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Sacred sounds and their psychological impact: The role of chants and prayers in the mind – A systematic review

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Abstract
Objectives: To explore the effect of sacred sound like mantra chanting, prayer recitation, or meditative vocalization on cognition, emotion and psychological well-being.
Eligibility criteria: Included peer-reviewed quantitative studies that examined sacred sounds in spiritual, therapeutic, or wellness contexts, and reported data relevant to brain function, emotional regulation or stress reduction.
Information sources: Searched PsycInfo, Web of Science, JSTOR, Google Scholar, Semantic Scholar (2013-2025)
Synthesis of results: Findings were synthesized in a descriptive way
Included studies: 15 studies from diverse age groups and cultural settings were included.
Results: The findings from the included studies indicate that sacred sound-whether in the form of formalized chants, repeated prayers, or sound meditations- act as highly effective means of mental health improvement. They appear to work via neuropsychological processes of brainwave modulation, hormonal regulation, and sensory-motor synchrony.
Limitations: Small sample sizes, most studies were short-term in nature, lack of standard protocols also complicates replication. Conclusions were drawn based on self-report data heavily.
Interpretation: The existing corpus of research robustly indicates therapeutic and transformational potential for sacred sounds in cognitive improvement and emotional health; however, more empirical research is needed to provide deeper causal insights and understand long-term effects.

Keywords: Sacred sounds, Mantra chanting, Prayer and meditation, Psychological well-being, Brainwave modulation

Introduction

Sound has been known in all cultures and civilizations not only as a form of communication but also as an effective means of spiritual and psychological transformation. Sacred sounds namely chants, mantras, and prayers are intrinsic to religious and meditative practices across the globe. Whether as

Buddhist chanting, Vedic mantra, Islamic prayer, or Gregorian chant, these sounds have long been connected with healing, affect regulation, and mental acuity. While their religious meaning has been thoroughly recorded in religious texts and cultural rituals, contemporary psychological and neuro-scientific inquiry is just starting to investigate their possible influence on the human psyche. Chanting has been linked to the stimulation of the parasympathetic nervous system, leading to reductions in stress, anxiety, and depressive symptoms (Bernardi *et al*., 2001). Sacred sounds tend to include rhythmical repetition, melodic form, and vocal resonance, all of which can be calming and centering for the mind. Repetitive chanting, for instance, has been proven to induce a meditative state through its ability to change brainwave patterns and decrease autonomic activation. Research employing electroencephalography (EEG) and functional magnetic resonance imaging (fMRI) has indicated that certain chants or prayers have the ability to stimulate areas of the brain related to attention, emotional control, and self-awareness. Sacred sound differs from everyday sound in that it is considered to possess vibrational and symbolic significance which unites human beings with the divine, facilitates inner harmony, and aids spiritual change. It acts as a vehicle of worship and an instrument of meditation, healing, and consciousness. The practice of chanting "Om" in Hindu and Buddhist traditions has been shown to synchronize neural oscillations and induce a relaxation response similar to that observed in mindfulness meditation (Kalyani *et al*., 2011).

In addition, the psychological value of chanting and prayer is more than just brain function. Both activities are usually coping strategies, particularly under emotional or psychological stress. The repetitive structure of holy sounds can actually cut down on rumination and act as a cognitive anchor that permits one to temporarily disengage from stress-provoking thoughts. Prayer, for instance, has been researched in positive psychology as being linked to increase hope, gratitude, and hardness. Further, group chanting and collective prayer encourage social bonding and a feeling of belonging that is very important to emotional health and lowers levels of isolation

The existing literature on the subject is scattered over various disciplines such as psychology, neuroscience, music therapy, and religious studies, most of which lack a logical and unified system of thinking. While some reports indicate that sacred sounds produce measurable alterations in brain function, mood states, and stress reduction, others fail to provide conclusiveness or mechanisms for their perceived effects. Moreover, cross-cultural variations in the use and interpretation of the sacred sounds make the understanding of their psychological effect even more complex.

Therefore, the objective of the present review is to fill these gaps by systematically synthesizing and examining current research on the psychological effects of sacred sound. The emphasis is on how activities that incorporate chanting and praying affect mental health, emotional regulation, stress

response, and cognitive processes, and discovering if and how they can further enhance psychological well-being.

