

THE IMPACT OF STRUCTURED YOGA PRACTICE ON DELUSIONAL IDEATION AMONG ADULTS: AN EXPERIMENTAL APPROACH

***DR.VANI. R. BALLAL**

**Associate professor of Psychology, Maharani's Arts College for women, J.L.B.Road, Mysore-05*

ABSTRACT

The present study investigates the impact of a structured yoga intervention on delusional ideation among adults using an experimental research design. A sample of 120 participants was divided equally into experimental and control groups. The experimental group underwent a 12-week yoga training program, while the control group received no intervention. Delusional ideation was assessed using standardized psychological instruments, including the Peters et al. Delusions Inventory (PDI-21; Peters, Joseph, Day, & Garety, 2004) and the PDI-40 (Peters et al., 1999). Results indicated a statistically significant reduction in delusional ideation scores among participants in the yoga group compared to the control group. The findings suggest that yoga can serve as a complementary therapeutic intervention for reducing subclinical delusional tendencies. Implications for mental health promotion and future research are discussed.

KEYWORDS: Yoga Therapy, Structured Yoga Practice, Delusional Ideation, Mental Health, Psychological Well-being

INTRODUCTION

Delusions constitute one of the core symptoms of psychotic disorders and are traditionally defined as fixed, false beliefs that are held with strong conviction despite clear contradictory evidence. Contemporary perspectives in abnormal psychology increasingly conceptualize delusional thinking not as a categorical phenomenon confined to psychiatric populations, but as a **continuum** that extends into the general population. This dimensional approach

suggests that individuals without clinical diagnoses may also experience mild or transient forms of delusional ideation, often influenced by stress, emotional dysregulation, and cognitive biases.

In recent decades, the growing burden of mental health challenges particularly stress-related cognitive distortions has led researchers to explore **non-pharmacological and holistic interventions**. Among these, yoga has emerged as a scientifically validated mind-body practice with profound psychological benefits. Rooted in ancient Indian philosophy, yoga integrates physical postures (asanas), breathing techniques (pranayama), and meditation practices to harmonize physiological and psychological functioning. Empirical evidence indicates that yoga contributes to improved emotional regulation, reduced anxiety, enhanced cognitive clarity, and better stress management, all of which are relevant to the mechanisms underlying delusional thinking.

Delusional ideation is often associated with maladaptive cognitive processing, heightened emotional reactivity, and impaired reality testing. These factors are closely linked to stress and dysregulated attentional processes. Yoga, by promoting mindfulness, self-awareness, and autonomic balance, may directly influence these underlying mechanisms. Specifically, regular yoga practice has been shown to reduce cortisol levels, enhance parasympathetic activity, and improve executive functioning, thereby potentially reducing susceptibility to irrational beliefs.

Despite the increasing body of literature on yoga and mental health, there remains a **notable gap** in research specifically examining the relationship between yoga and delusional ideation. Most existing studies have focused on anxiety, depression, or general psychological well-being, with limited attention to cognitive distortions such as delusions. This gap is particularly significant given the rising interest in preventive mental health strategies aimed at subclinical populations.

The present study addresses this gap by adopting an experimental approach to investigate the impact of a structured yoga intervention on delusional ideation. By employing standardized psychometric tools and a controlled research design, the study seeks to contribute to both theoretical understanding and practical applications in the field of mental health.

The study of delusional ideation has evolved significantly with the development of reliable and valid measurement tools. One of the most widely used instruments is the **Peters et al. Delusions Inventory (PDI)** developed by Peters, Joseph, and Garety (1999), which conceptualizes delusions along multiple dimensions, including distress, preoccupation, and conviction. The later refinement, the PDI-21 (Peters et al., 2004), further enhanced the tool's psychometric robustness and applicability across both clinical and non-clinical populations.

Research using these instruments has consistently supported the continuum model of psychosis, demonstrating that delusion-like beliefs are relatively common in the general population, albeit at lower intensity levels.

