Original Article

Impact of Classical Yoga Therapy and Naturopathy Neutraceutical Functional Supplementary Food on Cortisol and Pittsburg Sleep Quality Index among Middle-Aged Men with Insomnia: Randomized Control Trial

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Abstract

To fulfill the objectives of the Random Group Experimental Design, 120 adults experiencing insomnia issues volunteered from Chennai city. Among them, 90 individuals underwent screening, from which 30 were randomly selected using the Random Sampling technique, falling within the age range of 35 to 50 years. These participants were then divided into two groups: an Experimental Group and a Control Group, each comprising 15 subjects. Over a period of 12 weeks, the Experimental Group received training sessions six days a week, lasting up to an hour each morning, while the Control Group engaged in active rest. Both groups underwent pre-test and post-test evaluations before and after the training sessions, during which their scores on the Pittsburgh Sleep Quality Index (PSQI) and cortisol levels were measured. The significance of differences among the groups was determined using the 't' test. Results indicated a decrease in both PSQI scores and cortisol levels among participants in the Experimental Group, who engaged in Classical Yoga therapy practices and consumed Naturopathy supplementary food. Consequently, the hypothesis was accepted with a confidence level of 0.05. The study concludes that Classical Yoga therapy practices along with Naturopathy supplementary food contribute to reducing PSQI scores and cortisol levels in adults suffering from insomnia.

Keywords: Yoga therapy, Naturopathy food, Nutraceutical Functional Supplementary Diet, cortisol, Pittsburgh Sleep Quality Index (PSQI).

Introduction

Classical Yoga therapy and Naturopathy Nutraceutical Supplementary food offer numerous benefits to individuals grappling with trauma and insomnia[1]. These modalities encompass various yoga

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techniques and the consumption of Nutraceutical Supplementary food derived from Naturopathy principles. Through classical yoga therapy, patients experience profound relaxation and a surge of positivity[2]. While sleeping tablets may aid in inducing sleep, they carry potential risks of side effects and merely address the symptoms rather than the root cause. Conversely, yoga boasts solely positive effects and has no associated side effects[3]. Moreover, it facilitates lifestyle changes that can be transformative. By consistently practicing yoga and integrating Naturopathy Nutraceutical Supplementary food, individuals can address the underlying causes of insomnia[1]. Insomnia, a prevalent sleep disorder, manifests as difficulty falling asleep, staying asleep, or waking up prematurely and struggling to return to sleep. It can drain one's energy and diminish overall well-being[4].

Objectives of the Study

The aim of the study was to determine there would be any significant difference on cortisol and Pittsburgh Sleep Quality Index among adults with insomnia due to classical Yoga Therapy as well as classical yoga therapy with naturopathy neutraceutical functional supplementary diet.

Statement of the Problem

The prevalence of insomnia worldwide is 33% with increasing age and diseases in the body. In India, 18.6% of healthy adults are suffering from insomnia.[5]. Additionally among the corporate employees, the prevalence rate of insomnia is 13.8%.[6] Various research studies iterates that insomnia can lead to many psychiatric disorders and can develop anxiety, depression and suicidal thoughts.[7].

Hypothesis

- It was hypothesized that there would be significant differences due to Classical Yoga therapy on Cortisol and Pittsburgh Sleep Quality Index among middle aged men with insomnia
- It was hypothesized that there would be significant differences due to Classical Yoga therapy and naturopathy neutraceutical functional supplementary diet on Cortisol and Pittsburgh Sleep Quality Index among middle-aged men with insomnia
- It was hypothesized that there would be significant differences between Classical Yoga therapy group as well as Classical Yoga Therapy with naturopathy neutraceutical functional supplementary diet group on Cortisol and Pittsburgh Sleep Quality Index among middle aged men with insomnia

Delimitations

- The study was delimited to adults suffering from insomnia living in Chennai only
- The age group of subjects was ranged from 35 to 50 years only.
- The selected dependent variables were cortisol and Pittsburgh Sleep Quality Index.
- The selected independent variables were Classical Yoga Therapy and Naturopathy Nutraceutical Supplementary diet.