Methods

Eligibility Criteria

1. Study Characteristics

Study design: cohort study design, cross-sectional study design was included

Publication type: only peer-reviewed article were included whereas gray literature or conference abstract were excluded.

Language: article written in English were only included

Publication status: only published article were included

Publication date range: Studies published within the range of 2013-2025 were included

2. Participant

Age Group- Participants with any age group were included, although most of them came from young age group

Gender- Both the gender was included

Geographic location- Global

3. Intervention

Exposure- Exposure to sacred sound activities like mantra chanting, prayer recitation, or meditative vocalizations

4. Outcomes

Primary outcome was to see the effect of sacred sound activities in brain functioning, emotional regulations and **secondary outcome** was to see its effect on well-being.

5. Other Inclusion/Exclusion Criteria

Exclusions based on methodological quality - studies that are at high risk of bias were excluded

Duplication - duplicates or overlapping populations were excluded

Non-human studies - animal studies were excluded

Information sources:

Databases searched-

1. PsycInfo
2. Web of science
3. Education resources information center
4. JSTOR
5. Google Scholar
6. Research Gate
7. Sematic scholar

Search strategy

Keywords: "Mantra Chanting", "Sacred Sound", "Cognitive function", "brain function", "well-being"

Selection process

Initially, studies are screened by title and abstract, after screening, full-text articles are assessed for eligibility against inclusion criteria.

Data Collection Process

This step involved collecting relevant data from the included studies, such as:

Study characteristics: Author, year of publication, country, study design, sample size etc.

Findings: Key findings, outcomes, and result related to research question

Methodological details: How the study conducted, types of analysis etc.

Risk of bias Assessment

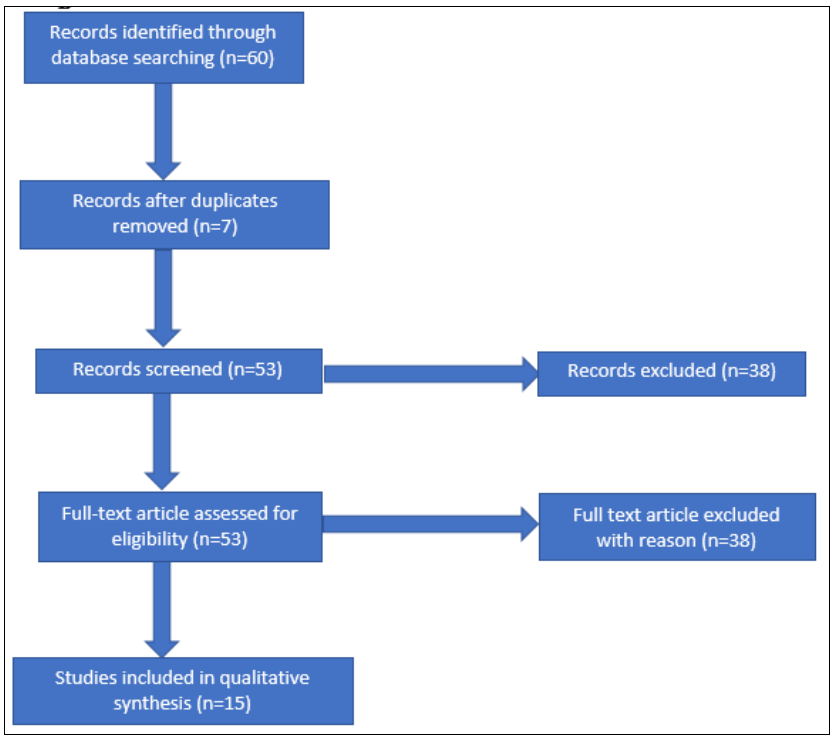
a. **Publication bias:** Some studies were not published
b. **Selective outcome reporting:** only positive result were reported

There were some articles, whose sources were missing

Data Synthesis: After collecting the and analyzing the data, descriptive analysis that summarizes the themes or pattern in the data

Result

Study selection: B



Study Characteristics

Total 15 studies were included in the review, consisting 2 one-group pre-test post-test design, six randomized control group design, 4 cross-sectional design and 3 qualitative analyses, with sample size ranging from 12 to 50, The majority of studies conducted in India.

