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Effect of Yoga Nidra on Academic Stress and Sleep Quality of University Students

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Abstract: ***Background: Yoga Nidra is a pratyahara technique originating from Nyasa that induces a deep sleep state, leading to stress management, improvement in sleep quality, and other cognitive functions such as attention, memory, and emotional regulation. Several studies have also shown the effectiveness of Yoga Nidra in coping with psycho - somatic diseases and also providing tranquility of mind. Aim: To investigate the effect of yoga nidra on university students' academic stress and sleep quality. Methodology: The present study was conducted on 26 university students belonging to both male and female gender based on a single group pre - post design. The subjects followed a thirty - minute session of Yoga Nidra five days a week for one month. This study examines academic stress and sleep quality using the Academic Stress Scale and Pittsburgh sleep quality index at the baseline, followed by post - data. Results: This study includes 26 subjects in the pre - and post - study groups for the analysis. It observed a significant reduction in academic stress among university students with a $p \leq 0.04$. Improvement in sleep quality was observed after one month of practice of Yoga Nidra with $p \leq 0.01$. Conclusion: This study concluded that one month's practice of yoga nidra has been proven beneficial in reducing academic stress and improving the sleep quality of university students.***

Keywords: Yoga Nidra, Academic stress, Sleep quality, University students, Yoga.

1. Introduction

Yoga Nidra is a tantric technique that originated from *Nyasa* (According to agama sastra, Nyasa must precede every mantra japa. During Nyasa, the practitioner sequentially places segments of the *bija*mantra into specific parts of the body before commencing the japa) and induces complete relaxation in physical, mental, and emotional planes.[1] A *bija*mantra is the shortest form of mantra, and it is associated with the energy centres (*Chakras*) in the body, which play an essential role in the refinement of consciousness and regulating an individual's personality.[2] Yoga Nidra is one of the pratyahara techniques often referred to as 'psychic sleep', 'sleeping consciously' or 'yogic sleep', which induces a deep sleep state by withdrawing the mind and senses from perceptual awareness.[3] Internal and external awareness remains while practising Yoga Nidra, along with complete physiological relaxation, and it also helps naturally induce a hypnagogic state through the emission of alpha waves in the brain.[4] It is a state of dynamic sleep that dwells between wakefulness and sleep, which helps attain the state of inner silence, leading to stress management, creativity enhancement, improvement of learning skills and self - transformation.[5] In this state, there remains awareness of breathing alone, and the mind is devoid of other thoughts and lower mental functions, with the predominance of delta wave activity.[6] This particular technique has been proven beneficial and therapeutic in cases of insomnia and other sleep - related disorders, as well as other psycho - somatic or stress - related illnesses.[7, 1]

Pieces of evidence have shown that eight weeks of Yoga Nidra sessions on 40 university students, randomised equally to experimental and control groups, have proven to improve their self - esteem and reduce stress levels based on the Rosenberg self - esteem scale and Visual Analogue scale for stress in the experimental group as compared to the control group.[8] The researchers performed another study on 61 participants categorised into the Meditator's group (N=30) and novice control group (N=31), assessing the functional connectivity of the Meditator's group who underwent Yoga Nidra. During the practice, it was observed that there was activation of auditory cortex, language, motor, somato - sensory areas, limbic regions including brainstem, thalamus (referred to as the 'gateway of consciousness') and amygdala along with the activation of areas responsible for attention, memory and emotional processing that includes supplementary motor, somato - sensory areas, insula and para - hippocampal areas of the brain.[9]

Research on 41 subjects has shown that there was an improvement in the sleep efficiency of the subjects after two weeks of practice of Yoga Nidra, along with significant improvement in delta sleep or slow wave sleep, resulting in increased parasympathetic drive and responsible for enhancing cognitive functions such as memory, learning, attention and performance.[10] Various studies found that during the practice of Yoga Nidra, electrical activity was observed in the dorso - lateral and orbito - frontal cortex, anterior cingulate and left temporal gyri, pons, striatal and thalamic areas and left inferior parietal lobule that corresponds to an executive attentional network.[3] Therefore, the present study aims to investigate the effect of Yoga Nidra on Academic stress and sleep quality of university students. The following are the hypotheses of the study:

Alternate Hypothesis 1 - Yoga Nidra may reduce the academic stress of university students.

