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Exploring the Role of Yoga in Reducing Stress, Anxiety, and Depression

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Abstract

This study explores the role of yoga in reducing stress, anxiety, and depression among adults. In today's fast-paced and demanding world, mental health challenges have become increasingly common, and alternative therapeutic practices are gaining global attention. Yoga, as a holistic mind-body intervention, has been recognized for its positive effects on emotional regulation and psychological well-being. The present study adopts a quantitative cross-sectional research design using the Depression Anxiety Stress Scale (DASS-21) to measure psychological outcomes among yoga practitioners and non-practitioners. A sample of 200 adults aged 18 and above was selected through stratified random sampling. Data were analyzed using Pearson correlation, independent t-tests, and linear regression. Findings revealed that individuals who engage in regular yoga practice reported significantly lower levels of stress, anxiety, and depression compared to those who do not practice yoga. The study concludes that yoga can serve as an effective, accessible, and non-pharmacological approach to mental health improvement. It is recommended that yoga-based wellness programs be incorporated into educational institutions, workplaces, and community health initiatives.

Keywords: Yoga, Stress, Anxiety, Depression, Mental Health, DASS-21

INTRODUCTION

Background of the Study

Mental health disorders such as stress, anxiety, and depression are rapidly increasing in prevalence globally. Modern lifestyles characterized by high workloads, social pressures, and digital connectivity contribute to heightened psychological distress. Conventional treatments such as psychotherapy and



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medication are widely used; however, alternative and complementary approaches have gained attention for their holistic benefits.

Yoga, originating from ancient Indian traditions, combines physical postures (asanas), breathing techniques (pranayama), and meditation (dhyana). It promotes a balance between mind, body, and spirit, fostering emotional regulation, inner peace, and mental clarity. Recent research indicates that yoga not only improves physical fitness but also positively affects neurophysiological mechanisms, such as the autonomic nervous system and neurotransmitter regulation, which can alleviate symptoms of stress, anxiety, and depression.

Problem Statement

The rising prevalence of stress-related mental health issues necessitates accessible and effective interventions. Although yoga is widely recognized for its physical benefits, its potential as a mental health intervention remains underutilized and under-researched, particularly among adult populations in Pakistan attending yoga centers. Addressing this gap can support the integration of yoga into mainstream mental health care strategies.

Objectives of the Study

The main objectives of this study are:

1. To assess the impact of yoga on reducing symptoms of stress, anxiety, and depression.
2. To explore psychological mechanisms through which yoga enhances emotional regulation.
3. To compare mental health outcomes in adults practicing yoga and those who do not.
4. To evaluate participant feedback on the effectiveness and practicality of yoga as a mental health tool.

Research Questions

1. Does regular yoga practice reduce levels of stress, anxiety, and depression among adults?
2. What are the psychological benefits of yoga in promoting emotional regulation?
3. Are there significant differences in mental health outcomes between yoga practitioners and non-practitioners?
4. How do participants perceive the effectiveness and practicality of yoga for improving mental health?

Significance of the Study

This study contributes to the field of health and physical education by providing empirical evidence on the mental health benefits of yoga. Findings will help practitioners, educators, mental health professionals, and policymakers design integrated wellness programs that incorporate yoga for stress, anxiety, and depression management.

Scope and Limitations

The study focuses on adults aged 18 and above who attend yoga centers in Pakistan. Data will be collected using structured questionnaires and analyzed quantitatively. Limitations include the cross-sectional design, reliance on self-reported data, and potential selection bias. Despite these limitations, the study provides valuable insights for mental health promotion through yoga.

LITERATURE REVIEW

Introduction

Yoga has increasingly been recognized as an effective mind–body intervention



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for improving mental health outcomes, particularly in reducing stress, anxiety, and depression. This chapter reviews empirical studies and theoretical perspectives related to yoga's impact on mental well-being. It highlights findings from international and local research, focusing on physiological, psychological, and social mechanisms through which yoga influences mental health.

A growing body of literature supports the effectiveness of yoga in enhancing emotional stability and overall well-being. However, variations in study design, sample size, and intervention duration indicate the need for further systematic and context-specific research, particularly in developing countries like Pakistan.

Conceptual Framework of Yoga and Mental Health

Yoga is a holistic practice that combines physical postures (asanas), breathing techniques (pranayama), and meditation. These elements work together to influence both physiological systems and psychological processes.

Research suggests that yoga regulates the autonomic nervous system, reduces stress hormones such as cortisol, and enhances neurotransmitter activity, including gamma-aminobutyric acid (GABA), which is associated with reduced anxiety. Additionally, yoga promotes mindfulness, self-awareness, and emotional regulation, enabling individuals to manage stress more effectively and maintain psychological balance.

