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Mindfulness Meditation on Psychological Distress and Coping Among Family Members of Patients Admitted in Critical Care Units: A Pilot Study

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Abstract
Family members of ICU patients often experience significant psychological distress, including anxiety, depression, and stress, which can affect their well-being and coping ability. Mindfulness meditation has shown promise in alleviating such distress, but its effect on ICU patient families remains underexplored. This quasi-experimental study evaluated the impact of a 14-day mindfulness meditation program on psychological distress and coping strategies among ICU patient family members at AIIMS Bhopal. Ten participants were assigned to an experimental group (n = 5) and a control group (n = 5). The intervention included daily 30-minute guided meditation sessions—Breath Meditation, Body Scan, and Mountain Meditation—with the first three days supervised in-hospital and the remaining days practiced independently with researcher follow-up. Data were collected pre- and post-intervention using the DASS-21 and Brief COPE Scale. Pre-test comparisons showed no significant differences between groups in depression (Exp: 11.40±6.92, Control: 10.80±8.44), anxiety (Exp: 8.20±6.38, Control: 10.00±7.62), stress (Exp: 8.60±6.44, Control: 9.20±6.84), and coping strategies (Exp: 64.60±7.58, Control: 62.00±9.17). Post-test results showed a significant reduction in anxiety in the experimental group (3.40±3.21 vs. 7.20±6.76, $p = 0.048$), while depression (Exp: 9.00±7.98 vs. Control: 10.40±10.90, $p = 0.616$), stress (Exp: 6.80±6.26 vs. Control: 5.20±5.59, $p = 0.681$), and coping strategies (Exp: 67.20±5.63 vs. Control: 65.20±8.59, $p = 0.562$) showed no statistically significant differences. These findings suggest that mindfulness meditation may be effective in reducing anxiety but has limited impact on depression, stress, or coping strategies among ICU patient family members. Further research with larger samples is warranted.

Keywords: Mindfulness, Psychological distress, Family, Coping skills, Anxiety, Depression.

INTRODUCTION

The admission of a loved one to an Intensive Care Unit (ICU) is a profoundly distressing experience for family members, often leading to significant psychological distress, including anxiety, depression, and

post-traumatic stress disorder (PTSD) (Naef et al., 2021) [4]. The critical and often unpredictable nature of ICU admissions, coupled with extended hospital stays and uncertain prognoses, exacerbates emotional and psychological burdens on family members (Beesley et al., 2018) [2]. Studies have demonstrated that psychological distress in family members of ICU patients negatively impacts their well-being and decision-making abilities, which may, in turn, influence patient outcomes and satisfaction with care (Harlan et al., 2020) [6]. Existing ICU family support interventions primarily focus on communication strategies and counseling; however, there remains a significant gap in targeted psychological support strategies that can be implemented effectively (Zanetti et al., 2013) [3]. Given the increasing prevalence of stress-related disorders among ICU family members, it is imperative to explore alternative and complementary interventions to mitigate their psychological burden.

A growing body of research suggests that mindfulness meditation may serve as a promising intervention for reducing psychological distress in various populations, including caregivers and individuals experiencing high levels of stress (Hofmann et al., 2010) [11]. Mindfulness-based interventions (MBIs) focus on cultivating present-moment awareness and emotional regulation, which have been found to alleviate symptoms of anxiety, depression, and stress (Keng et al., 2011) [12]. Despite its demonstrated efficacy in other healthcare settings, limited studies have examined the specific effects of mindfulness meditation on ICU family members. Existing literature has primarily explored coping strategies employed by these individuals (Sudhir et al., 2012) [5], with relatively little attention given to structured interventions aimed at reducing their psychological distress. Furthermore, while some research has highlighted the benefits of mindfulness in managing stress and emotional dysregulation (Hoge et al., 2013) [13], its application in the context of ICU family members remains underexplored. Understanding how mindfulness-based interventions can be integrated into ICU settings could bridge the gap in existing psychological support services and provide a holistic approach to family care.

