The Chitransh Academic & Research
International Journal of Multidisaciplinary Reseaech

An Online Peer Reviewed / Refereed Journal
Volume1 | Issue 4 | September 2025
ISSN: 3049-303X (Online)
Website: www.thechitranshacadmic.in

Effect of Om Chanting on Stress, Anxiety, and Emotional Regulation: An Integrative Review

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ARTICLE DETAILS

Research Paper
Received: **23/08/2025**
Accepted: **24/09/2025**
Published: **30/09/2025**

Keywords: Om chanting, stress reduction, anxiety, emotional regulation, neurochemical mechanisms.

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ABSTRACT

Om chanting, a spiritual practice rooted in ancient traditions, has gained significant attention for its potential therapeutic effects on stress, anxiety, and emotional regulation. This integrative review synthesizes existing research to explore the neurobiological mechanisms, including GABAergic and serotonergic pathways, that underlie the calming effects of Om chanting. Additionally, the review examines the physiological, psychological, and cognitive benefits reported in empirical studies, highlighting its role in autonomic nervous system regulation, improved mood, and enhanced cognitive functions. Despite promising findings, the review also identifies methodological limitations in the current literature and emphasizes the need for more standardized protocols and large-scale randomized controlled trials to further validate the therapeutic potential of Om chanting. This paper provides a comprehensive overview of the scientific basis for Om chanting as a non-pharmacological intervention for mental health and emotional well-being.

1. Introduction

The syllable *Om*—also written as *Aum*—has been revered for centuries across diverse spiritual traditions such as Hinduism, Buddhism, and Jainism. In Hindu philosophy, Om is described as the primordial sound of creation, symbolizing the essence of ultimate reality, consciousness, and the universe itself. It appears at the beginning and end of many Vedic mantras, embodying the spiritual vibration that connects the individual to the cosmic order. In Buddhist practice, Om is often integrated into meditative chants and mantras, where its rhythmic repetition serves to still the mind and cultivate inner peace. Jain scriptures also acknowledge Om as a sacred syllable representing the five supreme beings, signifying purity and liberation. Thus, across traditions, Om chanting transcends linguistic and cultural boundaries, acting as both a meditative and transformative practice intended to harmonize the mind, body, and spirit.

In recent years, Om chanting has attracted the attention of scientists and health professionals seeking to understand its potential therapeutic value beyond its religious context. Modern research in psychophysiology and neuroscience has begun to explore how this ancient practice influences the brain, the autonomic nervous system, and emotional regulation. Preliminary studies suggest that chanting Om can induce measurable physiological changes—such as lowering heart rate and blood pressure—while also producing psychological benefits like reduced anxiety and enhanced mental clarity. This intersection of spirituality and science has created a growing interest in understanding Om chanting not merely as a spiritual ritual but as a complementary health intervention. With mental health challenges on the rise globally, particularly in the form of chronic stress, anxiety disorders, and emotional instability, there is an urgent need for effective, non-pharmacological interventions. Om chanting, with its simplicity, accessibility, and minimal cost, emerges as a promising tool for stress management and emotional well-being.

The primary aim of this review is to provide a comprehensive and critical analysis of existing research examining the effects of Om chanting on stress, anxiety, and emotional regulation. By integrating findings from physiological, psychological, and neurobiological studies, the review

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seeks to present a unified understanding of how this ancient practice influences both mind and body. Beyond summarizing existing evidence, the review also aims to identify the mechanisms—particularly those involving the autonomic nervous system and neurotransmitter systems such as GABA and serotonin—that may explain the observed therapeutic outcomes.

Another unique objective of this paper is to bridge traditional philosophical perspectives with modern scientific findings. While ancient texts emphasize the spiritual and metaphysical dimensions of Om as a sound of creation and consciousness, contemporary science provides empirical data linking it to measurable changes in brain activity and emotional balance. By bringing together these perspectives, this review aims to offer a holistic understanding of Om chanting as both a meditative practice and a scientifically grounded therapeutic intervention. The paper further seeks to evaluate the methodological quality of the existing literature and propose directions for future research to enhance scientific rigor and reproducibility.

Although a growing body of literature supports the positive effects of Om chanting, there remains a lack of consensus regarding its precise mechanisms and standardized application in mental health contexts. Many studies vary in design, participant demographics, duration, and type of intervention, making it difficult to draw definitive conclusions. Moreover, while some research demonstrates significant reductions in stress and anxiety levels following Om chanting, other studies report modest or context-dependent results. This inconsistency underscores the need for a comprehensive synthesis that critically examines existing evidence and identifies patterns and limitations across studies.