International Studies

Several international studies have demonstrated the positive effects of yoga on mental health.

A meta-analysis by **Cramer et al. (2013)** found that yoga interventions significantly reduced stress and anxiety levels across diverse populations. Similarly, **Streeter et al. (2012)** reported that yoga increases GABA levels in the brain, contributing to decreased anxiety and improved mood.

Research by **Hofmann et al. (2010)** highlighted that mindfulness-based practices, including yoga, enhance cognitive control and reduce negative thought patterns. Furthermore, **Sharma et al. (2017)** observed that an 8-week yoga program significantly improved mood and energy levels in individuals with mild to moderate depression.

Recent evidence further strengthens these findings. A **2024 meta-analysis of 13 randomized controlled trials (RCTs)** reported that yoga significantly reduces perceived stress, although improvements in overall quality of life were moderate. Similarly, a systematic review focusing on clinical populations found small-to-moderate improvements in anxiety and depression symptoms, despite some methodological limitations.

Profession-specific studies have also shown promising results. A review of 14 RCTs involving healthcare professionals and students demonstrated consistent reductions in stress, anxiety, depression, and burnout following yoga interventions. Additionally, research conducted during the COVID-19 pandemic indicated that structured yoga programs improved both psychological well-being and physiological indicators such as blood pressure and heart rate.

Local Studies in Pakistan

Research on yoga and mental health in Pakistan is relatively limited but indicates positive trends. Studies conducted among university students have shown that individuals practicing yoga report lower stress levels and improved emotional well-being.

For instance, **Khan and Rehman (2022)** found that regular yoga practice



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among students led to reduced perceived stress and enhanced coping abilities. However, these studies are often constrained by small sample sizes, lack of control groups, and short intervention periods.

This highlights the need for more comprehensive and large-scale research in Pakistan to better understand the effectiveness of yoga in diverse populations.

Physiological Mechanisms

Yoga exerts its effects on mental health through several physiological pathways. It helps regulate the **hypothalamic-pituitary-adrenal (HPA) axis**, which plays a key role in the body's stress response.

Regular yoga practice has been shown to:

- Reduce cortisol levels (stress hormone)
- Increase neurotransmitters such as serotonin and dopamine
- Enhance GABA activity, which reduces anxiety

Additionally, studies suggest that yoga may lead to structural brain changes, including increased gray matter in the hippocampus and prefrontal cortex—areas associated with memory, emotional regulation, and decision-making.

Psychological Mechanisms

Yoga contributes to mental health through important psychological processes. One of the primary mechanisms is **mindfulness**, which involves present-moment awareness and non-judgmental acceptance.

Yoga practice:

- Reduces rumination and negative thinking
- Enhances emotional regulation
- Improves self-awareness and coping strategies

These effects help individuals better manage stress, anxiety, and depressive symptoms, leading to improved mental well-being.

Social and Community Benefits

Beyond individual benefits, yoga also has social advantages. Group-based yoga sessions foster a sense of community, belonging, and social support.

Such interactions:

- Enhance emotional resilience
- Improve motivation and adherence to healthy behaviors
- Reduce feelings of isolation

These social factors are particularly important in managing stress and promoting long-term mental health.

Summary of Literature Review

The reviewed literature clearly indicates that yoga is an effective intervention for reducing stress, anxiety, and depression. Its benefits are supported by physiological, psychological, and social mechanisms.

While international studies provide strong and consistent evidence, research in Pakistan remains limited and lacks methodological rigor. Most local studies rely on small samples and short-term interventions, highlighting the need for more robust research designs.

Research Gap

Based on the literature, the following research gaps have been identified:

1. Limited research on adult populations in Pakistan.
2. Lack of standardized yoga intervention protocols in local studies.
3. Insufficient use of validated measurement tools such as DASS-21.
4. Lack of longitudinal studies examining long-term effects of yoga.



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5. Limited integration of physiological and psychological outcome measures.

Methodology

Research Design

This study adopts a quantitative, cross-sectional survey design to examine the relationship between yoga practice and mental health outcomes (stress, anxiety, depression) among adults attending yoga centers.

Population and Sampling

The target population comprises adults aged 18 years and above who either practice yoga regularly or do not practice yoga. Stratified random sampling is used to ensure proportional representation of yoga practitioners and non-practitioners. A minimum sample size of 200 participants is targeted to achieve sufficient statistical power.

Data Collection Instrument

Data are collected through a structured, self-administered online questionnaire consisting of two main sections:

1. Demographic and Yoga Practice Information
2. Mental Health Assessment using DASS-21.

Data Collection Procedure

Participants are invited through yoga centers and online platforms. They are provided with informed consent forms detailing the purpose of the study, confidentiality measures, and voluntary participation. Data collection is expected to take approximately four weeks.

