RESEARCH PAPER

Effect of "ॐ" (OM) mantra meditation on stress, depression and anxiety using PSS and DASS-42 scales

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ABSTRACT

Background: Meditation is a widely practiced method for stress management, and "OM" chanting has been shown to offer physiological and psychological benefits. This study explores the effectiveness of guided and unguided "OM" chanting meditation in reducing stress, depression, and anxiety in healthy young adults.

Objective: To compare the effectiveness of guided versus unguided "OM" mantra chanting meditation in reducing perceived stress, depression, and anxiety.

Methods: A 60-day experimental study was conducted with 96 healthy adult participants (aged 20–60). Participants were randomized into two groups: Group 1 received guided "OM" chanting for the first 30 days followed by unguided chanting, and Group 2 followed the reverse protocol. Psychological assessments were conducted using the Perceived Stress Scale (PSS) and Depression Anxiety Stress Scale (DASS-42) on Days 1, 30, and 60.

Results: Both groups showed significant reductions in perceived stress, depression, anxiety, and stress symptoms. However, Group 1, which started with guided chanting, showed a greater magnitude of improvement compared to Group 2 across all scales, suggesting that guided meditation may be more effective in managing psychological distress.

Conclusions: Both guided and unguided "OM" chanting meditation significantly reduces psychological distress. The guided intervention was particularly effective, highlighting its potential for stress and emotional regulation.

Keywords: OM mantra, meditation, stress reduction, depression, anxiety, DASS-42

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INTRODUCTION

Stress is commonly defined as an internal state arising from physical demands on the body or from environmental and social factors. In contemporary society, stress has become a pervasive issue, contributing to the development of numerous stress-related disorders such as hypertension, diabetes, and other lifestyle diseases. Chronic stress disrupts multiple physiological systems, making individuals more vulnerable to anxiety, depression, and other mental health conditions. Fortunately, several strategies exist for stress management, including psychotherapy, pharmacological treatments, yoga, and meditation.

Meditation, in particular, is a mind–body practice aimed at regulating both physiological and psychological functions. Various techniques have been studied, including focused attention meditation (FAM), open monitoring (OM) meditation, Zen meditation, transcendental meditation, and mindfulness meditation [1]. Among focused attention techniques, the use of the "OM" mantra is one of the most widely practiced and accessible methods for achieving relaxation and enhancing mental well-being.

Several studies have demonstrated the beneficial effects of "OM" chanting on stress and related physiological parameters. Telles et al. reported that mental chanting of "OM" produced significant decreases in heart rate, skin resistance, and finger blood flow, indicating psychophysiological relaxation with altered autonomic activity [2,3]. Subsequent clinical studies extended these findings, showing that "OM" chanting reduced blood pressure, pulse rate, and DASS scores while improving cognition in elderly hypertensive women [4]. Similarly, Mishra et al. found that school teachers practicing "OM" chanting exhibited reduced stress levels along with improved auditory and visual reaction times [5]. More recently, Anjana et al. demonstrated that an intervention combining "OM" chanting with yoga nidra led to significant reductions in blood pressure and lipid profile among hypertensive patients, highlighting its potential as a safe complementary therapy [6].

Earlier experimental research also compared the effects of mentally repeating "OM" with those of repeating a neutral word such as "ONE" [7], and examined differences between listening to "OM" and hearing either a meaningful Hindi word ("AAM") or a non-meaningful syllable ("TOM") [8]. These investigations demonstrated that chanting or listening to "OM" promotes stress reduction, induces calmness, and enhances physiological alertness [9]. Neuroimaging evidence further supports these findings: an fMRI study reported that verbal chanting of "OM"

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produced significant deactivation in brain regions such as the amygdala, anterior cingulate gyrus, hippocampus, insula, orbitofrontal cortex, parahippocampal gyrus, and thalamus [10]. This pattern suggests that "OM" chanting modulates the limbic system, possibly mediated through the auricular branches of the vagus nerve, thereby contributing to the management of stress, depression, and hypertension. Recent EEG studies also provide compelling evidence. In young Indian males, "OM" chanting was found to facilitate flexible switching between resting-state networks (RSNs), promoting relaxation while simultaneously improving attention [11]. Both verbal chanting and passive listening activated common networks, including the frontoparietal, dorsal attention, and default mode networks, which are crucial for maintaining cognitive flexibility and emotional regulation. Hence, the current study was aimed to evaluate and compare the effectiveness of guided versus unguided "OM" chanting meditation in reducing depression, anxiety, and stress levels in healthy young adults.