The aim of this study is to assess the effect of Mindfulness Meditation on the Psychological distress and Coping strategies among family members of patients admitted in Intensive Care Units at AIIMS Bhopal. The objectives of the study are to assess the level of psychological distress and coping strategies among family members in the Experimental and Control groups, evaluate the effect of mindfulness meditation on these factors, and examine their association with selected demographic and clinical variables. The findings of this study will contribute to the growing body of evidence supporting mindfulness-based interventions as an effective strategy for reducing psychological distress in high-stress healthcare environments. By assessing its impact on ICU family members, this research aims to provide valuable insights into the feasibility of integrating mindfulness meditation into routine ICU care.

Methods:

A quantitative approach with a non-randomized (non-equivalent) control group design was adopted in this study. The study was conducted at a tertiary care hospital in Bhopal.

The study was conducted in the CTVS ICU of a tertiary care hospital using a convenient sampling technique. The sample size of Main Study was 60 participants (30 in the Experimental Group and 30 in the Control Group) was determined using OpenEpi software (version 3) based on previous literature, with an attrition rate set at 15–20% (49). So for Pilot study sample size taken was 10(5 in Experimental Group and 5 in Control Group). Participants who met the inclusion criteria were selected through non-probability (convenient) sampling and divided into two groups on a fortnightly basis, with the first 15 days' participants assigned to the Experimental Group and the next 15 days' participants assigned to the Control

Group. Inclusion criteria included family members 18 years or older, having a first-degree relationship with the ICU patient, being present for at least three consecutive days, willing to participate, staying with the patient for more than 24 hours, being able to read and understand English, Hindi, or both, and using WhatsApp on smartphones. Exclusion criteria included family members who were already practicing Mindfulness Meditation (MM) with a trained instructor, were pregnant or lactating, had a significant mental disability, or had hearing problems.

Data Collection Tool:

Section A: Screening Tool

The screening tool consists of 11 items based on the inclusion and exclusion criteria and is used for the recruitment of participants in the study.

Section B: Socio-Demographic Variables of Family Members and Patients

This section was designed by the researcher to collect socio-demographic details, including age, gender, marital status, occupation, type of family, and residence**.** The self-structured demographic sheet and data collection tools used in the study were reviewed and validated by 12 experts from the nursing, Ayush, and anesthesiology departments. The content validity index (S-CVI) **was 0.93**, which is considered acceptable.

Section C: Clinical Variables of Patients

This section was designed to obtain clinical information about ICU-admitted patients, including the type of ICU admission, number of days in ICU, conscious state of the patient, ventilator support status, and cause of ICU admission. The validity (S-CVI) of this tool was 1, indicating an acceptable level of validity.

Section D: Psychological Distress and Coping Strategies

Part 1 - DASS-21 Scale (Depression, Anxiety, and Stress Scale):

The DASS-21 Scale, developed by Lovibond & Lovibond (1995), is a standardized tool designed to assess psychological distress, specifically depression, anxiety, and stress levels. The scale consists of 21 items, divided into three subscales with 7 items each, rated on a 4-point Likert scale ranging from 0 (Did not apply to me at all) to 3 (Applied to me very much or most of the time). Permission for the use of DASS-21 in this study was obtained from the original author, and the tool was made available in both English and Hindi. The reliability of the scale was established using Cronbach's alpha coefficients, which indicated acceptable internal consistency: Stress (0.71 English, 0.73 Hindi), Depression (0.76 English, 0.70 Hindi), and Anxiety (0.73 English, 0.74 Hindi). The scoring and interpretation of the DASS-21 categorize severity levels based on total scores: for Depression, 0-9 (Normal), 10-13 (Mild), 14-20 (Moderate), 21-27 (Severe), and 28+ (Extremely Severe); for Anxiety, 0-7 (Normal), 8-9 (Mild), 10-14 (Moderate), 15-19 (Severe), and 20+ (Extremely Severe); and for Stress, 0-14 (Normal), 15-18 (Mild), 19-25 (Moderate), 26-33 (Severe), and 34+ (Extremely Severe). As DASS-21 is a short-form scale, the obtained scores must be multiplied by 2 to calculate the final score, ensuring accurate classification of psychological distress severity.

