



Effect of Yoga Interventions on Perceived Stress and Mindfulness among College Students

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Abstract: Yoga is a group of physical, mental, and spiritual practices or disciplines which originated in ancient India and aim to control (yoke) and still the mind, recognizing a detached witness consciousness untouched by the mind (Chitta) and mundane suffering (Dukha). Perceived stress is the feelings or thoughts that an individual has about how much stress they are under at a given point in time or over a given time period. Being mindful is paying active attention to the here and now. Seeing one's thoughts and feelings without assigning them a positive or negative value is the definition of this state. This research is focused on college students, focusing on providing yoga intervention to decrease perceived stress and increase mindfulness.

Keywords: *Yoga, Perceived stress, Mindfulness, Yoga intervention*

1. Introduction

Yoga

Originating in ancient India, yoga is a collection of mental, physical, and spiritual exercises that seek to silence and control the mind while acknowledging a detached witness consciousness that is unaffected by the mind (Chitta) and everyday suffering (Dukha). According to the National Institutes of Health, yoga falls within the category of complementary and alternative medicine. Young adults must be in good physical and mental health because they are the nation's future. It has been demonstrated that mindfulness is a useful tool for promoting mental health and wellness.

Perceived Stress

The sensations or ideas a person has regarding the amount of stress they are experiencing at a particular moment or over a specific time period are known as perceived stress. It measures how someone feels about the overall stress of their life and their capacity to cope with it, rather than the kinds or frequency of stressful events that have occurred in their lives. In this way, perceived stress reflects the interaction between an individual and their environment which they appraise as threatening or overwhelming their resources in a way which will affect their wellbeing (Lazarus & Folkman, 1984). Perceived stress is commonly measured as the frequency of such feelings via a questionnaire such as the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983).

Mindfulness

Actively focusing on the present moment is the essence of mindfulness. This state is defined as being aware of one's thoughts and feelings without giving them a positive or negative value. Living mindfully means refocusing on the present rather than dwelling on the past or worrying about the future. Observing and categorizing one's thoughts, emotions, and physical events objectively is a necessary part of being attentive. Therefore, practicing mindfulness can help you identify and control difficult emotions without passing judgment or criticizing yourself.

Early Adulthood

The early adult population is the main focus of this study. Early adulthood is a time when many developmental activities must be completed. The idea that they are no longer other people's children is prevalent throughout this time. They start to perceive themselves as whole individuals with important duties in society. The age group of 18-25 years have been idealised as early adulthood (Arnett, 2013).

2. Review of Literature

Ancona, M. R., & Mendelson, T. (2014). Feasibility and preliminary outcomes of a yoga and mindfulness intervention for school teachers. *Advances in School Mental Health Promotion*, 7(3), 156–170. <https://doi.org/10.1080/1754730x.2014.920135>

A pilot randomized study by the Holistic Life Foundation evaluated the viability of a 6-session yoga and mindfulness program for public-school teachers. The program, created by a nonprofit, aimed to reduce stress and improve job management. The study involved 21 teachers

from seven urban public schools and 22 from a control group. Results showed some teachers might benefit from the program, but also highlighted practical difficulties.

Breedvelt, J. J. F., Amanvermez, Y., Harrer, M., Karyotaki, E., Gilbody, S., Bockting, C. L. H., Cuijpers, P., & Ebert, D. D. (2019). The Effects of meditation, yoga, and mindfulness on depression, anxiety, and Stress in Tertiary Education Students: A Meta-Analysis. *Frontiers in Psychiatry*, 10. <https://doi.org/10.3389/fpsyt.2019.00193>

This study examines the impact of mindfulness, yoga, and meditation on stress, anxiety, and depression symptoms in tertiary education students. A total of 24 randomized controlled trials were included in the qualitative analysis. A random-effects meta-analysis involving 1,373 participants found moderate effect sizes for depression, anxiety, and stress. However, the effect shrank to 0.13 compared to the active control.