Results of Individual studies

Sl. No.	Authors & Publication	Objectives and sample	Type of analysis	Key findings
1	Bayan, T., & Deb, N. (2025) [4] Indian Journal of Science and Technology	To see the impact of Mantra Chanting on Power Spectral Density of experienced Sample- 11	Quantitative analysis One group pre-test post-test design	The results demonstrate significant changes in specific EEG frequency bands, including an increase in Alpha (10%), Gamma (13%), Beta (23%), and Delta (16%) during mantra chanting, suggesting a deeper state of relaxation and focus.
2	Bishnoi, M., Jain, K. & Jeenger, J. (2025) [5] Traditional Medicine	To see the impact of the trans formative power of AUM.	Review Paper	The rhythmic intonation aligns breath with mental focus, reducing anxiety and fostering a state of deep relaxation. The connection between AUM chanting and neurophysiological processes suggests its potential for therapeutic applications in stress-related disorders, emotional regulation, and cognitive enhancement.
3	Rao, P. D. (2024) [45] Frontiers in Health Informatics	To examine the feasibility of Mantra practices as culturally interwoven Mental health interventions in its aiming for their advancement in enhancing cognitive resilience. Sample-15	Qualitative analysis	The results show that these sound-based techniques are essential for the mentally healthy and well-balanced believer. Mantra chanting helps the Emotional regulation which leads to little stress ultimately increases cognitive resilience.
4	Samajdar, S.S., Mukherjee, S. (2020) [49] International Journal of Current Research in Physiology and Pharmacology	To assess the effect of GM chanting on attention, memory, anxiety and mental state on healthy young athletes Sample- 45	Quantitative analysis Randomized control group design	Subjects with GM chanting showed significant improvement in attention and memory domain. Marked improvements in both state and trait anxiety was noted for the GM chanters
5	McCulloch, K.C. & Parks-Stamm, E.J. (2020) [32, 41] Psychology of Religion and Spirituality	To see the impact of prayer on psychological perspective and emotional acceptance. Sample- 56	Quantitative analysis Cross-sectional design	Research suggests that prayer expands people's psychological perspective, which then improves their emotional management of personal problems.
6	Parks-Stamm, E.J., Pollack, J.S., Hill, D.R. (2020) [41] Psychology of Religion and Spirituality	To see the effect of prayer on emotional acceptance and cognitive understanding of a personal problem when compared with an equivalent time of thought. Sample- 253	Quantitative analysis Randomized control group design	Participants who directed their prayers inward and outward felt more resolved, at peace, and content than those in the thought condition. Cognitive understanding of the problem was significantly greater for those in the inward and outward prayer conditions.
7	Sekar, L., Niva, W. J. & Maheshkumar, K. (2019) [50] Journal of Clinical & Diagnostic Research	To see the effect of Mahamantra chanting in reducing stress among women nursing professionals. Sample- 30	Quantitative analysis Randomized control group design	This study showed significant increase in parasympathetic tone (LF/HF ratio) ($p<0.05$), shortened cognitive functions using Auditory (ART) ($p=0.05$), Visual Reaction Time (VRT) ($p=0.01$) and significant decreased serum cortisol levels ($p=0.05$) among subjects who underwent Mahamantra intervention.
8	Harne, B.P. & Hiwale, A.S. (2018) [19] Applied Psychophysiology and Biofeedback	To see the impact of the temporal dynamics of oscillatory changes after OM mantra meditation Sample- 23	Quantitative analysis Cross-sectional design	The results show that significantly increase in theta power was found after meditation when averaged across all brain regions
9	Thomas, S. & Rao, S.L. (2016) [54] International Journal of Indian Psychology	Aims to see the effect of listening to Gayatri mantra on the brain using electroencephalograph (EEG) functional Magnetic Resonance Imaging (fMRI) Sample-20	Quantitative analysis Cross-sectional design	Results indicate that mantra meditation can result in changes in the brain. Results showed that the areas that had maximum activation were the bilateral superior temporal gyri, right temporal lobe, right insula, left inferior parietal lobule inferior parietal lobule, lateral globuspallidus and culmen of the cerebellum.
10	Luhrmann, T.M., Nusbaum, H. & Thisted, R. (2013) [30] Journal of Cognition and Culture	To see the effect of cataphatic prayer on mental imagery vividness, mental imagery uses, visual attention and unusual sensory experience. Sample- 101	Quantitative analysis Randomized control group design	The results indicate that the prayer group experienced increased mental imagery vividness, increased use of mental imagery, increased attention to objects that were the focus of attention, and more unusual sensory experience, including unusual religious experience,
11	Mohanty, S.N., Satpathy, S. & Chopra, R. (2024) [35] Advances in Integrative Medicine	to see the impact of Maha Mantra chanting on anxiety and depression: An EEG Rhythm Analysis Approach Sample- 40	Quantitative analysis Randomized control group design	The study showed generous production of alpha, theta and delta waves which has been found in the study to be associated with the secretion of hormones or neurotransmitters causing dilation of blood vessels which is further associated with the improvement in the mental well-being and feeling relaxed and relieved, thus leading to decrease in anxiety and depressions.
12	Pundir, A. & Chauhan, A. (2023) [44] Traditional Medicine	To see the impact of Positive Effects of 'AUM' Chanting on Mental Health Well-Being	Review Paper	
13	Niva, W.J., Sekar, L. & Manikanda, A. (2021) [39] Advances in Integrative Medicine	To see the impact of Mahamantra chanting as an effective intervention for stress reduction among nursing professionals Sample- 30	Quantitative analysis Randomized control group design	A simple techniques like chanting of Mahamantra may have beneficial effect in relieving stress, as evidenced by alteration in stress biomarkers (decreased serum cortisol, increased DHEA, decreased SAA) and improvement in the metabolic parameters among the nursing professionals with moderate to severe stress
14	Lolla, A. (2018) [29] Journal of religion and health	To see the impact of Mantras Help the General Psychological Well-Being of College Students.	Quantitative analysis One group pre-test	The findings reveal a clear improvement in the general cheerfulness and clarity of mind of the subjects