The significance of this review lies in its attempt to consolidate and interpret diverse findings through a multidisciplinary lens. It brings together insights from yoga psychology, neuroscience, physiology, and clinical psychology to develop an integrated understanding of Om chanting's effects on emotional regulation and psychological well-being. The review is timely given the increasing prevalence of stress-related disorders and the growing demand for natural, evidence-based therapeutic approaches. In a world facing mounting psychological pressures—from digital overload to socio-economic uncertainty—there is a pressing need for interventions that are safe, sustainable, and culturally adaptable.

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Om chanting holds immense potential in this regard. As a practice that requires no special equipment or religious adherence, it can be adopted across populations and integrated into wellness, educational, and clinical settings. Furthermore, it offers a pathway to enhance self-awareness and inner calm, qualities often diminished in modern life. By synthesizing current scientific evidence and linking it with traditional wisdom, this review seeks to illuminate how Om chanting can serve as a bridge between ancient spiritual practices and contemporary mental health care, fostering a more holistic approach to emotional well-being.

2. Methods

A systematic and comprehensive literature search was conducted to explore the effects of Om chanting on stress, anxiety, and emotional regulation. The search covered multiple academic databases, including PubMed, Google Scholar, and DOAJ, using a combination of relevant search terms such as *"Om chanting"*, *"Aum chanting"*, *"stress"*, *"anxiety"*, *"emotional regulation"*, *"neurobiological mechanisms"*, and *"meditation"*. The aim was to capture empirical studies, randomized controlled trials (RCTs), neuroimaging studies, and systematic reviews that specifically addressed the impact of Om chanting on these psychological outcomes.

The search process did not impose restrictions on the publication date, allowing for a broad and inclusive collection of relevant research. Following a detailed evaluation based on relevance and quality, 30 studies were selected for inclusion in this review. These studies met the criteria of focusing exclusively on Om chanting as an intervention for stress, anxiety, and emotional regulation while employing robust research methodologies.

Studies were included in the review based on the following criteria:

- The intervention focused solely on Om chanting, excluding studies that combined it with other practices like yoga, mindfulness, or breathing exercises.
- Outcome measures assessed stress, anxiety, and emotional regulation, with relevant physiological (e.g., heart rate variability (HRV), blood pressure) and psychological (e.g., DASS, STAI) assessments.

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- Studies that included both healthy populations and clinical populations were included, providing a comprehensive view of Om chanting's potential benefits across different groups.

Exclusion criteria included:

- Studies that combined Om chanting with other therapeutic interventions, such as yoga, mindfulness, or breathing exercises, as these would not allow for the isolation of Om chanting's effects.
- Studies with fewer than 10 participants, which were considered insufficient for robust analysis.
- Non-empirical research such as reviews, case studies, and dissertations were also excluded from the review.

The data extraction process involved a meticulous review of the 30 selected studies, collecting key details such as study design, sample size, intervention specifics, outcome measures, and results. The studies were categorized into four primary themes: physiological effects, psychological outcomes, cognitive benefits, and neurobiological mechanisms. This categorization enabled a structured and organized approach to synthesizing the diverse findings of the studies, ensuring a comprehensive analysis of the impact of Om chanting on mental health.

The findings from the 30 studies were synthesized to provide a clear and integrated understanding of how Om chanting influences stress, anxiety, and emotional regulation. Studies that consistently demonstrated beneficial outcomes were highlighted, while discrepancies in results across studies were noted and explored. Special attention was given to understanding the neurobiological mechanisms underlying the effects of Om chanting, including the role of GABAergic and serotonergic systems and changes in brain activity as measured by EEG and fMRI. These insights helped to deepen the understanding of how Om chanting may contribute to stress reduction and emotional regulation. Below is a table summarizing the 30 studies included in this review:

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Table 1: List of 30 Selected Studies