Methodology

In order to fulfill the study's objectives, I invited subjects through the news paper advertisement and notice papers and all multimedia and banners etc .120 middle aged men experiencing insomnia from Chennai city volunteered, out of which 120 underwent screening, and 30 were randomly selected using a randomized control sampling method within the age range of 35 to 50 years. Duly consent form was signed by the participants. Under supervision of Registered MBBS doctors team with Registered laboratory team presentation data taken on 19th February 2023 and after 12 weeks.

These participants were divided into an experimental group and a control group, each comprising 15 subjects. The Experimental Group underwent training for 12 weeks, six days a week, with sessions lasting up to an hour in the morning, while the control group engaged in active rest. Yoga therapy treatment post data taken That all programs conducted private Higher secondary school campus including 12 weeks morning yoga therapy treatment itself.

Pre-test and post-test assessments were conducted before and after the training for both groups, measuring scores on the Pittsburgh Sleep Quality Index (PSQI) and cortisol levels. The 't' test was utilized to determine significant differences among the groups.

The Classical Yoga therapy practices included Sukshma Vyayama (Subtle Exercises), Suryanamakar, Uttanasana (Squat pose), supta baddha konasana (reclining butterfly pose), Sashankasana (moon pose), Viparita karani (inverted pose), Halasana (Plough pose), and Shavasana(Corpse Pose). Pranayamas such as Bhramari-Humming Bee Breath, Ujjayi-Psychic Breath, Nadi Shodhana-Psychic Network, and Yoga Nidra (Psychic Sleep) were also taught. Additionally, Naturopathy Nutraceutical Supplementary Food incorporating antioxidant-rich foods like berries, leafy greens, nuts, chia seeds, along with ingredients like turmeric, ginger, and garlic for potential anti-inflammatory properties, and sleep-promoting nutrients found in grains like oatmeal, were recommended. The importance of minimizing sweeteners, which can disrupt sleep, was also emphasized.

The data concerning the variables gathered from both groups before and after the training period were subjected to statistical analysis using the 't' test to ascertain any significant differences. This analysis was conducted with a significance level of 0.05.

Naturopathy Neutraceutical Funtional Supplementary Diet Chart

Table I: Break Fast Menu

Day	Breakfast
Monday	Kichadi / Pongal +Chutney
Tuesday	Kichadi /Uppuma with Vegetables + Mint Chutney
Wednesday	Kichadi /Ragi Dosa+ Chutney
Thurusday	Kichadi /Poha
Friday	Kichadi / Beaten Rice
Saturday	Kichadi /Dosa (Vegatables) +Sambar
Sunday	Kichadi /Rava Idli (Vegetables)+Corriander Leaves Chutney+Sambar

Table II: Lunch Menu

Day	Main Menu	Raitha	Sabji	Soup	Fruit
Monday	Palak Rice/Chapathi	Cucumber Tomato Raitha	Cho-Cho Sabji	Tomato Soup	Papaya
Tuesday	Rice+Dhal+Rasam Sambar+Buttermilk+ Chapathi	----------	Cabbage Sabji	---------	Orange
Wednesday	Veg Pulao/Curd Rice +Chapathi	Beetroot Raitha	Channa Gravy	Palak Soup	Apple
Thrusuday	Corriander Rice+Chapathi	Carrot Raitha	Tomato Sabji	Dhal Soup	Watermelon
Friday	Rice+Dhal+Rasam+ Sambar+Buttermilk+ Chapathi	----------	Ash Gourd Sabji	----------	Guava
Saturday	Tomato Rice+Chapathi	Cucumber Tomato Raitha	Dhal Sabji	Carrot Soup	Musambi
Sunday	Bisebelabath	Mixture	---------	Beetroot Soup/ Mixed Vegetable Soup	Banana/ Papaya

Table III: Dinner Menu

Day	Main Menu	Vegetable Sabji	Chutney	Salad
Monday	Chapathi+Rice+Rasam+ Sambar+ Buttermilk	Carrot Beans Sabji	Corriander	Cucumber Crimson
Tuesday	-Do-	Drumstick Leaves/ Ladies Finger	Mint	Raw Papaya
Wednesday	-Do-	Knol Khol	Curry Leaves	Tri-Colored Salad
Thursday	-Do-	Bottle Gourd	Tomato	Summer Retreat
Friday	-Do-	Palak	Groundnut	Guava Delight
Saturday	-Do-	Bitter Gourd Chips	Methi	Grated Salad
Sunday	-Do-	Cho-Cho Sabji	Ginger	Cabbage Kosambari

