

Research Paper

Effects of Yoga Nidra and Progressive Muscle Relaxation on Sleep Quality and Stress in University Students: A Quasi Experimental Study

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ABSTRACT

The aim of the study was to investigate the effects of Yoga Nidra and Progressive Muscle Relaxation on sleep quality and stress levels among university students. The study used a pre-test and post-test design with a 15-day online intervention. Results showed that Yoga Nidra (YN) slightly reduced stress and improved sleep quality more than Progressive Muscle Relaxation (PMR), but the differences were not statistically significant. Both techniques show potential for managing stress and sleep. However, limitations like a small sample size and online mode highlight the need for further research.

Keywords: *Sleep Quality, Stress, Relaxation techniques, Yoga Nidra, Progressive Muscle Relaxation, University students, online intervention, quasi-experimental design, mental health interventions*

University students often face academic-related challenges which contribute to heightened stress levels that significantly impact their sleep patterns and overall sleep quality (Almojali, A. I., 2017). As a critical activity, sleep occupies more of our time than any other activity and is essential for various physiological processes, including restorative functions, thermoregulation, and energy conservation. During sleep, the body undergoes important physiological changes, with basic bodily functions slowing down and major shifts in consciousness occurring. People who are deprived of sleep are more prone to stress and people in distress have poor quality of sleep (Stress in America, APA, 2013). Hence sleep and stress are very much interrelated in terms of their effects on each other (Huang, Y. et al., 2011). Poor sleep quality can hinder cognitive functioning, reduce academic efficiency, worsen academic performance, and contribute to physical issues such as weight gain (Pilcher, J. J., 1997). Therefore, it is essential to equip students with effective practices that improve sleep quality, which in turn can enhance their overall physical and psychological functioning. Progressive Muscle Relaxation (PMR) is a technique that involves tensing and then relaxing different muscle groups in the body to reduce physical tension and promote relaxation, which can improve sleep quality. It's particularly useful for people who experience stress and/or anxiety. Progressive Muscle Relaxation (PMR) helps individuals become more aware of physical sensations, reduce

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stress, and calm the mind—factors critical for achieving restorative sleep. Research indicates that PMR is particularly effective in addressing insomnia and sleep disturbances, as it lowers physiological arousal, decreases heart rate, and enhances parasympathetic nervous system activity, which facilitates relaxation (Zarbakhsh, M., & Sayed Raisi, L. 2018). Yoga Nidra originating from tantric practice is a state of dynamic sleep that is characterized by systematic rotation of awareness in the body. By inducing a state of deep relaxation and heightened awareness, often referred to as the 'hypnagogic state', Yoga Nidra revitalizes the body and mind more effectively than regular sleep (Saraswati, S. S., 1998). Several research studies have suggested that practicing Yoga Nidra can significantly enhance sleep quality by facilitating faster onset of sleep and improving overall sleep quality, bringing down levels of stress, anxiety, depression and pain. (Moszeik, E. N., et al., 2022).

Research gap

Despite its proven efficacy, Yoga Nidra remains underutilized in mainstream psychological practice, warranting further integration and exploration. This is because there is a lack of comparative research making it challenging for psychotherapists to choose the most suitable approach for their clients. Although a few studies have explored this line of inquiry, their focus on athletic populations limits the generalizability of their findings to the broader population of university students (Kaur, S. & Singh, A. 2016), (Singh, S. 2017), (Singh, M. 2017). Physiological measures like Galvanic Skin Response played a primary role. The conclusions favoured the use of PMR rather than Yoga Nidra for reduction of anxiety and stress levels in athletes (Kaur, S. & Singh, A. 2016), (Singh, S. 2017), (Singh, M. 2017). A study evaluating the effect on sleep of athletes showed that both the practices are useful for improving Sleep Quality and dealing with insomnia (Datta, K. et al., 2022). Given the similarities between Yoga Nidra and Progressive Muscle Relaxation, understanding the unique benefits and relative advantages of Yoga Nidra could encourage therapists to incorporate it into mainstream psychological practice.