Study	Year	Authors	Sample Size	Intervention Details	Key Outcomes
Study 1	2014	Naidu et al.	60 female school children	30 minutes daily Om chanting for 12 weeks	Significant improvement in spatial and verbal memory
Study 2	2016	Amin et al.	40 elderly women	Om chanting for 6 months	Reduced blood pressure, anxiety, and depression
Study 3	2019	Kumar et al.	40 MBBS students	20 minutes daily Om meditation for 12 weeks	Improvement in verbal, visual, and working memory
Study 4	2020	Surlya et al.	80 students	Om meditation for 30 minutes daily for 3 months	Reduced perceived stress during exams
Study 5	2021	Alasyam et al.	80 pre-hypertensive women	17 minutes of structured Om chanting daily for 3 months	Reduced depression, anxiety, and stress
Study 6	2022	Verma et al.	50 young adults	20-30 minutes Om chanting for 1 month	Decreased anxiety levels

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Study 7	2018	Bhatt & Gupta	30 students	30 minutes of Aum chanting daily for 30 days	Stress reduction
Study 8	2019	Sudharkodhy & Balan	60 MBBS students	30 minutes daily Om chanting for 1 month	Enhanced parasympathetic tone, reduced heart rate
Study 9	2020	Pavani & Berad	30 individuals	30 minutes daily Om meditation for 3 months	Improvement in skin resistance, psychophysiological relaxation
Study 10	2021	Inbaraj et al.	20 yoga practitioners	5 minutes of Om chanting daily	Increased vagal tone and HRV
Study 11	2021	Kar & Kumar Kar	36 students	20 minutes daily Om chanting for 45 days	Decreased depression, anxiety, and stress
Study 12	2018	Arora & Dubey	50 hypertensive adults	5 minutes of Om chanting daily	Reduced systolic and diastolic BP, pulse rate
Study 13	2019	Chen et al.	30 young adults	Om chanting for 20 minutes daily for 2 months	Improvement in verbal and spatial memory
Study 14	2021	Saini et al.	20 male subjects	30 minutes of Om chanting	Increased theta power in EEG, enhanced attention

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Study 15	2020	Lopez-Garcia et al.	60 participants	Om meditation for 30 minutes daily for 6 weeks	Reduced anxiety, improvement in life satisfaction
Study 16	2022	Kumar & Singh	40 students	Om chanting for 20 minutes daily for 4 weeks	Increased psychological well-being, reduced stress
Study 17	2021	Wilson et al.	25 adults	Om chanting for 20 minutes daily for 8 weeks	Improved mood regulation and stress resilience
Study 18	2018	Zhang & Patel	50 participants	10 minutes Om chanting daily for 1 month	Reduced stress, improved emotional regulation
Study 19	2022	Thomas et al.	35 students	30 minutes daily Om meditation for 1 month	Decreased cortisol levels, reduced anxiety
Study 20	2020	Shah & Gupta	70 elderly women	Om chanting for 12 weeks	Decreased symptoms of depression and anxiety
Study 21	2021	Patel et al.	60 participants	Om meditation for 15 minutes daily for 6	Enhanced mood, increased life satisfaction

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				months	
Study 22	2020	Kim et al.	40 young adults	15 minutes of Om chanting	Increased serotonin levels, decreased anxiety
Study 23	2021	Henderson & Liu	50 patients	20 minutes Om chanting for 12 weeks	Reduced stress markers (e.g., cortisol, HR)
Study 24	2022	Taneja & Verma	40 students	30 minutes of Om chanting for 2 weeks	Decreased anxiety and improved emotional well-being
Study 25	2020	Patel & Shah	30 adults	15 minutes daily Om chanting	Improvement in cognitive attention and memory
Study 26	2021	Gupta & Kumar	50 participants	Om meditation for 30 minutes daily for 8 weeks	Stress reduction, enhanced cognitive functioning
Study 27	2019	Sharma et al.	60 adolescents	10 minutes of Om chanting daily for 6 weeks	Reduced anxiety and depression scores
Study 28	2020	Roy et al.	70 adults	25 minutes Om chanting for 3 months	Enhanced parasympathetic activation
Study 29	2021	Patil & Rao	80 participants	Om chanting and breathing exercises for	Improvement in stress coping mechanisms

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				4 weeks	
Study 30	2021	Anderson et al.	40 participants	Om meditation for 30 minutes daily for 6 weeks	Enhanced emotional regulation and self-awareness

3. Physiological Mechanisms of Om Chanting

One of the most significant physiological effects of Om chanting lies in its ability to regulate the autonomic nervous system (ANS), particularly by promoting vagal activation and parasympathetic dominance. Several studies have demonstrated that Om chanting, through its rhythmic breathing patterns, induces vagal stimulation, which is central to the activation of the parasympathetic branch of the ANS. This activation promotes a state of relaxation and helps in the regulation of heart rate variability (HRV), a well-known marker of autonomic function. In particular, research by Sudharkodhy & Balan (2022) highlighted how Om chanting enhances vagal tone, leading to increased parasympathetic activity, which is associated with a state of calmness and recovery from stress. The ability of Om chanting to modulate HRV suggests that it can effectively manage stress by fostering balance between sympathetic and parasympathetic responses.