Review of Related Literature

Thirthalli et al. (2013) studied at a tertiary care psychiatry hospital and investigated the effectiveness of yoga as an antidepressant and its impact on reducing serum cortisol levels. The study involved 54 patients with depression, who were offered yoga as a potential therapy. A validated yoga program was administered over a month, and patients were free to choose medication under their psychiatrist's guidance. Depressive patients exhibited higher serum cortisol levels compared to controls, but after treatment, there was a significant decrease in cortisol levels. More patients in the yoga group experienced a reduction in cortisol levels compared to those in the medication-only group. The findings suggest yoga may alleviate depression by exerting "anti-stress" effects at the hypothalamic level.[8]

Zhai et al. (2021) studied involving 6973 Chinese college students found that perceived stress mediates the relationship between physical activity and sleep quality. The study used the International Physical Activity Questionnaire—Short Form (IPAQ-SF), Perceived Stress Scale—10 Items (PSS-10), and Pittsburgh Sleep Quality Index (PSQI). The results showed that perceived stress mediated the relationship between physical activity and sleep quality in both males and females, with 42.4% partial mediation and 306.3% complete mediation, respectively. This suggests that physical activity can improve sleep quality by managing stress.[9]

Results and Discussions

The information concerns the analysis of data collected from two groups before and after a training period, using a t-test to find out any significant differences. This test was conducted at a significance level of 0.05.

Table IV: Independent T Test for Yoga Group and Yoga with Diet Group

		Yoga group (n=15)	Yoga with diet (n=15)	t - Value and p - value
Pre-test cortisol	Mean	268.60	266.67	t= 0.443
	Std. Dev	10.84	12.98	p= 0.661 (N.S)
Post test cortisol	Mean	213.53	259.80	t= -5.711
	Std. Dev	29.69	10.16	p= 0.000 ***
Pre-test PSQI	Mean	18.67	2.440	t= -0.383
	Std. Dev	2.44	2.33	p= 0.705 (NS)
Post test PSQI	Mean	11.60	17.80	t= -5.889
	Std. Dev	3.46	2.15	p= 0.000 ***

Note: ***- Significant at p<0.001 level, NS- Not significant

In above statistical table, the outocme of independent t test computation states that there is no statistically significant difference in the pre test values of cortisol and Pittsburgh Sleep Quality Index between Yoga group and Yoga with diet group. Additionally, statistically significant difference ($p < 0.001$) was found in the post-test values of cortisol and the Pittsburgh Sleep Quality Index between the Yoga group and the Yoga with diet group.

Table V: Computation of Paired T Test for Yoga Group and Yoga with Diet Group on Cortisol

Group	Pretest		Post Test		Difference Mean (S.D)	Paired 't' Test and p value
	Mean	S.D	Mean	S.D		
Yoga group	266.67	12.98	259.80	10.15	6.86 (4.121)	t= 6.454 p=0.000 ***
Yoga with diet	268.60	10.84	213.53	29.68	55.067(26.1680	t= 8.150 p=0.000 ***

Note: ***- Significant at p<0.001 level

In the table V, There is significant effectiveness ($p<0.001$) present between the pre test and post test values of cortisol in both yoga group and yoga with diet group. The figure 1 elucidates the mean difference evident between pre and post test values of cortisol in yoga group and yoga with diet group.

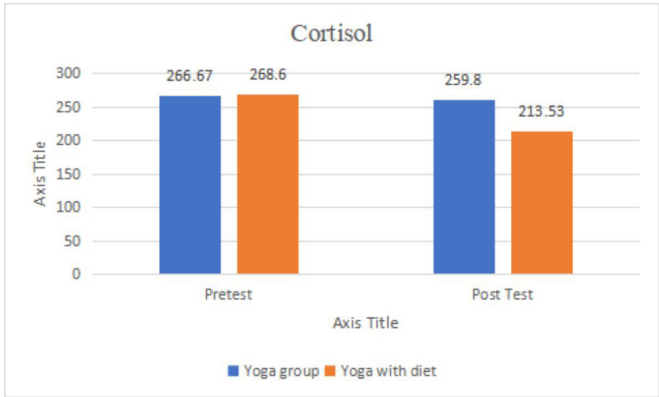

Figure 1. Bar Diagram Showing the Mean Difference Among Yoga Group and Yoga with Diet Group on Cortisol