RESEARCH METHODOLOGY

Research Design and Variables Employed

The current study utilizes a quantitative research design to examine the impact of Yoga Nidra (YN) and Progressive Muscle Relaxation (PMR) on Sleep Quality. This Quasi - experimental study features two independent variables (YN and PMR) and two dependent variables (Sleep Quality and Stress). The study employs a between-groups design, comprising two distinct groups: one receiving the YN intervention and the other receiving the PMR intervention. This design enables the comparison of the effects of the two independent variables on sleep quality and stress across two separate samples.

Hypothesis

1. There is no significant difference in the effect of yoga nidra and progressive muscle relaxation in improving sleep quality.
2. There is no significant difference in the effect of Yoga Nidra and Progressive Muscle Relaxation in reducing stress levels.

Sample and the Sampling Method

The sample population is composed of university students from MIT ADT University, typically ranging from 18 to 25 years old. This demographic was taken because university students often experience high levels of stress, and sleep disturbances are common in this group, making them an ideal population for the study. A pretest from consisting of stress

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scale and sleep quality scale were circulated. Convenience sampling technique was used to select participants for the study. A total of 33 participants were selected. These participants were then randomly assigned into two groups: 16 students were assigned to the Yoga Nidra intervention, and 17 students were assigned to the Progressive Muscle Relaxation intervention.

Measures Used

1. Pittsburgh Sleep Quality Inventory (PSQI) is a widely used self-report questionnaire developed by Buysse et al. (1989) that assesses sleep quality over a one-month time interval.
2. Perceived Stress Scale (PSS) developed by Cohen et al. (1983), is a widely used psychological instrument for measuring the perception of stress.

Procedure

The intervention spanned over 15 days. The duration of each session of the intervention was 30 minutes. The intervention was conducted online at night from 9:15pm to 9:45pm. Consent was included in the pre-test. After each session, a form was distributed to attendees to collect feedback on any difficulties they experienced during the intervention and their feelings post-session. To minimize experimenter bias, two researchers were involved, each responsible for one group (YN or PMR). An ABAB counterbalancing design was employed, where the experimenter's conditions are alternated daily to nullify unintended effects. Participants were guided through Yoga Nidra sessions with clear instructions, leading them through a series of relaxation techniques, including body awareness and focusing on breath, while maintaining a calm and supportive environment throughout to enhance the effectiveness of session. Progressive Muscle Relaxation sessions involved instructing participants to tense and relax specific muscle groups while promoting proper technique and deep, slow breathing for maximum relaxation. Time of the intervention was controlled by keeping it constant. Noise was controlled by informing participants to avoid external noise during the session. After the intervention period, all participants complete the post-test assessments using the Pittsburgh Sleep Quality Index (PSQI) and the Perceived Stress Scale (PSS).

RESULTS

Table 1 Descriptive Statistics

	Pretest Stress	Post-test Stress	Pretest Sleep	Post-test Sleep	Gains Stress	Gains Sleep
N	28	28	28	28	28	28
Mean	20.92	18.21	7.17	7.17	-2.71	.00
Median	20.00	18.50	7.50	6.00	-3.00	1.00
Mode	14.00a	17.00a	8.00	5.00	-4.00a	1.00
Std. Deviation	6.66	7.76	3.28	3.76	7.18	3.79
Skewness	.984	.753	.045	.790	-.171	.048
Kurtosis	1.11	1.36	-.84	.23	-.64	.03
Range	28.00	36.00	11.00	15.00	27.00	17.00

a. Multiple modes exist. The smallest value is shown

There were no outliers found. The values of skewness and kurtosis are within their cut off range of -2 to +2 and -5 to +5 respectively. Hence parametric statistics were used.