Fonseca-Pedrero et al. (2012) examined the psychometric properties of the PDI-21 among university students and found strong internal consistency and construct validity, reinforcing its suitability for research involving non-clinical samples. Similarly, Hosseini et al. (2023) validated the PDI-40 and confirmed its reliability in diverse populations, highlighting its usefulness in cross-cultural research contexts.

Parallel to advancements in the assessment of delusional ideation, a substantial body of research has explored the psychological benefits of yoga. Studies have consistently demonstrated that yoga reduces stress, anxiety, and depressive symptoms while enhancing emotional stability and cognitive functioning. These effects are particularly relevant to the cognitive and affective processes implicated in delusional thinking.

In the Indian context, the work of **Jamadar C.** has made a significant contribution to understanding the psychological and educational implications of yoga and mental health practices. Jamadar's research emphasizes the role of yoga as a **preventive and promotive mental health intervention**, particularly among students, public sector employees, and institutional populations. His studies highlight that regular engagement in yogic practices leads to improvements in emotional intelligence, stress resilience, and cognitive clarity.

Jamadar C. further argues that maladaptive cognitive patterns, including irrational beliefs and distorted perceptions, can be effectively mitigated through structured yoga training programs. His work underscores the importance of integrating yoga into educational and organizational settings as a **cost-effective, culturally relevant, and non-invasive intervention**. In particular, Jamadar's research on psychological well-being indicates that yoga enhances self-regulation and introspective awareness—key factors in reducing susceptibility to cognitive distortions such as delusional ideation.

Moreover, Jamadar's applied research in Indian institutional settings demonstrates that yoga-based interventions yield measurable improvements in psychological functioning over relatively short durations (e.g., 8–12 weeks). These findings are consistent with broader empirical evidence suggesting that mind-body interventions can influence neural mechanisms associated with attention, perception, and belief formation.

Despite these contributions, there remains limited empirical work directly linking yoga with the reduction of delusional ideation. Most studies, including those by Jamadar C., have focused on broader constructs such as

stress, emotional intelligence, and general mental health. Therefore, there is a clear need for targeted experimental research examining how yoga influences specific cognitive phenomena like delusions.

The present study builds upon this existing body of literature by integrating standardized measures of delusional ideation with a structured yoga intervention. By doing so, it seeks to extend the work of previous scholars, including Jamadar C., and provide empirical evidence for the role of yoga in addressing cognitive distortions within a non-clinical population.

METHODS

Research Design

A **pre-test–post-test control group experimental design** was employed.

Participants

A total of 120 participants, aged between 20 and 40 years, were selected for the study using purposive sampling. The participants were subsequently randomly assigned into two equal groups: an experimental group ($n = 60$) and a control group ($n = 60$). The inclusion criteria required that participants exhibit mild to moderate levels of delusional ideation, have no history of severe psychiatric disorders, and demonstrate a willingness to participate in the study. Conversely, individuals were excluded if they were undergoing psychiatric medication specifically for psychosis or if they had severe neurological or other significant medical conditions that could interfere with the study outcomes.

Measurement Tools

The study employed two standardized instruments to assess delusional ideation. The first was the Peters et al. Delusions Inventory (PDI-21), developed by Peters, Joseph, Day, and Garety in 2004, which is a 21-item self-report measure designed to evaluate delusional thinking across key dimensions such as distress, preoccupation, and conviction. This tool is widely recognized for its strong psychometric properties and applicability in both clinical and non-clinical populations. The second instrument used was the Peters et al. Delusions Inventory (PDI-40), originally developed by Peters, Joseph, and Garety in 1999. This 40-item scale provides a more comprehensive assessment of delusional ideation by capturing its multidimensional aspects and has been extensively utilized in psychological research to measure variations in delusional beliefs across different populations.