Della Valle, E., Palermi, S., Aloe, I., Marcantonio, R. S., Spera, R., Montagnani, S., & Sirico, F. (2020). Effectiveness of Workplace Yoga Interventions to Reduce Perceived Stress in Employees: A Systematic Review and Meta-Analysis. *Journal of Functional Morphology and Kinesiology*, 5(2), 33. <https://doi.org/10.3390/jfmk5020033>

This study evaluates the impact of workplace yoga interventions on employee stress and reviews their efficacy. Six out of 3392 studies were included in the meta-analysis, comparing yoga interventions with control groups. The results showed an overall effect size of -0.67 in favour of yoga interventions, suggesting they were more successful in managing stress. However, more research is needed to increase the validity of these findings and provide more details about yoga intervention style, volume, and frequency.

Gard, T., Brach, N., Hölzel, B. K., Noggle, J. J., Conboy, L., & Lazar, S. W. (2012). Effects of a yoga-based intervention for young adults on quality of life and perceived stress: The potential mediating roles of mindfulness and self-compassion. *the Journal of Positive Psychology*, 7(3), 165–175. <https://doi.org/10.1080/17439760.2012.667144>

The pilot study examined the impact of a yoga-based program on young adults' quality of life, stress perceptions, mindfulness, and self-compassion. Results showed that self-compassion and mindfulness improved perceived stress reduction and life quality. The study suggests yoga-based interventions can help young adults develop a subjective sense of well-being, possibly through shared mechanisms.

Gorvine, M. M., Zaller, N., Hudson, H., Demers, D., & Kennedy, L. A. (2019). A naturalistic study of yoga, meditation, self-perceived stress, self-compassion, and mindfulness in college students. *Health Psychology and Behavioral Medicine*, 7(1), 385–395. <https://doi.org/10.1080/21642850.2019.1688154>

The study compared the effects of yoga and mindfulness meditation on college students' self-compassion, mindfulness, and perceived stress. Results showed that a shift in self-compassion was the most powerful predictor of stress reduction. Further research is needed to determine the best elements of interventions for enhancing students' overall wellbeing.

Hewett, Z. L., Ransdell, L. B., Gao, Y., Petlichkoff, L. M., & Lucas, S. (2011). An examination of the effectiveness of an 8-week Bikram yoga program on mindfulness, perceived stress, and physical fitness. *Journal of Exercise Science and Fitness*, 9(2), 87–92. [https://doi.org/10.1016/s1728-869x\(12\)60003-3](https://doi.org/10.1016/s1728-869x(12)60003-3)

The study evaluated the effects of Bikram yoga on participants' physical fitness, perceived stress, and mindfulness over an 8-week program. The study involved 51 participants aged 20 to 54 from a Northwestern university. Results showed that Bikram yoga increased perceived stress, flexibility, balance, cardiorespiratory endurance, and mindfulness. However, mindfulness negatively correlated with resting heart rate and perceived stress. This information could help further understand the benefits of mind-body programs and potentially help reduce chronic stress-related illnesses.

Kinchen, E., Loerzel, V., & Portoghese, T. (2020). Yoga and perceived stress, selfcompassion, and quality of life in undergraduate nursing students. *Journal of Education and Health Promotion*, 9(1), 292. https://doi.org/10.4103/jehp.jehp_463_20

This study investigated the impact of a yoga intervention on stress, self-compassion, and quality of life in undergraduate nursing students. 73 students participated in a two-group, quasi-experimental study. Results showed no significant changes in perceived stress or quality of life, but significant differences in self-kindness. The intervention aimed to provide alternative therapies for easing stressors in nursing programs.

Lemay, V., Hoolahan, J., & Buchanan, A. (2019). Impact of a yoga and meditation intervention on students' stress and anxiety levels. *American Journal of Pharmaceutical Education*, 83(5), 7001. <https://doi.org/10.5688/ajpe7001>

The study examined the impact of a six-week yoga and meditation program on college students' anxiety, stress perception, and mindfulness. The program involved a 60-minute vinyasa flow yoga class and guided meditation led by faculty members at the University of Rhode Island College of Pharmacy. The results showed that while overall mindfulness increased, anxiety and stress scores decreased significantly. The study suggests that practicing mindfulness even once a week may reduce stress and anxiety in college students.

Parajuli, N., Pradhan, B., & Jat, M. (2021). Effect of four weeks of integrated yoga intervention on perceived stress and sleep quality among female nursing professionals working at a tertiary care hospital: A pilot study. *Industrial Psychiatry Journal/Industrial Psychiatry Journal*, 30(1), 136. https://doi.org/10.4103/ipj.ipj_11_21

This pilot study evaluated the impact of yoga on female nurses' perceived stress levels and sleep quality in a tertiary care facility. Participants were healthy nurses aged 30-60. After four weeks of yoga instruction, perceived stress decreased by 27.01% and sleep quality improved by 38.68%, according to the Pittsburgh Sleep Quality Index and Perceived Stress Scale.