METHODOLOGY

This experimental study was conducted in the Department of Physiology, Santosh Medical College & Hospital, SDTU Ghaziabad, Uttar Pradesh, India, over a period of 60 days. 96 healthy adult volunteers of both sexes, aged 20–60 years, were recruited after obtaining written informed consent. Participants with psychiatric or neurological disorders, auditory deficits, autonomic dysfunction, those on medications influencing nervous system activity, individuals with a recent history of yoga or meditation practice (within the last 3 months), substance abuse, or pregnancy were excluded from the study. On the first day (Day 0), the purpose of the study was explained, and baseline assessments were performed. The psychological assessment included the Perceived Stress Scale (PSS), which measures the degree to which individuals perceive situations in their lives as stressful, and the Depression Anxiety Stress Scale (DASS-42), which evaluates negative emotional states across three domains: depression, anxiety, and stress. After baseline evaluation, participants were randomized into two groups as shown in Figure. 2.1. Group 1 underwent guided "OM" chanting meditation under live supervision via Zoom for 30 minutes daily from Day 1 to Day 30. On Day 30, all baseline assessments were repeated. Subsequently, from Day 31 to Day 60, Group 1 practiced unguided "OM" chanting meditation (self-practice at home), followed by a final assessment on Day 60 using the same parameters. Group 2 followed the reverse protocol: they began with unguided meditation from Day 1 to Day 30, underwent reassessment on Day 30, and then switched to guided "OM" chanting meditation from Day 31 to Day 60, followed by the final evaluation on Day 60.

The data were analyzed using **SPSS version 20.0** (IBM Corp., Armonk, NY, USA). All values were expressed as mean ± standard deviation (SD). Paired comparisons of pre- and post-"OM" chanting values within each group were performed, and a **p-value < 0.05** was considered statistically significant.

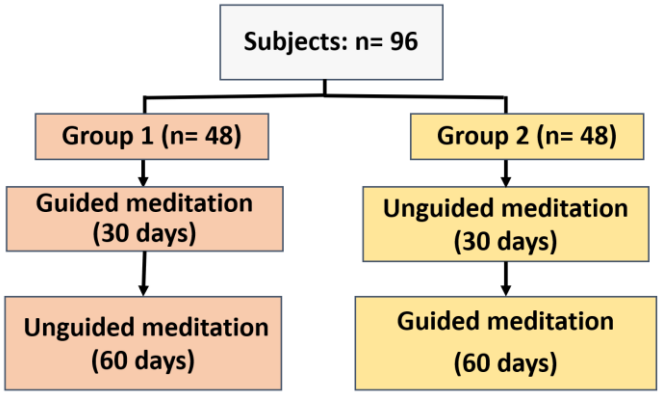


Figure. 2.1. Study design

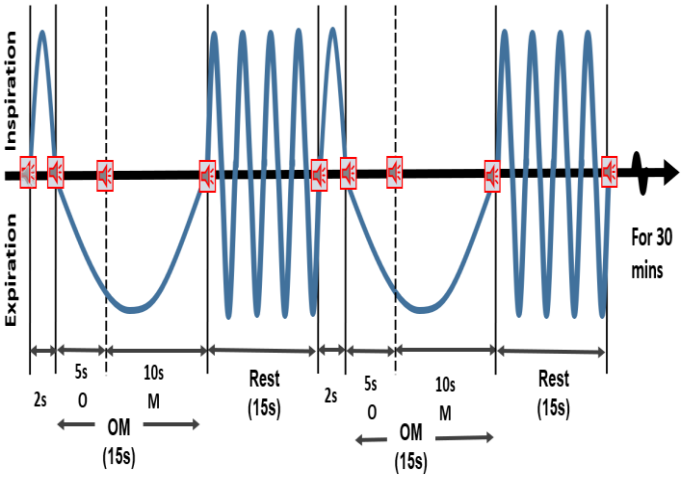


Figure. 2.2. "OM" mantra meditation session.