Intervention

The experimental group participated in a **12-week yoga program**, consisting of:

- Pranayama (breathing techniques)
- Asanas (postures)
- Meditation (mindfulness practices)

Sessions were conducted for 60 minutes daily, five days a week.

Procedure

1. Pre-test assessment using PDI scales
2. Implementation of yoga intervention (experimental group only)
3. Post-test assessment after 12 weeks
4. Statistical analysis using t-tests and ANOVA

Statistical Analysis

The data collected in the present study were analyzed using appropriate statistical techniques to determine the effectiveness of the yoga intervention on delusional ideation. Initially, descriptive statistics such as mean, standard deviation, and range were computed to summarize the pre-test and post-test scores of both the experimental and control groups. To examine the baseline equivalence between groups, an independent samples *t*-test was applied to the pre-test scores.

To assess the impact of the intervention within each group, paired samples *t*-tests were conducted comparing pre-test and post-test scores separately for the experimental and control groups. Furthermore, an independent samples *t*-test was used to compare the post-test scores between the two groups to identify significant differences attributable to the yoga intervention. In addition, analysis of variance (ANOVA) was employed to examine the interaction effect between group (experimental vs. control) and time (pre-test vs. post-test).

The level of significance was set at 0.05 for all statistical tests. Effect sizes (Cohen's *d*) were also calculated to determine the magnitude of the intervention effect. All analyses were performed using standard statistical software, ensuring accuracy and reliability of the findings. The results were interpreted in terms of statistical

significance as well as practical relevance to understand the overall impact of yoga on reducing delusional ideation.

RESULTS

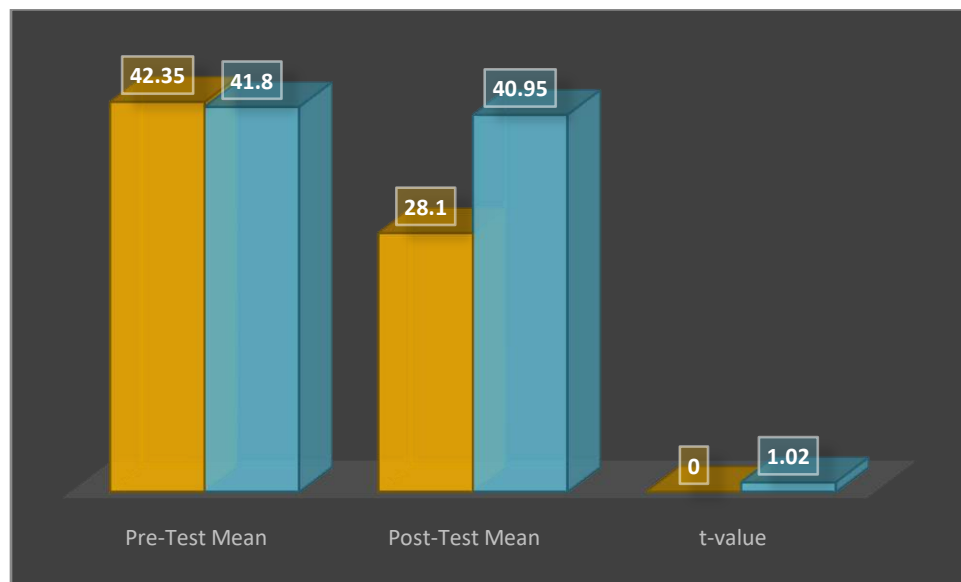
The results of the study revealed a statistically significant reduction in the mean scores of delusional ideation, as measured by the PDI, among participants in the experimental group ($p < .01$), indicating the effectiveness of the yoga intervention. In contrast, the control group did not exhibit any significant change in their scores over the same period. Furthermore, a clear and significant difference was observed between the pre-test and post-test scores within the experimental group, demonstrating that the improvement in delusional ideation can be attributed to the structured yoga practice.