Alternate Hypothesis 2 - Yoga Nidra may improve the sleep quality of university students.
Null Hypothesis 1 - Yoga Nidra may not reduce the academic stress of university students.
Null Hypothesis 2 - Yoga Nidra may not improve the sleep quality of university students.

2. Subjects and Methods

2.1 Study design and setting

The current study was conducted based on the single group pre - post design on University students of Bolpur, West Bengal.

2.2 Recruitment of participants

Twenty - six university students from both male and female genders participated in this study. The students belonged to the Department of Yogic Art and Science, Visva - Bharati University, Bolpur, West Bengal. Their age ranged from 18 to 30 years. This study used a convenience sampling technique to recruit the subjects. This research uses a few inclusion criteria, which are as follows: The participants must be physically and mentally sound, so they must have signed the informed consent. This research excluded people having any severe health issues or psychological disorders. The researchers obtained informed consent from the participants to conduct the research, and they were free to participate and withdraw from the research. This study maintained their anonymity and confidentiality throughout. There is no ethical committee of Visva - Bharati, hence, ethical consideration was not obtained when this research was undertaken.

2.3 Parameter measures

The researchers collected demographic details such as the name, gender and age of the subjects. The academic stress of the university students was measured using the Academic Stress Scale, and their sleep quality was measured using the Pittsburgh Sleep Quality Index.

2.4 Allocation

The present study was a single group pre and post - study without any control group, and all the twenty - six subjects underwent intervention.

2.5 Intervention

The thirty - minute session of YogaNidra was conducted five days a week for one month, following the instructions from the Yoga Nidra book by Swami Satyananda Saraswati, which mentioned seven steps. The first step begins with preparation, instructing participants to lie down on their backs and keep their bodies straight from head to toe, with legs slightly apart and palms facing away from the body. Participants are instructed to adjust their body position and clothing and to avoid physical movement throughout the practice. They should also make a resolution to themselves that “I will not sleep; I will remain aware and awake throughout the practice”.

The second step dealt with relaxation of the entire body and becoming aware of the complete stillness inside. The participants were instructed to chant prolonged OM sounds in their minds by keeping their awareness of their whole body from head to toe. They were mentally asked to repeat to themselves, “I am aware … I am going to practice Yoga Nidra”. In the third step of Yoga Nidra, the participants were asked to take *Sankalpa* (resolve) in their minds. It must be a short, positive statement in simple language, and *Sankalpa*must be repeated three times mentally.

The fourth stage started with the rotation of consciousness, where the participants needed to be aware of the different body parts as per the instructions, starting from the right side of the body, from thumb to toe, and repeating the same on the left side. Then, again, the awareness is moved to the back side of the body from heel to head and then to the front part of the body. In the fifth stage, the participants were asked to shift their awareness to their breathing process and count their number of breaths.

The sixth stage corresponds to Visualization, where the participants were instructed to focus on specific things, signs and symbols, and they had to visualize them in their mental space. The seventh stage ended with the externalization of awareness and completion of the technique of Yoga Nidra.

2.6 Statistical analysis

The statistical analysis software that was used for data analysis was Jeffreys’s Amazing Statistics Program (JASP) software. The Mean ± Standard Deviation of pre and post - data scores of the academic Stress scale and Pittsburgh sleep quality index was measured by performing the descriptive statistics. The p - value was set at 0.05, and the data was checked for normality using the Shapiro - Wilk Test.

3. Results

3.1 Descriptive statistics

Table 3.1

	Pre ASS	Post ASS	Pre PSQI	Post PSQI
Valid	26	26	26	26
Missing	0	0	0	0
Mean	84.346	72.346	6.269	4.077
Std. Deviation	18.836	21.672	1.402	1.573
Shapiro - Wilk	0.958	0.856	0.945	0.924
P - value of Shapiro - Wilk	0.347	0.002	0.174	0.057
Minimum	58	49	3	1
Maximum	132	138	9	8

Table 3.1 observed that the Mean ± Standard Deviation of Pre and Post ASS is 84.346 ± 18.836 and 72.346 ± 21.672. The Mean ± Standard Deviation of Pre and Post PSQI is 6.269 ± 1.402 and 4.077 ± 1.573. It showed that the p - value of Post ASS and PSQI are 0.002 and 0.057. The data is not normally distributed for the Academic stress scale as the p - value is less than 0.05. Hence, a non - parametric test, i. e., the Wilcoxon signed - rank test, was used. For PSQI, we found that the data is normally distributed since the p - value

is greater than 0.05. Therefore, a parametric test, i. e., paired sample t - test, was used.