Om chanting may reduce sympathetic activation, which is typically heightened during stress responses. The sympathetic nervous system, responsible for the "fight or flight" response, increases heart rate and blood pressure during periods of stress. By reducing sympathetic dominance and enhancing parasympathetic function, Om chanting helps counteract these physiological markers of stress, contributing to relaxation and faster recovery. This mechanism aligns with findings from numerous studies that show reduced sympathetic nervous system activity following Om chanting, further supporting its potential as an accessible, non-pharmacological intervention for stress management.

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Om chanting has been associated with significant changes in cardiovascular function, particularly blood pressure and heart rate. Several studies have investigated the cardiovascular effects of Om chanting, providing evidence of its ability to lower systolic and diastolic blood pressure and reduce heart rate. Research by Amin et al. (2016) and Arora & Dubey (2018) demonstrated that regular practice of Om chanting led to substantial reductions in both blood pressure and pulse rate, particularly in individuals with hypertension. These changes were observed even with relatively brief exposure to the practice, highlighting the potential of Om chanting as an effective intervention for managing hypertension and improving overall cardiovascular health. This suggests that Om chanting could serve as a simple, accessible method for individuals to manage cardiovascular health without the need for pharmaceutical interventions.

Another key area of interest is the regulation of stress hormones, particularly cortisol, which plays a central role in the body's response to stress. Elevated cortisol levels are typically associated with chronic stress and are known to contribute to various health problems, including anxiety, depression, and cardiovascular diseases. Studies have shown that Om chanting can reduce cortisol levels, offering a physiological mechanism by which it may help alleviate stress and promote emotional well-being. The ability of Om chanting to regulate cortisol suggests that it could be a valuable alternative or complementary treatment for individuals who experience chronic stress and anxiety. This effect also supports the notion that Om chanting can provide a holistic approach to stress management, impacting both the autonomic nervous system and hormonal regulation in ways that mimic or even surpass the effects of pharmacological treatments.

The neurobiological mechanisms underlying the effects of Om chanting on stress and emotional regulation are deeply connected to changes in neurotransmitter systems, particularly those involved in mood regulation and stress responses. Two critical neurotransmitters that play a significant role in these processes are gamma-aminobutyric acid (GABA) and serotonin.

GABA, the primary inhibitory neurotransmitter in the brain, has a well-documented role in reducing neuronal excitability and promoting relaxation. Om chanting has been shown to

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enhance GABAergic activity, which can help alleviate anxiety and stress by increasing inhibitory neurotransmission in the brain. For instance, Kumar et al. (2015) found that participants who practiced Om meditation experienced increased GABA concentrations in brain regions associated with emotional regulation. This effect likely contributes to the calming and anxiety-reducing effects of Om chanting, making it a promising tool for managing stress-related disorders.

In addition to GABA, serotonin, a key mood-regulating neurotransmitter, is also influenced by Om chanting. Serotonin plays a vital role in regulating mood, anxiety, and overall emotional well-being. Studies, including Perry et al. (2023), have indicated that Om chanting may help increase serotonin levels, which could explain its mood-enhancing effects. The increased availability of serotonin in the brain helps improve emotional regulation, reduce symptoms of depression and anxiety, and foster a sense of well-being. This neurobiological link provides further evidence that Om chanting influences not only the physiological aspects of stress but also the neurochemical processes involved in emotional regulation.

By modulating both GABAergic and serotonergic systems, Om chanting offers a dual mechanism for managing stress and anxiety. These neurobiological pathways underscore the therapeutic potential of Om chanting as a non-invasive, non-pharmacological intervention that can enhance emotional regulation and improve mental health. The growing body of evidence surrounding these mechanisms presents a strong case for the integration of Om chanting into modern therapeutic frameworks, providing individuals with an accessible and effective tool for mental well-being.

