0.3	36	607	0.009
<i>Chinta</i> (stress)	26	0.966	74.359	25	0.7	56.75	573	0.062

n=Number of patients, Df: Difference in mean before treatment and after treatment

**Table 4: Overall effect of therapies**

Effect	Number of patients (%)	
	Group A	Group B
Excellent improvement (>70%)	24 (80)	19 (63.33)
Moderately improvement (40%-<70%)	6 (20)	11 (36.66)
Mild improvement (20%-<40%)	0 (0)	0 (0)
Unchanged (<20%)	0 (0)	0 (0)
Overall effect	30 (79.19)	30 (73.43)

practice. Other two patients were dropped out from study due to their personal reason.

Maximum number of patients, i.e., 62.50% were female. Biological conditions unique to women such as the menstrual cycle, pregnancy and menopause can affect sleep. This is because the changing levels of hormones that a woman

experiences throughout the month and over her lifetime, such as estrogen and progesterone, have an impact on sleep.<sup>[8]</sup> The present study reveals that maximum numbers (51.56%) of the patients were homemakers, this reflects that high level of physical or mental stress, strain with responsibilities causes stress, and thus insomnia has become more common in homemakers. The present study shows that maximum number of patients, i.e., 87.5% were from middle class. The middle-class economic background people may have more struggles in life, hence insomnia dominates.<sup>[9]</sup> About 60.93% of patients were taking *Katu Rasa* (pungent taste) dominant diet, it increases *Vata* and due to *Vataprakopa* (vitiation of *Vata Dosha*), insomnia occurs. *Rajasika/Vatavardhaka Ahara* (dietary items that increase *Vata Dosha*) may act as a predisposing factor in manifestation of a psychiatric disorder. In the present trial, 54.68% of patients had poor appetite. As

*Nidra* (sleep) is stated to enhance *Agni* (digestive power),<sup>[10]</sup> *Anidra* (insomnia) may produce *Mandagni* (weak digestive power). Proper sleep helps for normal digestion and excretion. Some studies supported classical opinion that poor state of *Agni* (digestive power) is associated with sleep complaints. About 57.81% of patients were having *Madhyama Koshta* and 40.625% were having *Krura Koshta*. *Madhyama* and *Krura Koshta* are suggestive of *Kapha* and *Vata Dosha* dominancy, respectively. About 75% of patients were not performing any kind of physical exercise and were leading a sedentary life. Lack of physical exercise results in the feel that there is no need for rest and thus may lead to sleeping difficulties which can later result into insomnia. Maximum number of patients (64.06%) was having addiction of tea. Tea contains caffeine and small amounts of theobromine and theophylline, which are stimulants.<sup>[11]</sup> *Vatapradhana-Pitta Prakriti* (*Vata* predominant *Pitta* constitution) was observed in maximum (73.43%) patients. Generally, person who has *Vata Prakriti* (*Vata* predominant constitution) gets poor quality of sleep due to *Chala Guna* (mobile property) of *Vata Dosha*, whereas *Pitta Prakriti* (*Pitta* predominant constitution) persons have “*Klesha Asahishnuta* (unable to tolerate mental stress), *Krodhadhikyata* (excessive anger)” which leads to more stress. Hence, these *Prakriti* individuals are more prone to insomnia.<sup>[12]</sup> About 96.86% were of *Rajasika Prakriti*. Characteristic features of this constitution are various emotional factors related to *Rajoguna* – keeping in mind overactive condition which causes either delayed or lesser sleep duration. About 60.93% of patients were having *Avara Sattva* (weak mental strength), followed by 32.81% of patients having *Madhyama Sattva* (moderate mental strength). Acharya Charaka has mentioned that person having moderate and weak mental strengths is more vulnerable to insomnia.<sup>[13]</sup> Majority of patients’ (82.41%) insomnia started gradually. Progressive course of disease was reported in 84.37% of patients. Gradual and progressive nature of the disease indicates silent nature of the disease which is avoided initially and causes many physical and mental disturbances in later stage. Data revealed that stress and *Vata Vriddhi* (increased state of *Vata Dosha*) as a causative factor for primary insomnia were observed in majority (79.68%) of patients, whereas poor sleep hygiene, anxiety, *Vegadharana* (suppression of natural urges), *Dhatukshaya* (debility) and *Pittavridhhi* (aggravated *Pitta*) were found in 12.5%, 35.29%, 14.06%, 17.18% and 20.31% of the patients, respectively. Researchers have shown a long list of factors to be related to insomnia, ranging from physical and emotional disorders to demographic and socioeconomic characteristics. However, many of these factors are interrelated, so what seems to be a direct association may disappear when the effects of the others are taken into account.<sup>[14]</sup>