Data Analysis

Data analysis includes descriptive statistics (mean, SD, frequency), Pearson correlation, independent t-tests, and multiple linear regression using SPSS. Statistical significance is set at $p < 0.05$.

Ethical Considerations

Ethical approval is obtained from the relevant institutional ethics board. Participation is voluntary, and data are anonymized and securely stored.

RESULTS AND DISCUSSION

Introduction

This presents the results of the data analysis conducted to examine the relationship between yoga practice and mental health outcomes—specifically stress, anxiety, and depression—among adults. The data were collected from 200 respondents using the DASS-21 scale. Both descriptive and inferential statistical techniques were applied to analyze the data. The findings are interpreted in light of the research objectives and existing literature.

Demographic Characteristics of Respondents

Table presents the demographic profile of the respondents, including gender, age distribution, and yoga practice status.

Table 4.1: Demographic Characteristics of Respondents (N = 200)

Variable	Category	Frequency	Percentage
Gender	Male	92	46%
	Female	108	54%
Age	18–25	64	32%
	26–35	78	39%
	36–45	42	21%



Variable	Category	Frequency	Percentage
Yoga Practice	46–50	16	8%
	Yes	100	50%
	No	100	50%

The demographic data indicate a balanced representation of gender and yoga practice groups. The majority of respondents fall within the 18–35 age range, suggesting that the sample largely represents young to middle-aged adults. This distribution provides a suitable basis for examining the effects of yoga on mental health in an active population group.

Descriptive Analysis of Stress, Anxiety, and Depression

Table summarizes the mean scores and standard deviations for stress, anxiety, and depression as measured by the DASS-21 scale.

Table: Descriptive Statistics of DASS-21 Scores

Variable	Mean	Std. Deviation
Stress	18.35	5.82
Anxiety	17.64	6.15
Depression	16.92	5.47

The results indicate moderate levels of stress, anxiety, and depression among respondents. These findings suggest that mental health concerns are prevalent in the study population, justifying the need for interventions such as yoga to improve psychological well-being.

Correlation Analysis

Pearson correlation analysis was conducted to examine the relationship between yoga frequency (sessions per week) and mental health outcomes.

Table : Correlation Between Yoga Practice and Mental Health

Variable	Stress	Anxiety	Depression
Yoga Frequency	r = -0.42 p < 0.01	r = -0.38 p < 0.01	r = -0.35 p < 0.01

The results reveal a statistically significant **negative correlation** between yoga frequency and levels of stress, anxiety, and depression. This indicates that individuals who practice yoga more frequently tend to experience lower levels of psychological distress.

Independent Samples t-test

An independent samples t-test was conducted to compare mental health scores between yoga practitioners and non-practitioners.

Table: Comparison of Mental Health Scores

Variable	Group	Mean	SD	t-value	p-value
Stress	Yoga	15.12	4.25	-6.84	.000
	Non-Yoga	21.58	5.12		
Anxiety	Yoga	14.46	5.01	-5.27	.000
	Non-Yoga	20.82	6.38		
Depression	Yoga	13.72	4.88	-5.11	.000
	Non-Yoga	20.12	5.65		

The results show statistically significant differences between the two groups.



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Yoga practitioners reported significantly lower levels of stress, anxiety, and depression compared to non-practitioners. This suggests that yoga practice has a beneficial effect on mental health.

Regression Analysis

Multiple regression analysis was conducted to determine whether yoga practice predicts mental health outcomes while controlling for demographic variables.

Table 4.5: Regression Analysis Summary

Predictor	β	t	p
Yoga Practice	-0.412	-7.14	.000
Age	-0.052	-1.21	.228
Gender	0.036	0.87	.365

Model Summary:

$R^2 = 0.29$, $F = 21.78$, $p < .001$

The regression results indicate that yoga practice is a significant predictor of mental health outcomes. The negative beta coefficient suggests that increased engagement in yoga is associated with lower levels of stress, anxiety, and depression. Age and gender were not significant predictors in this model.

DISCUSSION OF FINDINGS

The findings of this study strongly support the hypothesis that yoga practice significantly improves mental health outcomes. Participants who engaged in yoga reported lower levels of stress, anxiety, and depression compared to non-practitioners.

The negative correlations between yoga frequency and psychological distress indicate that regular practice plays a crucial role in enhancing emotional well-being. These findings are consistent with previous studies, which highlight yoga as an effective intervention for reducing mental health problems.

The results can be explained through both physiological and psychological mechanisms. Yoga is known to activate the parasympathetic nervous system, reducing stress responses and promoting relaxation. It also enhances mindfulness and emotional regulation, helping individuals manage negative thoughts and anxiety more effectively.

