

Effect of Mindfulness meditation on depression, anxiety and stress- A Mixed method longitudinal study

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ABSTRACT

Introduction: Depression, Anxiety, and stress are frequently seen as significant contributors to diseases such as cardiovascular and immunological diseases. Meditation is one of the self-help tools that are effective in treating these problems. Mindfulness meditation is one of the techniques that is used in psychotherapeutic interventions for these conditions. This study was done to find the effect of mindfulness meditation on depression, anxiety, and stress.

Methodology: A Mixed method longitudinal study was done in a Yoga Teaching centre (Sri Ramakrishna Yogashramam) in the Kanchipuram district. All 25 participants who were enrolled in the yoga classes during February- March 2021 were included in the study. DASS 21 scale was used and administered before and after the completion of classes among the study participants. Data were collected and entered in MS Excel and analyzed in SPSS 25. Paired “t” test was used. Semi-structured telephonic interviews were conducted. Interviews were transcribed and analysed thematically.

Results: All 25 participants had a beneficial improvement in DASS-21 scores after the course. The difference in means of scores of DASS-21 for depression, anxiety, and stress was found to be statistically significant with t-values of 11.6, 7.2, and 15.6 respectively. Study participants reported many benefits of mindfulness meditation. Changes were seen in Depression, anxiety, and stress after the completion of the course. Most of the patients wanted a longer course and an adjunct mobile application to guide them through the meditation technique in their homes. No effects were seen with respect to body pain and memory recall abilities.

Conclusion: Mindfulness meditation has a positive impact on depression, anxiety, and stress and needs to be incorporated into the management of depression, anxiety, and stress.

Keywords: *Mindfulness meditation, Depression, Anxiety, Stress, DASS-21*

INTRODUCTION:

Mental health is an important component of health. The WHO constitution states: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." Mental health is vital to our ability as humans to express ourselves, interact, live, and leave a mark on the world. Mental health care and treatment should be provided for common mental illnesses like Depression, Anxiety, and Stress. Hence, Mental Health should be promoted, curated, and advocated by all the stakeholders involved.¹

Depression affected 300 million people in 2015. Nearly the same numbers of people suffer from a variety of anxiety disorders. These disorders create a huge impact on health. Depression is ranked by WHO as the single largest contributor to global disability (7.5% of all years lived with disability in 2015); anxiety disorders are ranked 6th (3.4%). Depression is also a major contributor to suicide deaths, which number close to 800 000 per year.² In, India the prevalence of common mental illnesses in 2015-16 was 12.3% of the entire population, which is a worrisome number. The prevalence of Mood disorders which include anxiety was 5.6%, Depression was 5.25%, and Stress related disorders were 3.7% according to the National Mental Health Survey of India 2015-16.³

Depression, Anxiety, and Stress contribute to diseases, and clinical evidence is increasing for the effects of stress on immunological and cardiovascular conditions.^{4, 5} Traditional Psychiatric treatments have been in place for years to help patients recover from these illnesses.^{6, 7}

Patient-friendly interventions which involve the participation of the patient themselves have found support from affected individuals and mental health care professionals alike. These programs are effective in treating illnesses as well.⁸ Meditation is a self-help tool that helps cope with Depression, stress, and anxiety. There are many

types of meditation techniques practised around the globe such as Zen meditation, Transcendental meditation, and Mindfulness meditation among others. Mindfulness meditation is now practiced widely among these techniques to help people overcome mental health problems.⁹

Mindfulness meditation has its roots in Buddhism. It promotes and provides for focused breathing and attention toward thoughts in a detached manner. Mindfulness meditation helps in giving the individual emotional stability and positive perceptual change in one's personality. Hence, it produces beneficial effects on mental well-being and reduces psychiatric and stress-related symptoms. Mindfulness meditation thus should be incorporated into psychotherapeutic interventions.¹⁰

Limited research has been done on the effectiveness of mindfulness meditation courses on depression, stress, and anxiety. Therefore, this study was done to find out the effectiveness of Mindfulness meditation on depression, anxiety and stress both quantitatively and qualitatively as the user experience might add a definitive touch to the research.