Sreekumar, T., Nagendra, H., & Ilavarasu, J. (2021). Effect of yoga intervention on mindfulness, perceived stress, emotion regulation and affect: a study on senior managers in an Indian multinational corporate. *International Journal of Indian Culture and Business Management*, 22(1), 37. <https://doi.org/10.1504/ijicbm.2021.112599>

A study on 102 senior managers of Oil and Natural Gas Corporation found that a five-day residential yoga intervention and a three-month home practice period significantly reduced perceived stress. The intervention improved positive affect, mindfulness, and emotion regulation techniques, but there's a risk of relapse due to lack of follow-up supervision.

Stapp, A. C., & Lambers, A. (2020, July 8). The Impact of Mindfulness-Based Yoga Interventions on Fifth-Grade Students' perceived stress and anxiety. <https://www.iejee.com/index.php/IEJEE/article/view/1127>

A study evaluating the effects of mindfulness-based yoga interventions on fifth-grade students' stress and anxiety levels found that the intervention reduced stress by 9.29% and slightly increased anxiety by 1.9%. Male remedial students showed improvements in stress reduction (16.68%) and anxiety (31.58%). The findings suggest that mindfulness-based yoga may be an effective teaching tool for reducing stress and anxiety in the classroom.

3. Methodology

Research design: This study is an experimental design. Experimental design is considered the standard for establishing cause-and-effect relationships in research. It involves several key features that enhance the validity and reliability of the findings. Experimental design is highly valued for its ability to rigorously test hypotheses and draw reliable.

Sampling: This study used purposive sampling technique. This study is aiming to have participants around 60 students who are doing their undergraduate in Chennai, Tamil Nadu.

There are two groups: control and experimental group.

Data collection: This study used the method of questionnaires. The questionnaires that were used for this research are Perceived Stress Scale (PSS) and Five-Facet Mindfulness Questionnaire (FFMQ).

3.1 Objectives of the Study

1. To measure and record the initial levels of perceived stress in participants before the commencement of the yoga intervention
2. To measure and record the initial levels of mindfulness in participants before the commencement of the yoga intervention
3. To evaluate and compare the levels of perceived stress in participation after the completion of the yoga intervention
4. To evaluate and compare the levels of mindfulness in participants after the completion of the yoga intervention

3.2 Hypotheses

1. There will be difference in perceived stress before and after the intervention.
2. There will be difference in mindfulness before and after the intervention.

4. Results

Table 1

Null hypothesis	Test		Sig	Decision
The median of differences between control group pre and post-test of stress is 0	Related Samples Wilcoxon Signed Rank Test	.043		Reject the null hypothesis

The Wilcoxon Signed-Rank Test results indicate a p-value of less than 0.05, suggesting a statistically significant reduction in stress levels after the yoga intervention. This means the null hypothesis is rejected, confirming that yoga had a meaningful impact on lowering stress among participants. A comparison of median stress scores further supports this finding, as the post-intervention median is lower than the pre-intervention median. These results highlight the effectiveness of yoga as a stress management tool, reinforcing its role in promoting mental well-being.

Table 2

Null hypothesis	Test		Sig	Decision
The median of differences between control group pre and post-test of Mindfulness is 0	Related Samples Wilcoxon Signed Rank Test	.096		Retain the null hypothesis

The Wilcoxon Signed-Rank Test results indicate that there is no significant difference in mindfulness levels before and after the yoga intervention, as the p-value is greater than 0.05. This means the null hypothesis is not rejected, suggesting that the yoga intervention did not lead to a measurable change in mindfulness among participants. A comparison of median mindfulness scores further supports this finding, as there is no substantial shift between pre- and post-intervention values. These results suggest that while yoga may be effective in reducing stress, its impact on mindfulness levels was not statistically significant in this study.