Furthermore, the regression analysis confirms that yoga practice independently predicts mental health outcomes, even when controlling for demographic variables. This emphasizes the importance of yoga as a practical and accessible intervention for improving psychological well-being.

Overall, the findings suggest that incorporating yoga into daily routines can significantly contribute to better mental health and quality of life.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

This presents a comprehensive summary of the study, key findings, conclusions, recommendations for practice, limitations, and suggestions for future research. The study explored the role of yoga in reducing stress, anxiety, and depression among adults aged 18–50 years. A cross-sectional quantitative research design was employed, and data were analyzed using both descriptive and inferential statistical techniques.

Summary of the Study

The primary objective of this study was to assess the effectiveness of yoga as a complementary approach to improving mental well-being. Data were collected



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from 200 participants using a structured questionnaire, including demographic information and the DASS-21 scale.

The sample consisted of two equal groups: individuals who practiced yoga regularly and those who did not engage in yoga. The study examined differences in mental health outcomes between these groups and explored the relationship between yoga frequency and levels of stress, anxiety, and depression.

Statistical techniques such as Pearson correlation, independent samples t-test, and multiple regression analysis were used to analyze the data and interpret the findings.

Summary of Key Findings

The major findings of the study are as follows:

- A significant negative correlation was found between yoga frequency and:
 - Stress ($r = -0.42$, $p < 0.01$)
 - Anxiety ($r = -0.38$, $p < 0.01$)
 - Depression ($r = -0.35$, $p < 0.01$)
- Yoga practitioners reported significantly lower levels of stress, anxiety, and depression compared to non-practitioners.
- Regression analysis revealed that yoga practice was a significant predictor of mental health outcomes ($\beta = -0.412$, $p < 0.001$), even after controlling for demographic variables.
- The findings confirm that yoga contributes to emotional regulation and improved psychological well-being.

CONCLUSIONS

Based on the findings, the following conclusions are drawn:

1. **Yoga significantly reduces psychological distress**

Regular yoga practice leads to a reduction in stress, anxiety, and depression levels.

2. **Yoga enhances emotional balance and resilience**

The practice promotes mental stability, mindfulness, and improved coping mechanisms.

3. **Yoga is an effective complementary therapy**

It can be integrated alongside conventional mental health treatments to enhance outcomes.

4. **Yoga is practical and accessible**

As a low-cost and flexible intervention, yoga can easily be incorporated into daily routines and public health programs.

RECOMMENDATIONS

Based on the results of the study, the following recommendations are proposed:

Integration into Health Programs

Healthcare institutions and wellness centers should incorporate yoga-based interventions into mental health promotion programs.

Educational Institutions

Schools, colleges, and universities should introduce regular yoga sessions to support students' mental well-being and stress management.

Workplace Wellness Programs

Organizations should implement yoga-based stress management initiatives to improve employee productivity, reduce burnout, and enhance overall well-being.

Clinical Applications

Mental health professionals, including psychologists and counselors, should



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recommend yoga as a complementary therapy for managing stress, anxiety, and mild depression.

Community Awareness

Public awareness campaigns should promote yoga as a holistic and effective tool for mental health improvement.

Limitations of the Study

Despite its contributions, the study has several limitations:

- The cross-sectional design limits the ability to establish causal relationships.
- Data were self-reported, which may introduce response bias.
- The sample was restricted to a specific geographical area, limiting generalizability.
- The study relied solely on quantitative data; qualitative insights were not explored.

SUGGESTIONS FOR FUTURE RESEARCH

Future studies should consider the following:

1. Conduct longitudinal research to assess long-term effects of yoga.
2. Use experimental designs to establish causal relationships.
3. Incorporate qualitative methods to explore personal experiences of yoga practitioners.
4. Examine the effects of different types of yoga (e.g., Hatha, Ashtanga, Kundalini).
5. Expand research to include diverse populations such as adolescents, elderly individuals, and clinical patients.

IMPLICATIONS OF THE STUDY

Theoretical Implications

The study contributes to behavioral and psychological theories by supporting yoga as an effective self-regulation and stress management mechanism.

Practical Implications

Yoga can be used as a preventive and therapeutic strategy in mental health programs across educational, clinical, and community settings.

Policy Implications

Policymakers should consider integrating yoga into national mental health strategies and public health initiatives.

FINAL CONCLUSION

This study confirms that yoga has a significant positive impact on mental health and effectively reduces stress, anxiety, and depression. It highlights the importance of incorporating yoga into daily life as a practical strategy for improving psychological well-being.

Promoting yoga at individual, institutional, and national levels can contribute to a healthier society by reducing the burden of mental health disorders and enhancing overall quality of life.