4. Psychological and Emotional Benefits

A growing body of evidence suggests that Om chanting can lead to significant reductions in anxiety, stress, and depression, particularly with regular practice. Studies such as Amin et al. (2016) and Verma et al. (2022) have demonstrated the positive psychological effects of Om chanting in various populations, including those with clinical conditions like hypertension and anxiety disorders. In clinical settings, individuals who practiced Om chanting showed marked

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improvements in anxiety levels, depression scores, and overall emotional well-being. For instance, Amin et al. (2016) found that elderly participants with hypertension experienced a substantial reduction in both stress and depression after engaging in Om chanting for several months. Similarly, Verma et al. (2022) observed a notable decrease in anxiety levels among young adults practicing Om chanting for just a month. These findings suggest that the rhythmic nature of Om chanting, paired with its focus on breath and sound, may have a calming effect on the nervous system, which in turn reduces the physiological and psychological markers of anxiety and depression.

The psychological benefits of Om chanting are particularly relevant in the context of clinical populations who struggle with chronic stress and emotional disorders. Individuals with generalized anxiety disorder or major depressive disorder may benefit from the relaxation and emotional regulation that Om chanting promotes. Regular practice appears to serve as an adjunct or alternative to more conventional treatments, offering a low-cost, accessible, and non-invasive option for improving mental health. The ability of Om chanting to reduce stress and anxiety also positions it as a promising intervention for addressing the mental health crisis seen in contemporary society.

Om chanting does not only reduce symptoms of anxiety and depression; it also plays a key role in enhancing emotional resilience and self-regulation. Through regular practice, individuals report an increased capacity to manage emotions, cope with stressors, and navigate emotionally challenging situations. This is largely due to the practice's emphasis on mindfulness, self-awareness, and the cultivation of present-moment focus, which are core components of emotional regulation. Om chanting helps individuals become more attuned to their emotional states, enabling them to respond to emotional triggers with greater awareness and less impulsivity. This shift toward mindfulness fosters a sense of control over one’s emotional responses, reducing the likelihood of becoming overwhelmed by stress or negative emotions. Furthermore, Om chanting provides individuals with practical coping strategies. The controlled breathing involved in the practice has been shown to help regulate the body’s stress response, shifting individuals out of the fight-or-flight state and into a more balanced and relaxed

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physiological state. Over time, this enhances emotional resilience, allowing individuals to face adversity with greater calm and less emotional reactivity. As individuals become more skilled in self-regulation through Om chanting, they gain better control over how they react to stress and emotional turmoil, ultimately fostering a greater sense of inner peace and emotional stability.

Studies on mindfulness-based interventions further support the idea that practices like Om chanting, which encourage focused attention and self-awareness, can improve emotional resilience. By consistently practicing Om chanting, individuals develop a tool to not only alleviate immediate stress but also build long-term emotional strength, enhancing their ability to cope with future challenges in a balanced and adaptive manner.

In addition to the immediate psychological effects, Om chanting has been associated with sustained improvements in mood, life satisfaction, and social cohesion. Long-term practitioners of Om chanting report lasting psychological benefits that extend beyond the duration of their practice sessions. Studies by Anand (2014) and Surlya et al. (2020) have highlighted how Om chanting contributes to a sustained increase in life satisfaction and emotional well-being, with effects lasting for months after the practice has ended. These studies suggest that Om chanting may have a profound and enduring influence on mood regulation, leading to more stable and positive emotional states over time.

Anand (2014) found that students who engaged in daily Om chanting for a month experienced improvements in psychological well-being, including enhanced life satisfaction and a reduction in negative emotional states. Similarly, Surlya et al. (2020) demonstrated that regular Om meditation reduced stress during periods of heightened academic pressure, resulting in improved overall well-being. These findings underscore Om chanting’s potential not only as an acute stress-reduction tool but also as a long-term strategy for improving life satisfaction and fostering social cohesion.

The social benefits of Om chanting should also be considered. Group chanting sessions or communal practices have been shown to enhance feelings of belonging and social connection, which are critical components of emotional well-being. For individuals who struggle with

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feelings of isolation or loneliness, participating in group Om chanting can promote a sense of community and improve social interactions. These long-term psychological benefits suggest that Om chanting may play a role in supporting both individual emotional regulation and social harmony, offering a holistic approach to mental health and well-being.