RESULTS

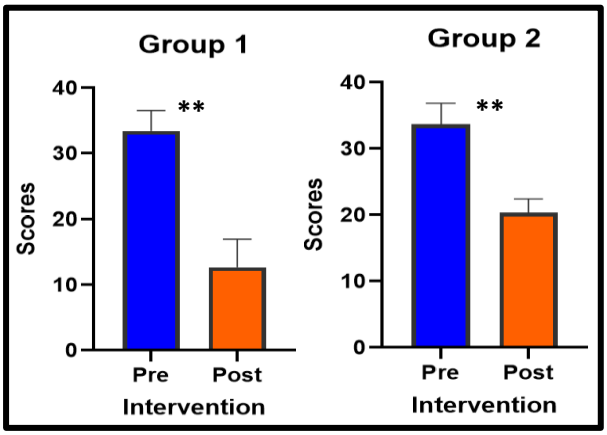
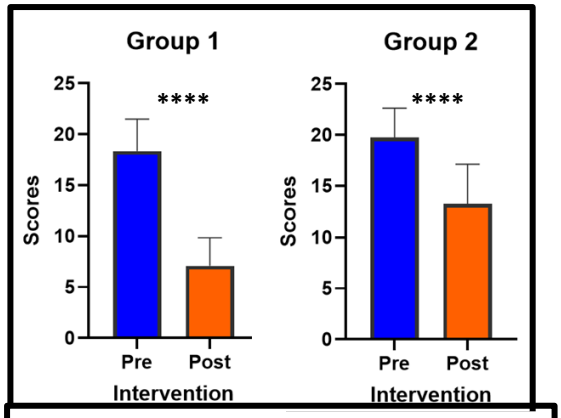
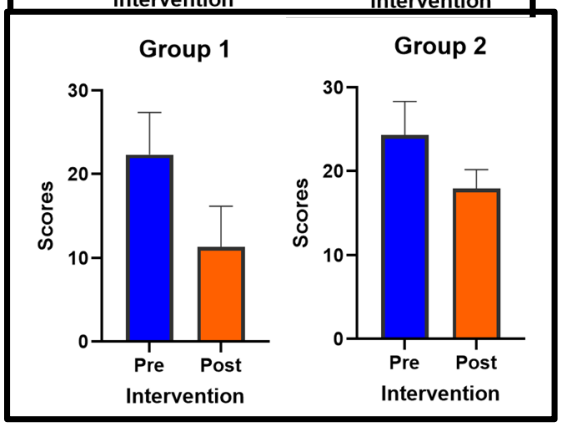


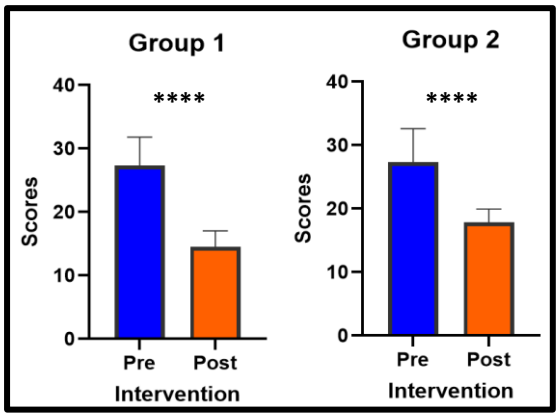
Figure. 3.1. Pre (Day 1) and Post (Day 60) showing the Perceived Stress Scores of Group 1 and Group 2.

Perceived Stress Scores – PSS

A significant reduction in perceived stress scores was observed following the intervention in both groups. In Group 1, the mean pre-intervention PSS score (≈32) markedly decreased to ≈13 post-intervention, indicating a substantial reduction in perceived stress (****$p < 0.0001$). Similarly, in Group 2, the mean pre-intervention PSS score (≈33) significantly decreased to ≈20 post-intervention







(****p < 0.0001). Although both groups demonstrated statistically significant reductions in stress levels, the magnitude of improvement was greater in Group 1 compared to Group 2, suggesting that the intervention was more effective in alleviating perceived stress in Group 1. Error bars represent the standard error of the mean (SEM) as shown in Figure. 3.1.

Depression Scores (DASS)

Figure. 3.1. Pre (Day 1) and Post (Day 60) showing the Depression Scores of Group 1 and Group 2.

A significant reduction in **depression scores** (as measured by the DASS) was observed following the intervention in both groups. In **Group 1**, the mean pre-intervention depression score (≈23) decreased markedly to ≈11 post-intervention (****p < 0.0001). Similarly, in **Group 2**, the mean pre-intervention score (≈24) significantly decreased to ≈16 following the intervention (****p < 0.0001). Although both groups demonstrated statistically significant reductions in depression levels, the magnitude of improvement was greater in **Group 1** compared to **Group 2**, suggesting that the intervention had a more pronounced antidepressant effect in Group 1. Error bars represent the standard error of the mean (SEM) .