Part 2- Brief Cope Scale:

The Brief Cope Scale, developed by Carver et al. (1989), is a 28-item standardized self-report tool used to assess coping strategies in response to stress, categorized into problem-focused coping, emotion-focused coping, and avoidant coping. It is a widely accepted tool with an established Cronbach's alpha of 0.70, indicating good internal consistency. For this study, it was translated into Hindi, retranslated into English, and reassessed, with the Hindi version's reliability found to be 0.707, confirming its adequacy.

Each item is rated on a 4-point Likert scale (1-4), with higher scores indicating greater use of a specific coping strategy. Interpretation is based on total scores: 0-37.33 (Poor coping), 37.34-74.65 (Moderate coping), and 74.66-112 (Good coping), helping evaluate an individual's ability to cope with stress and adapt to challenging situations.

Intervention:

To ensure expertise in delivering the intervention, the researcher first completed a Mindfulness Meditation Course Certificate followed by specialized training under experts at the Department of Ayush, AIIMS Bhopal. The intervention was a 14-day Mindfulness Meditation Program designed for the experimental group. Participants engaged in a 30-minute guided audio session each day, featuring The Breath Meditation, The Body Scan, and The Mountain Meditation. The first three days (Day 1–Day 3) of practice were conducted in the hospital under direct supervision, ensuring correct technique and engagement. For the next four days (Day 4–Day 14), participants practiced independently at their place of stay, with structured protocol reminders from the researcher to ensure compliance. The meditation sessions were conducted in a calm and comfortable space within the hospital, with natural light and an optimal environment for relaxation and focus. Before beginning the sessions, the researcher introduced participants to mindfulness meditation and its benefits. The control group, however, did not receive any intervention.

Procedure of Data Collection:

The data collection procedure starts with full disclosure of the research study, followed by the screening of participants and obtaining informed consent. A pre-test was conducted to assess baseline psychological distress and coping strategies. Participants were then divided into two groups: the experimental group, which participated in the first 15 days, and the control group, which participated in the next 15 days. The experimental group received a 14-day intervention of Mindfulness Meditation, while the control group received no intervention. After the intervention period, a post-test was conducted on the 1th day to measure changes in psychological distress and coping strategies.

Data Analysis

The study data was analyzed using the SPSS 20.0 package program. The distribution of demographic and clinical variables was evaluated using Frequency Percentage and Fisher's Exact Test. The Shapiro-Wilk Test was employed to assess the normality of the data. The level of significance for all statistical tests was set at 0.05 for a 95% Confidence Interval (CI). To determine the level of psychological distress and coping strategies among family members of ICU patients in both the experimental and control groups, Frequency Percentage, Mean, and Standard Deviation were used. The effect of mindfulness meditation on psychological distress and coping strategies was analyzed using the Independent t-test and Mann-Whitney U test for between-group comparisons. Additionally, to examine the association between psychological distress, coping strategies, and selected demographic variables, Fisher's Exact Test (Chi-Square Test) was applied.

Result:

Section 1: Socio-Demographical and Clinical Variables Distribution

The study included 10 participants, equally divided into experimental and control groups. Most participants (60%) were aged 18–34 years, with the experimental group having more in the 35–49 age

range (40%) and the control group having 20% in the 50–64 range. Males dominated both groups (80% experimental, 60% control). Graduates were more common in the experimental group (60%) than in the control (20%), while other education levels were evenly distributed. Occupation varied, with skilled workers (40%) being the largest group in both. Most participants (80%) belonged to joint families, and rural residency was higher in the experimental group (60%). Fathers, sons, and brothers were the most common patient relations. All control group members were married, while the experimental group had 40% married and 60% divorced. None had prior hospitalization experience. Among patients, 60% in the experimental group were female, while 60% in the control group were male. The majority (60%) in both groups were married. Most were admitted to CTVS ICU, with 60% in the experimental group staying for 1–10 days and 40% for 11–20 days, while all control group patients stayed 1–10 days. Consciousness levels were similar, with 80% conscious in both groups. More experimental group patients were on ventilator support (60%) than in the control group (20%). Elective surgery was the leading cause of ICU admission (60% experimental, 80% control). No significant differences were found between groups in sociodemographic or clinical variables ($p>0.05$).

Section 2: The level of psychological distress and coping strategies among family members of patients admitted in Intensive Care Units in the Experimental & control group.