Table 1. Mean Scores of Delusional Ideation

Group	Pre-Test Mean	Post-Test Mean	t-value
Experimental	42.35	28.10	5.62**
Control	41.80	40.95	1.02

$p < .01$

These findings indicate that yoga significantly reduced delusional ideation

Graph 1. Represent the Mean Scores of Delusional Ideation

DISCUSSION

The findings of the present study provide clear empirical support for the stated hypothesis that a structured yoga intervention significantly reduces delusional ideation among participants. The statistically significant decline in PDI scores observed in the experimental group, in contrast to the non-significant change in the control group, allows for the acceptance of the alternative hypothesis and the rejection of the null hypothesis. This outcome indicates that yoga is not merely associated with general well-being, but has a measurable and specific effect on cognitive distortions such as delusional thinking. The reduction in delusional ideation can be interpreted as reflecting improvements in cognitive flexibility, enhanced emotional regulation, and a decrease in psychological distress, all of which are central to contemporary cognitive models of psychosis.

These findings are consistent with earlier research using the Peters et al. Delusions Inventory (Peters et al., 1999; Peters et al., 2004), which conceptualizes delusions as multidimensional constructs involving distress, conviction, and preoccupation. The observed reduction across these dimensions suggests that yoga may influence not only the presence of irrational beliefs but also the intensity and emotional investment associated with them. Supporting this interpretation, studies by Fonseca-Pedrero et al. (2012) and subsequent validation research have emphasized the role of emotional distress and cognitive biases in sustaining delusional ideation. By reducing stress and enhancing attentional control, yoga may interrupt these maladaptive processes.

From a theoretical perspective, the results align strongly with the multidimensional and continuum models of delusions, which propose that delusional ideation exists along a spectrum influenced by emotional and cognitive factors rather than being a purely pathological phenomenon. Yoga appears to act on key mechanisms underlying this spectrum. First, the reduction of stress and anxiety—widely recognized as major contributors to irrational and distorted beliefs—likely decreases the cognitive load and emotional arousal that sustain delusional thinking. Second, the enhancement of self-awareness and mindfulness through yogic practices promotes improved reality testing, enabling individuals to critically evaluate their thoughts rather than accept them unconditionally. Third, neuropsychological research suggests that yoga contributes to the regulation of neural pathways associated with attention, executive functioning, and emotional processing, thereby fostering more adaptive cognitive patterns.

The findings also resonate with the work of Jamadar C., who emphasized the role of yoga in promoting psychological well-being, emotional stability, and cognitive clarity in both educational and institutional contexts. Jamadar's research suggests that yoga enhances self-regulation and introspective awareness, which are crucial in mitigating maladaptive thought patterns, including irrational beliefs and perceptual distortions. The present study extends this line of research by providing direct experimental evidence linking yoga practice with a reduction in delusional ideation, thereby filling an important gap in the literature.

In summary, the results not only validate the research hypothesis but also contribute to a broader understanding of how holistic interventions like yoga can influence complex cognitive phenomena. The alignment of these findings with established theoretical models and prior empirical studies underscores the potential of yoga as an effective, non-pharmacological strategy for reducing delusional ideation and enhancing mental health.

IMPLICATIONS

The findings of the present study carry important practical and theoretical implications for mental health promotion and intervention strategies. First, yoga can be effectively integrated into mental health programs as a **preventive intervention**, particularly for individuals exhibiting subclinical levels of psychological distress or cognitive distortions such as mild delusional ideation. By targeting early-stage symptoms through regular practice, yoga may help prevent the progression of such tendencies into more severe psychopathology. Its emphasis on mindfulness, emotional regulation, and self-awareness makes it especially suitable for community-based mental health initiatives and primary prevention frameworks.