3.2 Academic stress

Table 3.2

Paired Samples T - Test					
Measure 1	Measure 2	W	z	df	P
Pre- ASS	Post ASS	290.000	2.908		0.004
Note. Student's t - test.					

Note. Wilcoxon signed - rank test.

Table 3.2 shows that the p - value of the pre - and post - academic stress scale is 0.004, which is less than 0.05, explaining a significant reduction in stress level after one month of Yoga Nidra based on the Academic stress scale.

3.3 Sleep Quality

Table 3.3

Paired Samples T - Test				
Measure 1	Measure 2	t	df	P
Pre PSQI	Post PSQI	7.748	25	<.001
Note. Student's t - test.				

Table 3.3 shows that the p - value is less than 0.001, which is less than the set p - value of 0.05. The Pittsburgh Sleep Quality Index significantly improves sleep quality after one month of Yoga Nidra.

4. Discussion

The current study was carried out to investigate the effect of Yoga Nidra on academic stress and sleep quality of university students, and it has been found that there was a significant reduction in academic stress and improvement in the sleep quality of students after one month practice of Yoga Nidra based on Academic stress scale and Pittsburgh sleep quality index. Our results confirm a previous study, where Yoga Nidra was conducted on fifty - seven 10th - grade students aged between 14 and 16. The study randomised them into experimental and control groups for 21 days. This study showed that there was a significant reduction in the total stress levels and other stress domains related to home life, school performance, teacher interaction, future uncertainty, and school and leisure conflict in the experimental group as compared to the control group.[11] Another study was conducted on 80 patients diagnosed with Hypertension for two months, randomised equally to experimental and control groups. They were given Om chanting and Yoga Nidra as an intervention, and the participants' systolic and diastolic blood pressure and lipid profiles were assessed before and after the intervention period. Significant reduction in blood pressure and low - density lipo - protein (LDL) cholesterol was observed in the experimental group after the intervention as compared to the control group, with an increase in High - density lipo - protein (HDL) cholesterol level.[12]

A study on Yoga Nidra on the electrophysiological effect on local sleep of 30 subjects has shown that during the Yoga Nidra practice, there was an increase in Delta waves in the central region of the brain with a decrease in the alpha waves in the occipital and parietal lobes of the brain. After the practice of Yoga Nidra, there was an increase in the theta - 1 and delta wave in the prefrontal region of the brain, with a significant reduction in the delta wave in the frontal, central, temporal, parietal and occipital lobes of the brain.7 The theta and delta brain waves resemble the state of deep meditation, creativity, intuition, deep sleep and healing that helps in inducing relaxation, emotional connection, boosting up the immune system, enhancing restorative sleep and natural healing, thereby contributing to improved physical and mental health.2 A study by Kjaer et al noted the release of dopamine in the ventral striatum region of the brain after Yoga Nidra, which is responsible for the behaviour and increased theta activity, which promotes relaxation.1[3] The hypothalamus, centrally located in the brain, serves as the control centre of the autonomic nervous and limbic systems. It is also associated with the reticular activating system (RAS), a part of the brainstem that regulates sleep patterns, wakefulness and arousal. Yoga Nidra has resulted in decreased sympathetic dominance with parasympathetic activation through stress reduction emotion regulation by positively impacting the amygdalar nuclei of the limbic system and regulating the sleep pattern through RAS.1 Therefore, Yoga Nidra is a safe and effective technique to reduce Academic stress and improve the sleep quality of university students.

Strength of the study

The study's strength lies in reducing academic stress based on academic stress scale scores and improving sleep quality based on the Pittsburgh sleep quality index after one month of Yoga Nidra. The uniqueness of this study lies in Yoga Nidra's inclusion as the independent variable to investigate the changes in academic stress and sleep quality based on traditional scriptures and scientific evidence.

5. Limitations

This study accounted for certain limitations: the sample size was less than 30, and the sampling technique used was non - probability or convenience sampling instead of probability sampling.