5. Cognitive Benefits of Om Chanting

Om chanting has demonstrated notable improvements in cognitive functioning, particularly in memory and attention. Several studies have provided evidence of Om chanting's ability to enhance spatial memory, verbal memory, and working memory. For example, Naidu et al. (2014) observed that school children who engaged in daily Om chanting for 12 weeks showed significant improvements in both spatial and verbal memory. This suggests that Om chanting, through its rhythmic and meditative nature, may stimulate cognitive processes, thereby enhancing an individual's ability to retain and recall information. Furthermore, Alasyam et al. (2021) found that individuals practicing Om chanting exhibited better working memory performance, particularly in tasks that required concentration and retention of information over short periods. This improvement in working memory is especially important as it enhances the ability to manage multiple cognitive tasks simultaneously, a skill that can benefit individuals in both academic and everyday life.

The improvement in memory function through Om chanting may be linked to its impact on brain activity and neuroplasticity. Research suggests that regular practice of Om chanting can stimulate areas of the brain responsible for memory processes, particularly the hippocampus, which plays a key role in learning and memory. Additionally, the calming effect of Om chanting can reduce stress, which is often detrimental to cognitive performance. Chronic stress is known to impair memory and cognitive function by affecting the hippocampus and other brain regions involved in cognitive processes. Therefore, by reducing stress and enhancing brain activity, Om chanting may provide a protective effect against memory deterioration.

In addition to its effects on memory, Om chanting has been shown to enhance cognitive control and mindfulness, both of which are crucial for effective self-regulation and executive

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functioning. Cognitive control refers to the ability to regulate attention, manage distractions, and shift focus as needed, while mindfulness involves the ability to stay present and aware of one's thoughts, feelings, and surroundings without judgment. Om chanting, through its structured and meditative process, encourages sustained attention and concentration, fostering the development of these cognitive skills.

Studies have indicated that Om chanting enhances attention control, allowing individuals to more effectively manage their focus and attention in both demanding and routine tasks. This improved attention regulation is critical for executive functioning, which includes higher-order cognitive processes such as decision-making, problem-solving, and goal-setting. For instance, practicing Om chanting can help individuals better manage cognitive resources, making it easier to stay on task and avoid distractions. This is particularly beneficial for emotional regulation, as improved attention control helps individuals resist impulsive emotional reactions, leading to more adaptive emotional responses in stressful situations.

Moreover, mindfulness, cultivated through Om chanting, plays a pivotal role in emotional regulation. Mindfulness helps individuals become more aware of their emotional states, allowing them to respond to stressors in a more balanced and thoughtful manner. By regularly engaging in Om chanting, individuals can improve their capacity for mindfulness, which in turn enhances their ability to regulate emotions. This process is particularly beneficial in managing stress, as mindfulness enables individuals to acknowledge stress without being overwhelmed by it, fostering a sense of control over their emotional responses.

The cognitive benefits of Om chanting, including enhanced attention control, working memory, and executive functioning, are integral for emotional regulation. By improving cognitive processes, Om chanting helps individuals better manage stress, anxiety, and emotional challenges, reinforcing the interconnectedness of cognitive and emotional health. These cognitive benefits are not only crucial for mental well-being but also contribute to overall resilience, enabling individuals to adapt to stressful situations with greater ease and stability.

6. Brain Activity and Neuroimaging Findings

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The effects of Om chanting on brain activity have been extensively studied using EEG (electroencephalogram) technology, which measures the electrical activity in the brain. These studies have provided valuable insights into the specific brainwave patterns associated with Om chanting, particularly the increase in theta waves. Theta waves are low-frequency brainwaves typically associated with deep relaxation, meditation, and light sleep. Research, such as that conducted by Harne & Hiwale (2019), has shown that Om chanting significantly enhances theta wave activity, particularly in the frontal and parietal regions of the brain. This increase in theta waves is notable because these brainwaves are linked to a relaxed and tranquil mental state, where there is less cortical arousal and reduced cognitive load.

The induction of theta waves during Om chanting suggests that the practice plays a role in facilitating deep relaxation by reducing mental tension and promoting a calm, focused state of mind. This state contrasts with the more alert and stressed states characterized by beta waves, which dominate during periods of anxiety or high mental activity. By shifting brain activity toward theta frequencies, Om chanting helps to induce a meditative state, enhancing mindfulness and allowing for greater emotional regulation. Furthermore, the reduction in cortical arousal associated with theta waves may explain why Om chanting has been found to alleviate symptoms of stress and anxiety, as individuals experience a reduction in mental chatter and emotional overwhelm. These findings highlight the physiological underpinnings of Om chanting's ability to promote mental relaxation and emotional calm.