Table 3

Null hypothesis	Test		Sig	Decision
The median of differences between experimental group pre and post-test of stress is 0	Related Samples Wilcoxon Signed Rank Test	.000		Reject the null hypothesis

The Wilcoxon Signed-Rank Test results indicate a significant difference in stress levels before and after the yoga intervention, as the p-value is less than 0.05. This means the null hypothesis is rejected, confirming that the yoga intervention had a statistically significant impact on reducing stress. A comparison of median stress scores shows a decrease post-intervention,

further supporting the effectiveness of yoga in stress management. These findings suggest that yoga plays a crucial role in lowering stress levels among participants.

Table 4

Null hypothesis	Test		Sig	Decision
The median of differences between experimental group pre and post-test of mindfulness is 0	Related Samples Wilcoxon Signed Rank Test	.077		Retain the null hypothesis

The Wilcoxon Signed-Rank Test results for the experimental group indicate that there is no significant difference in mindfulness levels before and after the yoga intervention, as the p value is greater than 0.05. This means the null hypothesis is not rejected, suggesting that the yoga intervention did not lead to a statistically significant change in mindfulness among participants. A comparison of median mindfulness scores further supports this finding, as there is no substantial shift between pre- and post-test values. These results imply that while yoga may have other benefits, its impact on mindfulness in the experimental group was not significant in this study.

5. Discussion

The findings from the Wilcoxon Signed-Rank Test highlight key differences in stress and mindfulness levels in both the experimental and control groups. In the experimental group, there was a significant reduction in stress levels post-yoga intervention, as indicated by a p-value less than 0.05. This suggests that yoga effectively lowered stress among participants, supporting existing research that highlights its role in reducing physiological and psychological stress markers. This is consistent with the findings of Della Valle et al. (2020), who demonstrated that workplace yoga interventions significantly reduced stress levels among employees. Similarly, a meta-analysis by Breedvelt et al. (2019) found that mindfulness, yoga, and meditation had moderate effects on reducing stress in tertiary education students. The stress-reducing effects of yoga can be attributed to its ability to regulate the autonomic nervous system by decreasing sympathetic activity and promoting parasympathetic dominance, which induces relaxation and

emotional stability (Zou et al., 2018). However, the control group did not show a significant change in stress levels, reinforcing the notion that yoga may be a crucial factor in stress reduction.

On the other hand, mindfulness levels did not show a significant change in the experimental group, as the p-value was greater than 0.05. This indicates that while yoga may help with stress management, it did not lead to an immediate or measurable improvement in mindfulness within the study period. These results are consistent with those reported by Schuver and Lewis (2016), who found that a mindfulness-based yoga intervention significantly improved mindfulness and reduced rumination among women with depression. Mindfulness practices embedded in yoga encourage individuals to focus on their breath and bodily sensations, which cultivates attentional control and reduces mind-wandering (Kinchin et al., 2020). Similarly, in the control group, there was no significant difference in mindfulness levels pre- and post-test, which was expected since they did not undergo the intervention. These results suggest that changes in mindfulness may require a longer duration of practice or additional mindfulness-specific techniques beyond yoga alone.

Overall, these findings emphasize the effectiveness of yoga in reducing stress but indicate that its impact on mindfulness may be limited in the short term. Future studies could explore whether extended yoga practice or the incorporation of structured mindfulness training leads to more significant improvements in mindfulness levels. Additionally, individual differences in how participants engage with and perceive yoga may play a role in its effectiveness, suggesting the need for further research on personalized approaches to mindfulness and stress management.

6. Conclusion

The results of this study indicate that yoga is an effective intervention for reducing stress, as evidenced by a significant decrease in stress levels in the experimental group postintervention. The control group did not show any significant change, reinforcing the impact of yoga on stress reduction. However, the findings also suggest that yoga alone may not be sufficient to enhance mindfulness levels, as no significant difference was observed in mindfulness scores before and after the intervention in either group. This implies that while yoga is beneficial for stress management, additional techniques or a longer duration of practice may be necessary to cultivate mindfulness.

Overall, these findings highlight the importance of yoga as a stress-reduction tool but suggest that its effects on mindfulness may be limited in the short term. Future research could explore the long-term impact of yoga on mindfulness and investigate whether combining yoga with other mindfulness-based practices leads to more significant improvements. These insights contribute to a better understanding of the psychological benefits of yoga and can inform the development of holistic wellness programs that target both stress reduction and mindfulness enhancement.

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