### Mode of action of *Sattvavajaya Chikitsa*

In the present study, it is found that stress is the major cause for the disease insomnia. This stress further leads to chief symptoms as well as associated.

*Shithilikarana Vyayama* opens the energy channels and psychic centers. Researchers have found that developing control of the body through these practices enables them to control the mind and energy. *Yogasana* became tools to higher awareness, providing the stable foundation necessary for the exploration of the body, breath, mind and higher states. When *Prana* begins to flow, the toxins are removed from the system ensuring the health of the whole body.

*Surya Namaskara*: These postures generate *Prana*, the subtle energy, which activates the psychic body. *Surya Namaskar* regulates *Prana*, *Udana Vayu*, *Tarpaka Kapha* and *Alochaka Pitta* which in turn enhance the functions of *Buddhi* (intellect). Regular practice of *Surya Namaskar* significantly shows reduction in pulse rate, attributed to increased vagal tone and decreased sympathetic activity.<sup>[15]</sup> Research on *Surya Namaskara* concluded that it plays positive and significant role to decrease stress level of the individuals.<sup>[16]</sup>

Collective impact of *Nadi Shodhana*, *Bhramari Pranayama* and *Aum* chanting modulates the sympathetic and parasympathetic activities thereby resulting in relaxation. From the *Yogic* point of view, *Nadi Shodhana Pranayama* regulates *Prana* flow in the body. It helps to remove congestion or blockage of *Nadi* and thereby allows the free flow of *Prana*. When the *Pingala Nadi* is dominant, right nostril breathing will be there resulting in heating up of the body and increased physical activity. While *Ida Nadi* dominancy results in left nostril breathing, it increases mental activity. These two aspects of *Prana* represent the two most obvious characteristics of human, the ability to think and act. Through *Pranayama*, a fine balance of these two can be achieved.<sup>[17]</sup> *Pranayama* results in the control on *Chanchalatva Guna* (instability) of *Vata* and also *Rajas Guna*. *Vata Dosha* is the controller of *Manasa* (mind), by controlling the breath; mind also gets controlled. The various *Manasa Bhava* (mental signs) such as *Krodha* (anger) and fear also come under control through the *Pranayama*, which are the root cause for all type of mental disorders. During *Aum* chanting, the first pronunciation A creates the vibrations, which affects the spinal cord to increase its efficiency, affecting intermedialateral gray column. The second pronunciation U creates the vibrations in the throat and affects the thyroid glands, whereas the last pronunciation M brings the vibrations to the brain, thereby activating the brain centers as a result of which the efficiency of a brain increases.<sup>[18]</sup> *Aum* chanting helps to remove the *Avarana* (shield) of *Rajas* and *Tamas*.

**Meditation:** Meditation has been defined as training in awareness which when practiced over a period of time produces definite change in perception, attention and cognition. Mindfulness meditation involves focusing on your breathing and then bringing mind’s attention to the present without drifting into concerns about the past or future. It helps to break the chain of everyday thoughts to evoke the relaxation response, which would result in sleep.<sup>[19]</sup> Awareness is maintained by concentrating on the auditory channel. The rest of the terminals are disengaged

and their connections in the cerebral cortex are dissociated so that no message gets through to the motor organs. When awareness is focused on the parts of the body, the feelings or the visualizations enumerated in the practice, higher centers of the brain are being monitored.

