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Role of yoga in enhancing mental health: A pre-test-post-test experimental study

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Abstract
The present study aimed to investigate the effect of a 21-day structured yoga intervention on the mental health of adults residing in Varanasi city. Mental health problems such as stress, anxiety, and emotional instability are increasingly common among middle-aged adults due to occupational pressure, family responsibilities, and urban lifestyle demands. Yoga, as a holistic mind-body practice, has been recognized as an effective non-pharmacological approach for enhancing psychological well-being. However, limited empirical research has focused on short-term yoga interventions using standardized mental health measures among urban adult populations.
A total sample of 100 participants, comprising 50 males and 50 females aged between 30 and 45 years, was selected through purposive sampling. The study employed a pre-test-post-test research design. Mental health was assessed using the Mental Health Inventory (MHI) developed by A. K. Shrivastava, which measures various dimensions of mental health including emotional stability, self-concept, autonomy, and overall psychological adjustment. Prior to the intervention, all participants were administered the MHI as a pre-test. The participants then underwent a 21-day yoga program consisting of different yogic practices such as asanas, pranayama, meditation, and relaxation techniques, conducted for 45-60 minutes daily under expert supervision. After completion of the intervention, the MHI was re-administered as a post-test.
The results revealed a significant improvement in overall mental health scores following the yoga intervention. Statistical analysis using the paired sample t-test indicated that post-test scores were significantly higher than pre-test scores at the 0.01 level of significance. Both male and female participants demonstrated marked improvement in mental health after the intervention, indicating that yoga was equally effective across genders.
The findings of the study suggest that a short-term, 21-day yoga intervention can produce meaningful positive changes in mental health among adults. The study supports the inclusion of yoga as a cost-effective, accessible, and holistic strategy for promoting mental well-being in urban populations.

Keywords: Yoga, mental health, intervention, male, female, Varanasi

Introductions
Mental health is an essential component of overall health and well-being, influencing how individuals think, feel, and behave in their daily lives. In the modern era, rapid urbanization, work-related stress, family responsibilities, and changing social structures have significantly increased psychological stress among adults, particularly those in the age group of 30 to 45 years. This phase of life is often characterized by multiple roles and responsibilities, including career development, financial obligations, and family care, which may negatively affect mental health if effective coping mechanisms are not adopted. Urban populations, such as those residing in cities like Varanasi, are especially vulnerable to stress-related mental health issues due to lifestyle imbalance, reduced physical activity, and limited time for self-care.
Mental health encompasses emotional stability, self-concept, autonomy, social adjustment, and the ability to cope with stress and challenges. Poor mental health can manifest in the form of anxiety, depression, emotional instability, and reduced quality of life. Therefore, there is a growing need for effective, accessible, and non-pharmacological interventions that can enhance mental well-being and prevent the progression of psychological disorders. In this context, yoga has emerged as a holistic practice that integrates physical postures (asanas), breathing techniques (pranayama), meditation, and relaxation practices to promote harmony between the body and mind.

Yoga, rooted in ancient Indian philosophy, has been widely recognized for its positive effects on physical, psychological, and emotional health. Regular practice of yoga is known to reduce stress, regulate emotions, improve self-awareness, and enhance overall mental balance. Scientific studies have increasingly supported the role of yoga in reducing anxiety, depression, and stress, while improving emotional stability, concentration, and psychological resilience. Short-term yoga interventions have also been found to produce measurable improvements in mental health, making yoga a practical approach for individuals with time constraints

Despite the growing body of research on yoga and mental health, limited studies have focused on middle-aged urban adults using standardized psychological tools and controlled research designs. Moreover, gender-based representation and short-duration interventions remain underexplored. The present study addresses this gap by examining the effect of a 21-day yoga intervention on the mental health of 100 adults (50 males and 50 females) aged 30-45 years from Varanasi city, using a pre-test-post-test research design. Mental health is assessed using the Mental Health Inventory (MHI) developed by A. K. Shrivastava, a standardized and widely used tool in Indian psychological research. This study aims to contribute empirical evidence regarding the effectiveness of yoga as a preventive and promotive strategy for mental health in urban adult populations.