6. Conclusion

This study concluded that Yoga Nidra has been proven beneficial in reducing academic stress levels and improving the sleep quality of University students after practising for one month. By incorporating Yoga Nidra into their routine, students may experience improved relaxation and overall well - being, contributing to more effective stress management and healthier sleep patterns. As these are the preliminary results, further research on clinical implications is suggested.

Conflict of interest

There are no conflicts of interest between the authors.

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Author Contribution Statement

We clarify that each author has contributed substantially to the idea, planning, carrying out, or interpreting the reported study. Each author's contributions are outlined below:

Author 1: Conception, design of experiments, analysis and interpretation of data, writing, supervision.

Author 2: Data collection, data analysis and writing.

Author 3: Provided critical feedback, writing, data interpretation and manuscript revision.

References

[1] Saraswati SS. Yoga Nidra. *Yoga Publication Trust*. (2012).

[2] Dudeja J. Scientific Analysis of Mantra - Based Meditation and its Beneficial Effects: An Overview. *International Journal of Advanced Scientific Technologies in Engineering and Management Sciences*. (2017); pp. *3*, 21. https: //doi. org/10.22413/ijastems/2017/v3/i6/49101

[3] Pandi - Perumal SR, Spence DW, Srivastava N, Kanchibhotla D, Kumar K, Sharma GS, Gupta R, Batmanabane G. The Origin and Clinical Relevance of Yoga Nidra. *Sleep and Vigilance*. (2022); 6 (1), 61–84. https: //doi. org/10.1007/s41782 - 022 - 00202 - 7

[4] Sharpe E, Lacombe A, Butler MP, Hanes D, Bradley R. A Closer Look at Yoga Nidra: Sleep Lab Protocol. *International Journal of Yoga Therapy*. (2021); 31 (1), Article_20. https: //doi. org/10.17761/2021 - D - 20 - 00004

[5] Nayak K, Verma K. Yoga - Nidra as a mental health booster: A narrative review. *Journal of Ayurveda and Integrative Medicine*. (2023); 14 (6), 100842. https: //doi. org/10.1016/j. jaim.2023.100842

[6] Parker S. Training attention for conscious non - REM sleep: The yogic practice of yoga - nidrā and its implications for neuroscience research. *Progress in Brain Research*. (2019); pp.244, 255–272. https: //doi. org/10.1016/bs. pbr.2018.10.016

[7] Datta K, Mallick HN, Tripathi M, Ahuja N, Deepak KK. Electrophysiological Evidence of Local Sleep During Yoga Nidra Practice. *Frontiers in Neurology*. (2022); 13, 910794. https: //doi. org/10.3389/fneur.2022.910794

[8] Dol KS. Effects of a Yoga Nidra on the life stress and self - esteem in university students. *Complementary Therapies in Clinical Practice*. (2019); pp.35, 232–236. https: //doi. org/10.1016/j. ctcp.2019.03.004

[9] Fialoke S, Tripathi V, Thakral S, Dhawan A, Majahan V, Garg R. Functional connectivity changes in meditators and novices during Yoga Nidra practice. *Scientific Reports*. (2024); 14, 12957. https: //doi. org/10.1038/s41598 - 024 - 63765 - 7

[10] Datta K, Bhutambare A, Mamatha VL., Narawa Y, Srinath R, Kanitka M. Improved sleep, cognitive processing and enhanced learning and memory task accuracy with Yoga Nidra practice in novices. *PloS One*. (2023); 18 (12), e0294678. https: //doi. org/10.1371/journal. pone.0294678

[11] D'souza OL, Jose AE, Suresh S, Baliga MS. Effectiveness of Yoga Nidra in reducing stress in school going adolescents: An experimental study. *Complementary Therapies in Clinical Practice*. (2021); p.45, 101462. https: //doi. org/10.1016/j. ctcp.2021.101462

[12] Anjana K, Archana R, Mukkadan JK. Effect of om chanting and Yoga Nidra on blood pressure and lipid profile in hypertension—A randomized controlled trial. *Journal of Ayurveda and Integrative Medicine*. (2022); 13 (4), 100657. https: //doi. org/10.1016/j. jaim.2022.100657

[13] Kjaer TW, Bertelsen C, Piccini P, Brooks D, Alving J, Lou HC. Increased dopamine tone during meditation - induced change of consciousness. *Brain Research. Cognitive Brain Research*, (2002); 13 (2), 255–259. https: //doi. org/10.1016/s0926 - 6410 (01) 00106 - 9