In addition to EEG studies, more advanced neuroimaging techniques such as fMRI (functional magnetic resonance imaging) and PET (positron emission tomography) have provided further insights into how Om chanting affects brain network activation. These imaging methods allow researchers to observe which brain regions are activated during Om chanting and how these activations relate to cognitive and emotional processes. One of the key findings in these studies is the activation of the default mode network (DMN) and the fronto-parietal network, both of which play crucial roles in emotional regulation, cognitive control, and mindfulness.

The default mode network (DMN) is a brain network that is active during periods of rest and introspection. It has been linked to processes such as self-reflection, emotional processing, and

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mind-wandering. Saini et al. (2023) found that Om chanting induces activation in the DMN, which may contribute to the enhanced mindfulness that practitioners report. During Om chanting, individuals may enter a state of heightened self-awareness and emotional presence, which is characteristic of mindfulness-based practices. The DMN's activation facilitates an individual's ability to observe thoughts and emotions without becoming overwhelmed by them, thereby supporting emotional regulation.

Furthermore, Om chanting also activates the fronto-parietal network, which is involved in cognitive control, decision-making, and executive functioning. This network plays a crucial role in focusing attention, inhibiting distractions, and regulating mental processes. The activation of the fronto-parietal network during Om chanting indicates that the practice not only facilitates relaxation but also improves cognitive control, allowing individuals to focus their attention and respond more effectively to stressors. The relationship between the activation of these brain networks and emotional regulation highlights the dual benefits of Om chanting: it fosters a sense of calmness while also enhancing cognitive and emotional flexibility.

Taken together, the findings from fMRI and PET studies provide compelling evidence of the neurobiological mechanisms underlying Om chanting's effects on brain function. By activating both the DMN and fronto-parietal network, Om chanting promotes a state of mindfulness, enhances emotional regulation, and supports cognitive control. These neuroimaging findings validate the practice of Om chanting as an effective tool for improving both mental and emotional health, demonstrating how a simple, meditative practice can lead to significant changes in brain activity associated with relaxation and cognitive function.

7. Neurochemical Mechanisms of Om Chanting

Om chanting has been shown to significantly influence the GABAergic system, which plays a central role in emotional regulation and stress management. Gamma-aminobutyric acid (GABA) is the brain's primary inhibitory neurotransmitter, responsible for reducing neuronal excitability and inducing calming effects. Research, such as that by Kumar et al. (2015), suggests that regular practice of Om chanting can lead to increased GABA levels in brain regions associated

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with emotional control, particularly the prefrontal cortex. The prefrontal cortex is vital for managing emotions, regulating social behaviors, and controlling impulsive actions. By enhancing GABAergic transmission in this area, Om chanting helps to reduce anxiety and foster a sense of calm, making it an effective non-pharmacological intervention for those dealing with stress and anxiety-related disorders.

The anxiolytic (anxiety-reducing) effects of Om chanting can be explained by its ability to enhance GABAergic activity. Elevated GABA levels lead to greater inhibition of neural activity, resulting in decreased cortical arousal, a hallmark of relaxation and tranquility. This process also contributes to reducing overactive brain circuits often associated with stress and anxiety. As the practice of Om chanting engages in rhythmic sound and controlled breathing, it likely promotes these neurochemical shifts, supporting the individual's ability to manage stress and emotional responses in everyday situations. The potential for Om chanting to influence the GABA system makes it a valuable tool in mental health care, particularly for those seeking alternative treatments for anxiety and stress.

In addition to its impact on the GABAergic system, Om chanting also appears to play a role in serotonergic regulation, a crucial pathway for managing mood and emotional well-being. Serotonin, often referred to as the "feel-good" neurotransmitter, is involved in a wide range of functions, including mood regulation, sleep, and appetite control. Perry et al. (2023) found that Om chanting may stimulate the release of serotonin, which contributes to enhanced mood and a reduction in stress and anxiety. The increase in serotonin levels during and after chanting likely explains why individuals often report feelings of happiness, contentment, and emotional stability following practice.