Review of Literature

In recent years, yoga has gained substantial attention as an effective non-pharmacological intervention for improving mental health. Several empirical studies and systematic reviews have highlighted the positive influence of yoga on psychological well-being, emotional stability, and stress management across diverse age groups.

Telles, Gupta, and Balkrishna (2018) [9] reviewed multiple experimental studies and reported that regular yoga practice significantly improves mental health by reducing stress, anxiety, and depressive symptoms. Their findings emphasized the role of pranayama and meditation in enhancing emotional regulation and cognitive functioning.

Gard *et al*. (2019) [3] conducted a comprehensive review focusing on the neurobiological mechanisms of yoga. The authors concluded that yoga practices positively influence brain regions associated with emotional control and self-awareness, thereby improving overall mental health and psychological resilience.

Pascoe, Thompson, Jenkins, and Ski (2020) [5] systematically reviewed randomized controlled trials and found that yoga interventions significantly reduced stress and anxiety levels in healthy adults. The review suggested that even short-duration yoga programs can produce measurable improvements in mental well-being.

Cramer *et al*. (2021) [1] performed a meta-analysis examining yoga's effects on mental health outcomes. The results indicated moderate to large effects of yoga on reducing anxiety and improving quality of life. The authors highlighted yoga as a cost-effective and accessible mental health intervention.

Telles and Singh (2022) [10] examined yoga-based lifestyle interventions and reported significant improvements in emotional stability, self-concept, and mental balance. Their review strongly supported the inclusion of yoga in preventive mental health programs, particularly in urban populations.

Schmalzl, Powers, and Blom (2022) [6] reviewed yoga and mindfulness-based practices and concluded that integrated yoga programs enhance psychological flexibility and reduce mental fatigue, especially among working adults.

Voss *et al*. (2023) [11] reviewed mind-body interventions and found consistent evidence that yoga improves mental health by regulating stress hormones and enhancing parasympathetic nervous system activity.

Sullivan *et al*. (2023) [8] emphasized the role of yoga in improving self-regulation and emotional well-being. Their review supported the use of standardized psychological tools for measuring mental health outcomes in yoga research.

Campelo *et al*. (2024) [2] conducted a systematic review focusing on short-term yoga interventions. The findings showed significant improvements in mental health indicators within 2-4 weeks of yoga practice, supporting the effectiveness of 21-day interventions.

Kuppusamy *et al*. (2025) [4] reviewed recent clinical and community-based studies and concluded that yoga significantly enhances mental health across gender and age groups, particularly improving emotional stability and stress tolerance.

Overall, the reviewed literature strongly supports the effectiveness of yoga in enhancing mental health.

Methodology

Research Design

The present study employed a pre-test-post-test experimental research design to examine the effect of a 21-day yoga intervention on the mental health of adults. This design was selected to assess changes in mental health by comparing scores obtained before and after the yoga intervention within the same group of participants. The independent variable was the 21-day yoga intervention, while the dependent variable was mental health.

Sample

The sample consisted of 100 adults, including 50 males and 50 females, selected from Varanasi city. The age of the participants ranged from 30 to 45 years. Participants were selected using purposive sampling technique. Only those individuals who were physically fit, mentally stable, and willing to participate in the 21-day yoga program were included in the study. Participants with severe physical illness, psychiatric disorders, or those already undergoing psychological or psychiatric treatment were excluded from the study.

Variables of the Study

Independent Variable: 21-day yoga intervention (including different yogic practices).

Dependent Variable: Mental Health.

Tool Used in current study

Mental health was assessed using the Mental Health Inventory (MHI) developed by A. K. Shrivastava. The inventory is a standardized psychological tool widely used in Indian research settings. It measures various dimensions of mental health such as emotional stability, self-concept, autonomy, security-insecurity, and overall psychological adjustment. The tool has well-established reliability and

validity, making it suitable for assessing changes in mental health before and after intervention.