All these relaxation technique lessen the stress level in the body and activate *Mana* (mind) for proper function by controlling *Raja Dosha* and breaks the *Avarana* (shield) of *Tamas*. *Raja* and *Vata* both are interrelated by the *Samyavashtha* of *Raja Guna* (balanced state of *Raja Guna*); *Vata* also gets controlled. Ultimately, all the *Avarana* gets break down. There is free flow of *Prana* in *Manovaha Srotas* (*Hridaya*). *Manasa* (mind) gets activated for *Swasyanigraha* and *Indriyaabhighra Karma*. Mind gets dissociated from all the things (*Ahita Artha*) and prepares the body and the mind for sleep.

### Mode of action of Pippalimula

Vitiation of *Vata* is the most important phase of insomnia, where *Pippalimula* might help in the *Samprapti Vighatana* (breakdown of pathogenesis) by its *Vatahara* (pacification of *Vata Dosha*) property as the drug is *Dipana* (stimulation of digestion), *Pachana* (digestion of undigested food particle), *Anaha Prasamanam* (relieves abdominal distension) and regulates *Prana-Apana Gati* (movements of *Prana* and *Apana*). Hence, it was found effective in the management of insomnia. Adjuvant used in the present study is jaggery and buffalo milk. Jaggery is having *Madhura Rasa* (sweet taste), *Madhura Vipaka* (sweet postdigestive action), *Dhatupushtikara* (nutritious), *Shleshmavardhana* (increased *Kapha Dosha*) and *Vatapittahara* (pacified *Vata* and *Pitta Dosha*) property. Due to these properties, it acts as *Indriyatarpaka* (satisfied *Indriya*) and increases nutritional value of drug. Buffalo milk is having *Nidrajanana* (sedative) property so act as excellent adjuvant as *Anupana*. The present study confirms that *Pippalimula* with *Guda* (jaggery) and *Mahishi Ksheera* (buffalo milk) induced the sleep in the patients of insomnia. It may be stated that *Pippalimula* along with jaggery and milk containing three potent, yet different drugs attain balanced properties in synergistic fashion and regulate the function of *Apana Vayu*, improve the digestion, regulate the physiology of *Dhatu* or body tissues, give pleasure, calmness and relieve the symptoms of *Anidra*.

*Pippalimula* has piperine and pipartin which are known to have sedative effects. It may be presumed that alkaloids such as piperine and essential oils might be responsible of sedative and CNS depressant activities of *Piper longum* root by acting on the GABA receptor complex.

### Conclusion

*Sattvavajaya Chikitsa* in the form of relaxation technique and *Guda Pippalimula Churna* provide significant result in the chief as well as associated complaints of insomnia.

But the difference between these two therapies was statistically insignificant. While in psychological symptoms, group A (relaxation technique) was found more effective than group B (*Guda Pippalimula Churna*). In *Manas* symptoms like *Krodha* 28.48%, *Bhaya* (31.43%) and in *Shoka* (32.75%) better result was found in group A (relaxation technique) than group B (*Guda Pippalimula Churna*) which was statistically significant also. *Rajo* and *Tamo Guna* are the major predisposing factors for *Krodha* (anger), *Bhaya* (fear), *Shoka* (sorrow) and *Dweshya* (jealousy). *Yogic* practices bring down the *Rajo Guna* which is the root for *Manasa* (mind) indulgence in *Ahita Artha* (unwholesome objects). Hence, from this study it can be concluded that *Sattvavajaya Chikitsa* could be a better approach than *Pippalimula Churna*.

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### Conflicts of interest

There are no conflicts of interest.

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