Table VI: Computation of Paired T Test for Yoga Group and Yoga with Diet Group on PSQI

Group	Pretest		Post Test		Difference Mean (S.D)	Paired 't' Test and p value
	Mean	S.D	Mean	S.D		
Yoga group	19	2.33	17.80	2.145	1.20(0.676)	t= 6.874 p=0.000 ***
Yoga with diet	18.67	2.44	11.60	3.46	7.067(1.750	t= 15.629 p=0.000 ***

Note: ***- Significant at p<0.001 level

In the table VI, There is significant effectiveness ($p<0.001$) present between the pre test and post test values of PSQI in both yoga group and yoga with diet group. The figure 2 expound on the mean difference present between pre and post test values of cortisol in yoga group and yoga with diet group.

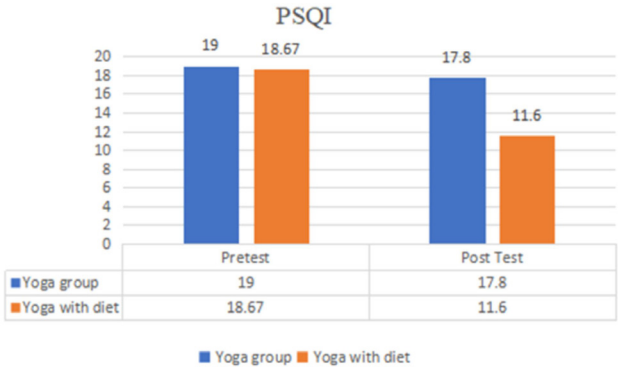

Figure 2. Bar Diagram Showing the Mean Difference Among Yoga Group and Yoga with Diet Group on PSQI

Discussion on Hypothesis

The results of first hypothesis proved that there were significant effectiveness ($p<0.001$) between the pre and post test values of Cortisol (Decreased) and PSQI (improved) due to Classical yoga therapy among middle aged men with insomnia.

Second hypothesis of the study proved there were significant effectiveness ($p<0.001$) between the pre and post test values of Cortisol (Decreased) and PSQI (improved) due to Classical yoga therapy and naturopathy neutraceutical functional supplementary diet among middle aged men with insomnia.

Third Hypothesis of the study proved there were significant effectiveness ($p<0.001$) in the post test values of Cortisol (Decreased) and PSQI (improved) between Classical yoga therapy and naturopathy neutraceutical functional supplementary diet among middle aged men with insomnia[8,9]. The above results are in line with the study conducted by Thirthalli et al. (2013) and Zhai et al. (2021).

Limitations:

- Several factors say personal life style habits, body frame, and social background were not taken in to consideration for this study.
- The factors say genetics and motivational factors were not accounted for this study.
- Certain factors like environmental and climatic conditions, economical background and also day to day work were not factored in.

Conclusion

The efficacy of yoga in alleviating insomnia appears to be linked to its ability to mitigate stress effects, particularly by reducing cortisol levels, possibly acting at the hypothalamic level. Elevated stress levels trigger physiological and psychological changes, activating the Hypothalamic-Pituitary-Adrenal (HPA) axis, which can lead to insomnia. Various coping mechanisms, including yoga therapy and naturopathy supplementary food, play crucial roles in managing stress. Yoga therapy, in particular, has been shown to reverse HPA axis activation, lower cortisol levels, and regulate sleep cycles. When combined with naturopathy supplementary food, yoga therapy becomes an effective adjunct in reducing stress and anxiety, thereby promoting normal homeostasis and improving sleep quality for individuals suffering from insomnia.

Ethical Clearance: The study was approved by Institutional Human Ethics Committee of Meenakshi Medical College Hospital and Research Institute with study reference number MMCH&RI IEC/PhD/09/June/22

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Conflict of Interest: The authors declare no conflict of interest

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