Anxiety Scores – DASS

A significant reduction in anxiety scores was observed following the intervention in both groups. In Group 1, the mean pre-intervention anxiety score (≈19) markedly decreased to ≈6 post-intervention, indicating a substantial improvement (****p < 0.0001). Similarly, in Group 2, the mean pre-intervention score (≈20) significantly decreased to ≈13 following the intervention (****p < 0.0001). Although both groups demonstrated statistically significant reductions in anxiety levels, the magnitude of improvement was greater in Group 1 compared to Group 2, suggesting that the intervention was more effective in reducing anxiety in Group 1. Error bars represent the standard error of the mean (SEM).

Figure. 3.1. Pre (Day 1) and Post (Day 60) showing the Anxiety Scores of Group 1 and Group 2.

Stress Scores – DASS

A significant reduction in stress scores was observed following the intervention in both groups. In Group 1, the mean pre-intervention DASS stress score (≈29) markedly decreased to ≈14 post-intervention, indicating a substantial improvement (****p < 0.0001). Similarly, in Group 2, the mean pre-intervention score (≈30) significantly decreased to ≈20 after the intervention (****p < 0.0001). Although both groups exhibited statistically significant reductions in perceived stress levels, the magnitude of improvement was greater in Group 1 than in Group 2, suggesting that the intervention was more effective in alleviating stress in Group 1. Error bars represent the standard error of the mean (SEM).

Figure. 3.1. Pre (Day 1) and Post (Day 60) showing the Stress Scores of Group 1 and Group 2.

DISCUSSION

The present study demonstrated that both interventions significantly reduced psychological distress, including perceived stress, depression, anxiety, and stress symptoms. The marked reduction in Perceived Stress Scale scores and DASS subscales in Group 1 suggests that this intervention might effectively modulate stress and emotions compared to Group 2.

The current study findings align with prior neurophysiological and psychological evidence indicating that meditative practices such as OM chanting promote relaxation, autonomic balance, and improved cognitive–emotional control. Meditation practices have been shown to induce changes in EEG rhythms, enhance attentional control, and reduce physiological arousal, all of which contribute to stress reduction [1]. Early work by Telles and

colleagues demonstrated that OM meditation produces increased parasympathetic dominance and decreased sympathetic activity, supporting its stress-alleviating properties [2]. Comparable autonomic and psychological improvements have been observed following structured yoga training programs, including reductions in stress markers and improved well-being [3].

Several studies specifically examining OM chanting report significant reductions in depression, anxiety, and stress, consistent with the robust improvements observed in our Group 1. Amin et al. showed that OM chanting significantly decreased DASS scores in elderly women with hypertension [4], while Mishra et al. reported similar benefits in school teachers, including reduced stress and improved reaction time [5]. More recent research also confirms improvements in cardiovascular parameters and mood following OM chanting and yoga nidra [6]. The pattern of greater symptom reduction in our Group 1 parallels these findings, suggesting that the intervention in this group may share mechanistic features with meditative or breath-based yogic practices.

Neuroimaging and electrophysiological research further supports the potential mechanisms underlying the stronger effects seen in Group 1. Functional MRI and EEG studies have shown that OM chanting produces decreased activity in limbic and default mode network regions associated with emotional distress and rumination [8,10]. Cahn and Polich also reported that meditation induces characteristic EEG changes reflecting relaxed alertness and reduced cognitive-emotional reactivity [1]. More recent EEG analyses indicate that OM chanting alters resting-state functional connectivity, promoting neural patterns associated with calmness and improved self-regulation [11]. These findings collectively support the possibility that the Group 1 intervention might be producing deeper neurophysiological relaxation and improved top-down regulation of stress responses.

The consistent superiority of Group 1 across all scales in our study may reflect differences in intervention intensity, participant engagement, or the inclusion of components known to enhance autonomic stability and cognitive-emotional regulation. Previous literature emphasizes that practices integrating breath control, focused attention, and sound resonance—characteristic of OM chanting—exert stronger physiological and psychological effects than less structured relaxation approaches [9]. This may partly explain the greater magnitude of reduction observed in Group 1.

Despite the promising findings, certain limitations warrant consideration. The sample size may limit generalizability, and the absence of long-term follow-up restricts conclusions regarding sustained benefits. Self-report measures, although widely validated, may be influenced by subjective bias. Future studies should incorporate objective biomarkers such as heart rate variability, salivary cortisol, and EEG measures to further elucidate mechanisms underpinning differential intervention efficacy.

Overall, the findings indicate that both interventions effectively reduce psychological distress; however, the intervention used in Group 1 produced substantially greater reductions in perceived stress, depression, anxiety, and stress symptoms. These results are consistent with accumulating evidence supporting the use of meditative and yoga-based practices in stress management, and they underscore the potential value of incorporating such approaches into clinical and community-based mental health programs.

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