METHODOLOGY:

In recent times, mindfulness meditation training is being delivered using mobile applications as well as monthly courses in respective meditation centres. It is considered a tool that can guide the practitioner through meditation techniques effectively, something that is popularly called "**Guided Mindfulness Meditation.**"

Study design: Mixed method longitudinal study.

Study area and population: The study was conducted in a yoga teaching centre (Sri Ramakrishna Yogashramam) in the Kanchipuram district. Mindfulness meditation was being taught at this centre. People who attended these classes during the study period were included in the study.

Informed Consent was obtained from all the study participants.

Sample size and Sampling method: A total of 25 participants who were enrolled in the yoga classes and consented to participate in the study during the study period were included.

Study Period: February-March 2021. The duration of the class is for a period of 21 days.

Study tool: The study tool used to assess the mental health status of the study participants in our study is DASS-21. DASS-21 convergent validity was confirmed with moderate correlation coefficients (-0.47 to -0.66) between its factor scores and the ADHP-V mental health-related domains.

The Depression, Anxiety, and Stress Scale - 21 Items (DASS-21) are a set of three self-report scales designed to measure the emotional states of depression, anxiety, and stress. Each of the three DASS-21 scales contains 7 items, divided into subscales with similar content. The DASS-21 is based on a dimensional rather than a categorical conception of psychological disorder. The DASS-2, therefore, has no direct implications for the allocation of patients to discrete diagnostic categories postulated in classificatory systems such as the DSM and ICD.

Recommended cut-off scores for conventional severity labels (normal, moderate, severe) are as follows:

Severity Grading	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

Data Collection Method:

Pre-test data was collected using DASS-21 and a semi-structured questionnaire was used to collect basic socio-demographic details of the study participants during the orientation classes before the beginning of the yoga sessions. The Post-test data was collected after the completion of yoga classes by administering DASS-21 again. Qualitatively, in-depth telephonic interviews were held after the completion of classes with the study participants using an interview guide that was prepared beforehand.

Statistical Analysis

The data were analyzed using Microsoft excel and SPSS software version 22.0. Descriptive statistics were computed for all the study variables. The Chi-Square test, Paired-t test was used for data analysis. P-values <0.05 was considered to be

statistically significant. In-depth interviews were transcribed manually and analysed thematically.

RESULTS:

Socio-Demographic Details:

There were 25 participants who took part in the study. The mean age of all participants was 34.08 ±5.8 years. 10 (40%) of them were women and the remaining were Men (60%). All of them were literate, out of which 21(84%) were graduates. 16 (64%) of them were employed. 24 (96%) were married and the majority (80%) belonged to the Upper middle class (According to Modified Kuppuswamy's Scale). All of them belonged to the Hindu religion. None of them had a history of Smoking or Alcohol Consumption. [TABLE 1: Difference in mean values of DASS scores]

Mean Difference of overall scores for DASS-21 was found to be improving, having a positive impact on the health of the study participants, and was statistically significant ($p < 0.05$.) Similarly, the Mean difference for individual components such as Depression, Anxiety, and Stress was also found to be having a positive impact on the health of the study participants and was statistically significant.

[TABLE 2: **Difference in the mean value of DASS scores by the severity of mental health states**]

The difference in mean scores for Moderate and Severe depression, before and after the intervention was found to be statistically significant. The intervention was effective in reducing the levels of depression among the study participants. Similarly, differences in mean scores of mild and moderate anxiety and difference in mean scores of mild and moderate stress were significant too. Mindfulness meditation was effective in tackling mild/moderate anxiety and stress too.

[TABLE 3: **Impact of Mindfulness meditation on Mental Health Status of Study Participants**]

A Chi-square test was done to see if the change in the mental health status of study participants was significant. The Change in the mental health status of the participants due to mindfulness meditation concerning depression was found to be statistically significant. While a change in mental health status concerning anxiety and stress was not found to be statistically significant.