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Table 2 Comparison of YN and PMR Groups in Terms of Sleep Quality and Stress Levels

Variables	YN		PMR		t	p
	M	SD	M	SD		
Gains Stress	-3.07	4.34	-2.40	9.11	-.24	.40
Gains Sleep	.384	3.81	-.33	3.86	.49	.31

Stress had reduced for both the groups. More stress reduction is seen in YN group in comparison to PMR group, indicating that YN is more efficient in reducing stress in comparison to PMR. Sleep quality has improved for YN group but has worsened for PMR group, indicating that YN is more efficient in improving sleep quality in comparison to PMR. One sided p value should be less than 0.05 to indicate significant difference. But it is observed that the one-sided p value for both stress and sleep is more than 0.05. Thereby we can state that: There is no statistically significant difference between YN and PMR in reducing stress. There is no statistically significant difference between YN and PMR in improving sleep quality. Thus, the null hypothesis is accepted. Hence the findings are not generalisable. This can be attributed to many factors including small sample size.

DISCUSSION

University students face increased stress levels and poor sleep quality due to various factors. Yoga Nidra, an ancient Indian practice has a positive impact on sleep and stress. But there was a dearth of research that compared its effects with other similar interventions like Progressive Muscle Relaxation which is already in clinical use. The current study aims to determine the relative efficiency of Yoga Nidra and Progressive Muscle Relaxation in improving sleep and stress. This study aimed to assess the comparative impact of YN and PMR on stress and sleep quality using a pretest-post-test quasi-experimental design with 15 days of online intervention. Gains stress was calculated by subtracting pretest from post-test. Hence a negative value indicates reduction in stress. Gains sleep was calculated by subtracting post-test from pretest. Hence a positive value indicates improvement in sleep quality. Gains in Stress: The YN group had a greater reduction in stress ($M = -3.07$) compared to the PMR group ($M = -2.40$). However, this difference was not statistically significant ($t = -0.24$, $p = 0.40$). Gains in Sleep: The YN group showed a slight improvement in sleep quality ($M = 0.38$), while the PMR group experienced a slight decline ($M = -0.33$). This difference was also not statistically significant ($t = 0.49$, $p = 0.31$). Theoretical evidence is available to highlight the nuanced and deep effect of Yoga Nidra as it does not involve movement and involves heightened awareness whereas PMR is more physical in approach to relaxation and does not deal with psychological stress. Higher efficiency of Yoga Nidra in reducing stress can be attributed to this fact. The sleep duration and efficiency of participants are influenced by various factors, including their workload, sleep habits, inconsistent schedules, sleep environment, dietary choices, and late-night gadget use. There is evidence for this from the feedback responses collected after each session. Majority of participants PMR felt completely refreshed after the session whereas majority of participants from YN group felt only somewhat refreshed. Some of the participants particularly from PMR group reported difficulty falling asleep after the session. This can explain why PMR group has shown a decline in sleep quality. High variability among participants could explain why the results were not significant. In the pretest, participants were asked about their frequency of consuming caffeinated beverages, such as coffee, tea, energy drinks, and soft drinks. The high caffeine group showed greater improvement in sleep quality and a more significant reduction in stress compared to the low caffeine group, suggesting that the intervention was more effective for individuals with higher caffeine consumption.

CONCLUSION

The study showed that Yoga Nidra is advantageous than Progressive Muscle Relaxation in reducing and stress levels and improving sleep quality by a small margin, although the differences were not statistically significant. However, the study faced several limitations, including a small sample size, shorter intervention duration, and online implementation, which could have influenced the results. Future research should explore these interventions with a larger sample, extended duration, and a control group to validate the findings and uncover the full potential of Yoga Nidra as a stress and sleep management tool.

Limitations

The study had several limitations that may have influenced the outcomes. The small sample size restricted the generalizability of the findings, making it challenging to draw broad conclusions. There was irregular participation among some individuals, which could have impacted the consistency and reliability of the data collected. The intervention duration was shorter than initially planned, with the intended 21-day period being reduced to just 15 days, potentially limiting the full effectiveness of the intervention. The online mode of the study posed several challenges, including difficulty in controlling extraneous variables, reduced control over experimental conditions, and variability in participant adherence. Additionally, despite taking precautions, internet connectivity issues disrupted the sessions at times.

Another limitation was the absence of a separate control group, which hindered the ability to compare the findings of the two conditions. This limitation was primarily due to the small sample size. Furthermore, since all the participants in the study were female, the results cannot be generalized to the male population.

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Conflict of Interest

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