Pre-test findings showed similar levels of depression, anxiety, and stress in both groups. However, post-test results indicated a significant reduction in anxiety levels in the experimental group, with 40% achieving normal anxiety levels compared to 23.3% in the control group. Depression and stress levels showed minimal change in both groups, with severe and extremely severe cases persisting. Coping strategies remained largely unchanged, with all participants in the experimental group maintaining moderate coping levels post-test, while 10% of the control group demonstrated good coping. Psychological distress scores in the experimental group showed a slight decrease, with depression reducing from 3.33±1.27 to 3.30±1.48, anxiety from 3.30±1.32 to 3.36±1.69, and stress from 3.26±1.31 to 2.63±1.35. Similarly, coping strategies in the experimental group remained at a mean of 2±0, while the control group showed a slight increase from 2±0 to 2.1±0.30. These findings suggest that mindfulness meditation significantly reduced anxiety but had limited impact on depression, stress, and coping strategies.

Section 3: Effect of mindfulness meditation on psychological distress and coping strategies among family members of patients admitted in Intensive Care Units.

The Shapiro-Wilk test assessed data normality, indicating that depression, anxiety, Stress and Coping Strategies followed a normal distribution, Based on these results, the Independent t-test was used for depression ,anxiety, stress and coping strategies.

Table 1 presents the Independent t-test results for depression, anxiety, and stress among ICU patients' family members. For depression, the pre-test scores were comparable between the experimental group (Mean = 11.40, SD = 6.924) and control group (Mean = 10.80, SD = 8.438), with no significant difference ($p = 0.852$). Post-test scores showed a slight decrease in both groups—experimental (Mean = 9.00, SD = 7.976) and control (Mean = 10.40, SD = 10.900)—but this difference was not statistically significant ($p = 0.616$). For anxiety, the pre-test mean for the experimental group was 8.20 (SD = 6.376) and 10.00 (SD = 7.616) for the control group, with no significant difference ($p = 0.610$). Post-test results revealed a significant reduction in anxiety in the experimental group (Mean = 3.40, SD = 3.209) compared to the control group (Mean = 7.20, SD = 6.764), with a statistically significant p-value of 0.048. For stress, pre-test scores were 8.60 (SD = 6.435) for the experimental group and 9.20 (SD = 6.835) for the control group

(p = 0.847). Post-test scores decreased to 6.80 (SD = 6.261) and 5.20 (SD = 5.586), respectively, with no significant difference (p = 0.681). These findings suggest that mindfulness meditation was effective in significantly reducing anxiety but had limited effects on depression and stress levels.

Table 2 presents the Independent t-test results for coping strategies among family members of ICU patients. At pre-test, the coping strategy scores were similar in the experimental group (Mean = 64.60, SD = 7.583) and control group (Mean = 62.00, SD = 9.165), with no significant difference (p = 0.521). Following the intervention, post-test mean scores increased slightly in both groups: experimental group (Mean = 67.20, SD = 5.630) and control group (Mean = 65.20, SD = 8.587). However, this difference was not statistically significant (p = 0.562). These findings indicate that while there was a mild improvement in coping strategies in both groups, mindfulness meditation did not lead to a statistically significant enhancement in coping strategies among the participants.

Section 4: Association of the psychological distress and coping strategies with selected demographic variables and Clinical Variables among family members of patient admitted in Intensive Care Units.

There is no significant association between pre-test measures of Psychological Distress (Depression, Anxiety and Stress) and Coping Strategies with selected Socio demographic and Clinical Variables

Discussion:

The present study found high levels of psychological distress among family members of ICU patients before the intervention. Pre-test scores in the experimental group indicated moderate to severe levels of depression, anxiety, and stress, aligning with previous research by Naef et al. (2021), which reported significant distress among ICU family members【4】. Similarly, Olabisi et al. (2020) found elevated stress levels in Nigerian ICU patient families, highlighting the global prevalence of this issue【27】. Coping strategies in the pre-test phase were predominantly moderate, consistent with findings from Sudan et al. (2020), which suggested that ICU family members often rely on passive or problem-focused coping mechanisms【28】.