In-depth interviews:

The themes extracted from in-depth interviews of the participants, which are related to the effectiveness of mindfulness meditation are the **Benefits of Mindfulness meditation, the Non-Impact of Mindfulness meditation, and Feedback about the classes.** Within each of these major themes, sub-themes are discussed and explored below:

Benefits of Mindfulness Meditation:

The benefits of mindfulness meditation were the most frequently detected theme related to the effectiveness of mindfulness meditation. Some of

the most commonly detected sub-themes are the positive impact on **1) Depression 2) Stress 3) Anger Management 4) Anxiety.** Most study participants felt that they felt better after the completion of the yoga course concerning anxiety and stress.

Other sub-themes that emerged were Focus on **Health awareness and Self-care concerns.** Study Participants felt that practising Mindfulness meditation lead them to be more aware of their health, and how lifestyle can affect the same, they also realised that it was their duty to involve in more self-care and take ownership of their body and health. They felt that it was seen in their efforts to involve in activities that promote and enhance health.

A female participant aged 36 years with High-school education who was a home-maker, said,

“I am feeling much better than I used to a month ago before I joined this course, especially since my stress levels have gone down by leaps and bounds. I also feel more confident about myself and therefore am less anxious about things not going my way”

of the course. Likewise, participants also felt they felt more relaxed and less depressed after the course and some of them even felt they were able to sort out their anger management issues. They felt that they were more active now.

Another participant aged 28 years old, a Graduate and Manager at a Private company said,

“I used to get angry at almost everything and my peace of mind would go for a toss, which has made me feel depressed over the past three months, but now after learning Mindfulness meditation I feel like I have gotten better to handle my anger, hopefully, this lasts a while”

A 45-year-old male participant, a businessman by occupation, a Graduate who is both a hypertensive and a diabetic, was so satisfied with Mindfulness Meditation and said: *“If there is a chance, and time permits I would like to do this again”*

Non-Impact of mindfulness meditation:

Many participants felt there were many aspects on which mindfulness meditation didn't have an

effect. They felt the purpose of their joining the yoga classes was defeated as many had joined these classes in hope of getting some relief. Some of these aspects were **1) Sleep 2) Concentration 3) Memory recall**. Most Participants felt that there was no change in these aspects after the completion of the course.

Feedback about the classes:

A 35-year-old female, graduate, hypertensive, and a college principal said,

“I felt the classes ended rather abruptly, we barely started to get the hang of the technique, the duration should have been more than 21 days, that way it would have had more impact and effect.”

Most participants gave **constructive feedback** which they thought might have affected the overall effectiveness of the meditation technique. They mainly were attributed to the duration of the course and the non-availability of a mobile application that would help as an adjunct to what was being taught in the class and help participants to better the technique in the comfort of their homes. The participants felt the overall effect would have been better if a mobile application was present.

DISCUSSION:

This study explored the effect of a 21-day mindfulness meditation program in a yoga centre on its study participants concerning Depression, Anxiety, and Stress. This is one of the very few studies that have evaluated the effect with a qualitative component of the research.

After the completion of the programme, it was found through the DASS-21 questionnaire that there was a significant reduction in levels of depression, anxiety, and stress, similar to studies done in Spain and India by **Gallego et al**¹¹ and **Duraimani et al**¹². It was also observed that there was a difference in the reduction of levels of depression, anxiety, and stress in the study population by their initial levels.

The change in levels of mental health states was more in mild and moderate forms of the disorders rather than the severe forms, contrary to a study

done in Australia by **Schreiner et al**,¹³ where the reduction was more in the severe forms of the condition. This difference may be because the duration of the programme in the Australian study was 10 weeks while in our study it was only 21 days.