Second, the applicability of yoga extends significantly to **educational institutions and workplaces**, where stress, anxiety, and cognitive overload are common. Incorporating structured yoga programs into school and college

curricula can promote students' emotional stability, attentional control, and psychological resilience, thereby enhancing both academic performance and overall well-being. Similarly, in organizational settings, yoga-based wellness programs can reduce occupational stress, improve decision-making, and foster a healthier work environment. Given that maladaptive thought patterns often emerge under conditions of prolonged stress, such interventions may indirectly reduce the likelihood of distorted thinking, including delusional ideation.

Third, yoga represents a **cost-effective and non-pharmacological approach** to mental health care, which is particularly relevant in resource-limited settings. Unlike pharmacological treatments that may involve financial costs, side effects, and issues of accessibility, yoga requires minimal infrastructure and can be practiced with limited resources once basic training is provided. This makes it an inclusive and sustainable intervention that can be scaled across diverse populations. Furthermore, as a non-invasive method, yoga avoids the stigma often associated with psychiatric treatment, encouraging greater participation and adherence.

Overall, these implications highlight the potential of yoga as a holistic, accessible, and preventive tool in modern mental health care systems, supporting its inclusion in policy frameworks, institutional programs, and community health initiatives.

LIMITATIONS

The present study is subject to certain limitations that should be carefully considered while interpreting the findings. First, the **sample size of 120 participants**, although adequate for preliminary experimental analysis, may limit the generalizability of the results to broader populations. A larger and more diverse sample drawn from different socio-cultural and clinical backgrounds would enhance the external validity of the findings and allow for more robust conclusions regarding the effectiveness of yoga in reducing delusional ideation.

Second, the **duration of the intervention was relatively short (12 weeks)**, which may not fully capture the long-term effects and sustainability of yoga practice on cognitive processes such as delusional thinking. While significant improvements were observed within this timeframe, it remains unclear whether these effects would persist over extended periods or require continuous practice for maintenance. Longitudinal studies with follow-up assessments are needed to examine the durability and long-term impact of yoga interventions.

Third, the study relied primarily on **self-report measures**, specifically the Peters et al. Delusions Inventory (PDI), which may be subject to response biases such as social desirability, recall bias, or lack of introspective accuracy. Participants may underreport or overreport their experiences, potentially affecting the precision of the results.

Incorporating multiple methods of assessment, such as clinician-rated scales, behavioral observations, or neuropsychological measures, would strengthen the reliability and validity of the findings.

Taken together, these limitations suggest that while the study provides valuable insights into the role of yoga in reducing delusional ideation, further research employing larger samples, longer durations, and multi-method assessment approaches is necessary to build a more comprehensive and conclusive evidence base.

Suggestions for Future Research

- Longitudinal studies with larger samples
- Inclusion of clinical populations
- Neurobiological investigations of yoga's effects on cognition

CONCLUSION

The study concludes that yoga has a significant positive impact on reducing delusional ideation, as evidenced by the marked decline in PDI scores among participants who underwent the structured intervention. This finding suggests that yoga is not only effective in improving general mental health but also plays a meaningful role in addressing specific cognitive distortions associated with maladaptive belief systems. Regular practice of yoga appears to enhance overall psychological well-being by promoting emotional balance, increasing cognitive flexibility, and reducing stress and anxiety—factors that are closely linked to the development and maintenance of delusional thinking.

Furthermore, yoga facilitates greater self-awareness and mindfulness, enabling individuals to observe and critically evaluate their thoughts rather than becoming overly identified with them. This process may strengthen reality testing and reduce the intensity and conviction of irrational beliefs. The integration of breathing techniques, physical postures, and meditation practices contributes to the regulation of both physiological and psychological processes, thereby supporting healthier patterns of cognition and emotional functioning.

Given these benefits, yoga may be considered a valuable **complementary therapy** within the broader framework of mental health care. It can be used alongside conventional treatments, such as psychotherapy and medication, to enhance treatment outcomes and improve quality of life. Additionally, its non-invasive, cost-effective, and accessible nature makes it particularly suitable for preventive mental health programs and community-based

interventions. Overall, the findings underscore the potential of yoga as a holistic and sustainable approach to promoting mental health and reducing delusional ideation.