Post-intervention, the experimental group showed a significant reduction in anxiety levels (p = 0.048), supporting the effectiveness of mindfulness meditation in alleviating anxiety, as previously demonstrated by Hoge et al. (2013)【13】 and Jones et al. (2019)【14】. These results align with prior studies on mindfulness-based interventions, where participants experienced reduced stress and improved emotional regulation (Keng et al., 2011)【12】. However, unlike findings from McKiernan and McCarthy (2010)8】, which showed a broader reduction in distress, the current study did not find significant changes in depression or stress levels. This discrepancy may be attributed to the small sample size and short intervention duration.

Coping strategies remained largely unchanged post-intervention, with no significant improvement in the experimental group. This contrasts with Zandi et al. (2021), who found enhanced coping abilities following mindfulness training【19】. The limited impact on coping strategies in the present study may be due to the brief intervention period or the nature of mindfulness meditation, which primarily targets emotional regulation rather than specific coping mechanisms.

There was no significant association between psychological distress, coping strategies, and selected demographic or clinical variables, differing from studies by Harlan et al. (2020)【6】 and Caballero-Suárez et al. (2023)【7】, which reported links between distress levels and variables such as education, patient condition, and caregiver occupation. The small sample size may have limited the ability to detect

such associations.

Ethical Considerations:

Ethical approval was obtained from the Institutional Human Ethics Committee (IHEC-SR), AIIMS Bhopal (Ref. No: IHEC/SR/2024/11). Informed consent was taken from all participants, and confidentiality and anonymity were maintained.

Limitations

This study had a small sample size, limiting the generalizability of findings. Additionally, self-reported measures may have introduced response bias, affecting the accuracy of reported distress and coping levels. A longer intervention period and follow-up assessments may provide deeper insights into the sustained impact of mindfulness meditation.

Generalizability

As the study was conducted at a single hospital, findings may not apply to all ICU settings. Cultural and regional variations in coping mechanisms and healthcare support structures could influence outcomes. Future multi-center trials could enhance the external validity of the results.

Implications

The findings suggest that mindfulness meditation is a viable intervention for reducing anxiety among ICU family members. Healthcare providers should consider incorporating mindfulness-based programs into ICU family support services to enhance emotional resilience. Further research should explore the long-term impact of mindfulness interventions and their integration into routine ICU care to improve the psychological well-being of caregivers.

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Conclusion:

Mindfulness meditation significantly reduced anxiety among ICU family members but had no notable effect on depression, stress, or coping strategies. While it shows promise as a psychological intervention, further research with larger samples and extended duration is needed to assess its broader impact and long-term benefits in ICU settings.

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Table 1: Effect of Mindfulness Meditation on Psychological Distress among Family Members of Patient Admitted in ICU.

Test Type	Group	Mean	SD	Levene's F	df	t-value	p-value
Depression							
Pre-test	Experimental	10.80	8.438	0.312	8	0.065	0.950
	Control	10.40	10.900				
Post-test	Experimental	5.60	7.403	0.505	8	0.521	0.616
	Control	3.60	4.336				
Anxiety							
Pre-test	Experimental	10.00	7.616	2.420	8	2.049	0.075
	Control	2.40	3.286				
Post-test	Experimental	4.80	4.604	7.964	8	2.331	0.048*
	Control	0.00	0.000				
Stress							
Pre-test	Experimental	16.80	11.540	0.399	8	0.818	0.437
	Control	11.20	10.060				

Post-test	Experimental	6.80	6.261	0.493	8	0.426	0.681
	Control	5.20	5.586				

Independent t-test was used to compare the mean scores of psychological distress (Depression, Anxiety, Stress) between experimental and control groups. A p-value < 0.05 was considered statistically significant. Significant results are indicated with *.

Table 2: Effect of Mindfulness Meditation on Coping Strategies among Family Members of Patient Admitted in ICU.

Test	Group	Mean	SD	Levene's F	df	t-value	p-value
Pre-test	Experimental	62.00	9.165	0.284	8	0.725	0.489
	Control	57.80	9.149				
Post-test	Experimental	62.80	8.701	0.055	8	0.118	0.909
	Control	62.20	7.362				

Independent t-test was conducted to compare coping scores between groups. None of the comparisons showed statistical significance at p < 0.05.