Qualitatively, the first theme **Benefits of Mindfulness Meditation** suggests that mindfulness meditation was very useful to the study participants and helped them in controlling Depression, Anxiety, and Stress. The study participants perceived Mindfulness meditation as a useful tool that helped them in their stress and anger management. It gives them the Mind space to feel more relaxed and focus on their healthcare needs. Mindfulness meditation has made them aware of their day-to-day activities and helped them realise the importance of health awareness and self-help in leading a healthy life. Similar findings were seen in a study done by **Matchim et al**.¹⁴

The second theme **Non-Impact of mindfulness meditation** deals with the traits which the participants felt were not affected by the meditation technique. Aspects like sleep quality, memory, and concentration had no change. Sometimes the expectations of the participants might be high, and other factors which affect these aspects must also be looked into before judging the non-impact. A study done by **Winbush et al**¹⁵ showed similar findings to our study that mindfulness meditation did not impact the sleep quality of the study participants. However, studies done by **Black et al and Eberth et al**^{16,17} contrary to our study show that Mindfulness meditation had a positive impact on the management of pain and improvement in memory recall. This may be because there is a large difference in the sample sizes of the studies discussed.

The Third theme was **Feedback**, it dealt with how the yoga course and the technique in particular could be more user-friendly and efficient.

Meditation is an exercise wherein the individual turns attention or awareness to dwell upon a single object, theme, or experience. Historically, Meditation was attributed to the attainment of enlightenment and the Philosophical dimension of the human psyche, but as time has progressed with

so much pressure on the human brain and mental illnesses increasing every day. Meditation techniques, especially Mindfulness meditation can be viewed as a Health seeking and promoting activity.

CONCLUSION:

Mindfulness meditation may not be effective by simple reading and discussing. The validity of the technique is also under question by experts. In this study, we found that mindfulness meditation has potential applications as a Psychologic intervention that helps people fight against burdening mental health problems such as Depression, anxiety, and stress. Hence, Mindfulness meditation should be used as an intervention technique more efficiently and frequently by healthcare professionals.

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Conflict of interest: NIL

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Table 1-Difference in Means of DASS Scores

Variables	Mean DASS Scores	Mean DASS Scores	P-Value (*P>0.05) is statistically
	Before MM	After MM	
Depression	14.8±6.8	11.6±5.9	0.00*
Anxiety	9.2±4.4	7.2±3.9	0.00*
Stress	18.2±4.8	15.6±4.4	0.00*
Overall score	42.8±15.3	34.4±13.5	0.00*

*-P<0.05 is statistically significant; P-value obtained from Paired t-test.

MM-Mindfulness meditation

Table 2-Difference in means of DASS scores by severity of mental health states

Variables (N=25)	Mean DASS Scores	Mean DASS Scores	P-Value
	Before MM	After MM	
Depression-Absent	4.40±3.05	3.2±2.16	0.07
Depression-Mild	11.33±1.52	9±0	0.11
Depression-Moderate	16.62±1.9	12.46±1.7	0.00*
Depression-Severe	24.75±2.6	21.5±3	0.04*
Anxiety- Absent	4.25±2.12	2.88±1.4	0.00*
Anxiety-Mild	8.67±0.51	7±0.89	0.01*
Anxiety-Moderate	12.4±1.174	9.60±1.5	0.00*
Anxiety-Severe	17.5±0.7	15.5±0.7	0.29
Stress-Absent	9.67±1.52	7±2.64	0.05
Stress-Mild	16.5±1.3	14.5±1.8	0.00*
Stress-Moderate	22.9±2.6	19.4±2.27	0.00*

*-P<0.05 is statistically significant; P-value obtained from Paired t-test.

MM-Mindfulness meditation

Table 3-Impact of Mindfulness meditation on Mental Health Status of Study Participants

Degree of severity	Depression				Anxiety				Stress			
	Before N (%)	MM	After N (%)	MM	Before N (%)	MM	After MM N (%)	MM	Before N (%)	MM	After N (%)	MM
Absent	5(20)		8 (32)		8 (32)		12 (48)		3 (12)		6 (24)	
Mild	3 (12)		10 (40)		6 (24)		8 (32)		12 (48)		13 (52)	
Moderate	13 (52)		5 (20)		9 (36)		3 (12)		8 (32)		5 (20)	
Severe	4 (16)		2(8)		2 (8)		2 (8)		1 (4)		1 (4)	
P-Value	0.03*				0.25				0.44			

MM-Mindfulness meditation

*-Significant, if $p < 0.05$, P value obtained from chi-square test.