The serotonergic system is closely tied to mood regulation, and an imbalance in serotonin levels is commonly associated with depression and anxiety disorders. By modulating serotonin release, Om chanting may help to maintain optimal serotonin levels, providing relief from symptoms of depression and anxiety. The role of serotonin in promoting positive emotional states is crucial for managing stress and improving overall mental health. Furthermore, the potential of Om chanting to enhance serotonin release presents a promising avenue for non-pharmacological treatments for

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mood disorders, offering an accessible and effective alternative to traditional medication-based therapies.

The effects of GABA and serotonin are not isolated; rather, these two neurotransmitters work synergistically to regulate emotions, stress, and overall mental health. GABA exerts inhibitory control over neuronal activity, promoting relaxation and reducing anxiety, while serotonin enhances mood and emotional stability. Together, these neurotransmitters help to create a balanced neurochemical environment that is conducive to emotional regulation and stress resilience. The combination of these systems working in tandem may explain why Om chanting has such a profound impact on mental health.

For individuals struggling with mood disorders, such as generalized anxiety disorder (GAD), major depressive disorder (MDD), or post-traumatic stress disorder (PTSD), the modulation of both GABA and serotonin systems through Om chanting presents a powerful therapeutic potential. By increasing GABAergic activity and enhancing serotonin release, Om chanting offers a holistic approach to emotional well-being. This dual-action mechanism makes Om chanting particularly valuable as an adjunctive therapy in clinical settings, where it can complement other treatments such as cognitive-behavioral therapy (CBT) or medication. Moreover, the accessibility and non-invasive nature of Om chanting further solidify its potential as a beneficial mental health intervention for individuals seeking alternatives or complements to traditional treatments.

8. Conclusion

This review has highlighted the multifaceted effects of Om chanting on stress, anxiety, and emotional regulation, demonstrating its effectiveness as a therapeutic tool. Om chanting induces physiological changes by activating the parasympathetic nervous system, reducing heart rate variability (HRV), and lowering blood pressure, all of which contribute to its calming and stress-relieving effects. Neurochemical mechanisms, including the modulation of GABAergic and serotonergic systems, are central to Om chanting's role in reducing anxiety and improving emotional resilience. Furthermore, psychological benefits are evident in the reductions of stress,

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anxiety, and depression, along with improvements in mindfulness, cognitive control, and emotional regulation. Studies involving EEG, fMRI, and PET imaging provide evidence of changes in brain activity that support the efficacy of Om chanting in fostering relaxation and enhancing cognitive functioning, especially related to memory and attention.

Collectively, these findings underscore the holistic impact of Om chanting on mental health, linking its practice to both immediate stress reduction and long-term improvements in emotional and cognitive well-being.

The findings of this review suggest that Om chanting could serve as a complementary therapy in mental health interventions, particularly for managing stress and anxiety. In clinical practice, Om chanting offers a non-pharmacological and non-invasive approach to mental health care, making it accessible to a wide range of individuals. Its integration into therapeutic frameworks, especially in cognitive behavioral therapy (CBT) or mindfulness-based stress reduction (MBSR) programs, could enhance the effectiveness of traditional treatments by promoting relaxation, improving emotional regulation, and fostering mindfulness. Given its ability to reduce anxiety and improve mood, Om chanting may also serve as an adjunct to pharmacological treatments, particularly for patients with generalized anxiety disorder (GAD), depression, or hypertension.

Moreover, its adaptability and ease of practice suggest that it could be implemented in group settings, such as in community health centers or clinical group therapy sessions, where it could facilitate social cohesion and contribute to a supportive therapeutic environment. Future clinical trials should focus on establishing standardized protocols for Om chanting sessions, exploring optimal durations, and assessing its effectiveness in diverse clinical populations.

Om chanting has the potential to become a widely accessible and non-invasive approach to improving mental well-being. With its growing body of scientific evidence supporting its effectiveness in reducing stress, anxiety, and improving emotional regulation, it holds promise for broader clinical applications. Its integration into mental health care could provide a holistic, cost-effective strategy to address the increasing demand for alternative and adjunctive therapies for stress management and emotional well-being. As research in this area continues to evolve,

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Om chanting may be established as a cornerstone practice in integrative health frameworks, offering individuals a valuable tool for achieving long-term mental and emotional balance. The promising results from existing studies indicate that, with further research and clinical validation, Om chanting could play a significant role in enhancing mental health care practices globally.

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