Yoga Intervention Program

The yoga intervention was conducted for 21 consecutive days under the supervision of a trained yoga instructor. The daily session lasted approximately 45-60 minutes and included a structured combination of different yogic practices:

Asanas: Tadasana, Vrikshasana, Bhujangasana, Paschimottanasana, and Shavasana

Pranayama: Anulom Vilom, Bhramari, Kapalbhati

Meditation: Breath awareness and mindfulness meditation

Relaxation: Shavasana with guided relaxation

The practices were introduced progressively and performed in a calm and disciplined environment to ensure maximum psychological benefits.

Procedure: After obtaining informed consent, the Mental Health Inventory (MHI) was administered to all participants as a pre-test prior to the commencement of the yoga intervention. Participants then underwent the 21-day yoga program regularly. Attendance was monitored to ensure adherence to the intervention. At the end of the 21st day, the same MHI was re-administered as a post-test to assess changes in mental health. The testing conditions for both pre-test and post-test were kept similar to maintain consistency.

Statistical Analysis

The collected data were analysed using descriptive and inferential statistics. Mean and standard deviation were calculated for pre-test and post-test scores. The paired sample t-test was applied to determine the significance of differences between pre-test and post-test mental health scores. Gender-wise analysis was also conducted to examine differences between male and female participants. The level of significance was set at 0.05.

Results

The purpose of the present study was to examine the effect of a 21-day yoga intervention on the mental health of adults aged 30-45 years. To achieve this objective, pre-test and post-test scores of the Mental Health Inventory (MHI) were compared using descriptive and inferential statistics.

Table 1: Mean, Standard Deviation, and t-value of Pre-test and Post-test Mental Health Scores (N = 100)

Test	Mean	SD	t-value	Significance
Pre-test	62.45	8.32	9.84	$p< 0.01$
Post-test	74.68	7.91		

The results presented in Table 1 indicate that the mean post-test mental health score (M = 74.68) was significantly higher than the mean pre-test score (M = 62.45). The obtained t-value (9.84) was found to be statistically significant at the 0.01 level, indicating a significant improvement in mental health after the 21-day yoga intervention.

Table 2: Gender-wise Comparison of Pre-test and Post-test Mental Health Scores

Gender	Test	Mean	SD	t-value	Significance
Male (n=50)	Pre-test	63.10	8.10	6.92	$p< 0.01$
	Post-test	75.20	7.85		
Female (n=50)	Pre-test	61.80	8.55	7.18	$p< 0.01$
	Post-test	74.10	7.98		

The gender-wise analysis shows that both male and female participants demonstrated significant improvement in mental health following the yoga intervention. The improvement was statistically significant for both groups at the 0.01 level.

Discussion

The findings of the present study clearly indicate that a 21-day yoga intervention significantly improves mental health among adults aged 30-45 years. The significant increase in post-test MHI scores suggests that regular practice of yoga positively influences emotional stability, self-concept, and overall psychological adjustment.

The improvement in mental health may be attributed to the combined effects of asanas, pranayama, meditation, and relaxation practices. Pranayama techniques such as Anulom Vilom and Bhramari are known to regulate breathing patterns and calm the nervous system, thereby reducing anxiety and emotional disturbances. Meditation and relaxation practices enhance self-awareness and emotional regulation, leading to improved mental balance.

The results of the present study are consistent with earlier findings reported by Pascoe *et al*. (2020) [5], Cramer *et al*. (2021) [1], and Telles and Singh (2022) [10], who found that yoga significantly reduces stress and enhances psychological well-being. The significant improvement observed in both male and female participants suggests that yoga is equally effective across genders.

Thus, the findings support the role of yoga as an effective, non-pharmacological intervention for improving mental health in urban adult populations.

Conclusion

On the basis of the results obtained, it can be concluded that a 21-day structured yoga program has a significant positive effect on mental health among adults aged 30-45 years residing in Varanasi city. The yoga intervention led to marked improvement in overall mental health, emotional stability, and psychological well-being in both male and female participants. Therefore, yoga can be recommended as an effective, economical, and holistic approach for promoting mental health and preventing stress-related psychological problems in adults.

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