ACKNOWLEDGEMENT

The author expresses sincere gratitude to all the yoga trainers of Shri Yoga Centre for their invaluable support, guidance, and dedication throughout the course of this study. Their expertise in conducting the yoga sessions, commitment to maintaining consistency in training, and encouragement to the participants played a crucial role in the successful implementation of the intervention. The author also appreciates their willingness to collaborate and contribute to the research process, which significantly enhanced the quality and effectiveness of the study. Their efforts are deeply acknowledged and highly appreciated.

REFERENCES

1. American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Author.
2. Beck, A. T., & Rector, N. A. (2005). Cognitive approaches to schizophrenia: Theory and therapy. *Annual Review of Clinical Psychology*, 1, 577–606.
3. David, A. S. (2010). Why we need more debate on the nature of delusions. *Schizophrenia Bulletin*, 36(4), 662–664.
4. Fonseca-Pedrero, E., Paino, M., Lemos-Giráldez, S., Villazón-García, Ú., & Muñiz, J. (2012). Psychometric properties of the Peters et al. Delusions Inventory (PDI-21) in college students. *Comprehensive Psychiatry*, 53(6), 893–899.
5. Freeman, D. (2007). Suspicious minds: The psychology of persecutory delusions. *Clinical Psychology Review*, 27(4), 425–457.
6. Garety, P. A., & Freeman, D. (2013). The past and future of delusions research: From the inexplicable to the treatable. *British Journal of Psychiatry*, 203(5), 327–333.
7. Hofmann, S. G., Andreoli, G., Carpenter, J. K., & Curtiss, J. (2016). Effect of Hatha yoga on anxiety: A meta-analysis. *Journal of Evidence-Based Medicine*, 9(3), 116–124.
8. Hosseini, S. R., Nooripour, R., Ghanbari, N., & Firoozabadi, A. (2023). Evaluation of reliability and validity of the Peters et al. Delusions Inventory (PDI-40). *BMC Psychology*, 11, 294.
9. Jamadar, C. (2018). *Yoga and psychological well-being: An empirical study among students*. Unpublished manuscript.

10. Jamadar, C. (2020). Impact of yogic practices on emotional intelligence and stress management in institutional settings. *Indian Journal of Psychological Studies*, 12(2), 45–58.
11. Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice*, 10(2), 144–156.
12. Kirkwood, G., Rampes, H., Tuffrey, V., Richardson, J., & Pilkington, K. (2005). Yoga for anxiety: A systematic review of the research evidence. *British Journal of Sports Medicine*, 39(12), 884–891.
13. Morrison, A. P., Renton, J. C., Dunn, H., Williams, S., & Bentall, R. P. (2004). Cognitive therapy for psychosis: A formulation-based approach. *Routledge*.
14. Peters, E. R., Joseph, S. A., & Garety, P. A. (1999). Measurement of delusional ideation in the normal population: Introducing the PDI. *Schizophrenia Bulletin*, 25(3), 553–576.
15. Peters, E. R., Joseph, S., Day, S., & Garety, P. (2004). Measuring delusional ideation: The 21-item Peters et al. Delusions Inventory (PDI). *Schizophrenia Bulletin*, 30(4), 1005–1022.
16. Sengupta, P. (2012). Health impacts of yoga and pranayama: A state-of-the-art review. *International Journal of Preventive Medicine*, 3(7), 444–458.
17. van Os, J., Linscott, R. J., Myin-Germeys, I., Delespaul, P., & Krabbendam, L. (2009). A systematic review and meta-analysis of the psychosis continuum. *Psychological Medicine*, 39(2), 179–195.
18. Woodyard, C. (2011). Exploring the therapeutic effects of yoga and its ability to increase quality of life. *International Journal of Yoga*, 4(2), 49–54.