		Sample- 52	post-test design	
15	Dwivedi, M. & Singh, S.K. (2016) [10] Aatmbodh Journal of Rajarishi School of Management & Technology.	To evaluate scientifically the significance of AUM in knowing self	Review Paper Qualitative analysis	It brings clarity in mind, increases self-awareness, greater ability to be associated with the world, selflessly serving others and being open for positive thoughts, simultaneously negative thoughts are swept away that heals the body on a cellular level, with more energy. It acts a brain stabilizer which recovers the body without medication.

The results across the reviewed studies consistently demonstrate that mantra chanting, particularly AUM and Mahamantra practices, has measurable neurophysiological and psychological effects, suggesting a strong link between sound-based contemplative practices and cognitive-emotional regulation.

EEG analyses revealed significant changes across multiple brainwave frequencies during mantra chanting, including increases in Alpha (10%), Gamma (13%), Beta (23%), Delta (16%), and Theta power. These shifts indicate heightened states of relaxation, focused attention, and internalized awareness, commonly associated with meditative absorption. Brain imaging data highlighted activation in regions related to auditory processing, emotional regulation, and attention, such as the superior temporal gyri, insula, temporal lobe, and parietal lobule, underscoring the deep neural impact of vocal meditation therefore, sacred sounds through chanting indicating neurophysiological activation and brainwave changes.

Subjects who engaged in mantra chanting, including Gayatri Mantra (GM) and Mahamantra, exhibited significant improvements in attention and memory domains. Reaction time assessments (auditory and visual) showed measurable reductions in cognitive latency, while reductions in serum cortisol levels and improved parasympathetic tone (LF/HF ratio) indicated lowered physiological stress. These findings support the idea that chanting practices may enhance cognitive resilience and aid in stress recovery**.**

The integration of breath control with rhythmic intonation in chanting appears to reduce anxiety, induce deep relaxation, and promote mental clarity. Both state and trait anxiety showed significant decreases among chanting participants. The practice's therapeutic relevance is especially noted in managing stress-related disorders, promoting emotional balance, and enhancing psychological well-being. Thus, chanting can be used in therapeutic practice and for stress reduction

Prayer-based interventions, especially those involving inward and outward prayer, were associated with greater emotional clarity, inner peace, and contentment. These practices not only expanded psychological perspectives but also facilitated problem resolution and enhanced the use of mental imagery. Participants also reported experiencing unusual sensory and spiritual sensations, highlighting the transcendent aspects of these practices. It can be considered a spiritual practice and a form of psychological expansion.

The findings from the studies also analysed and demonstrate that chanting-based contemplative practices, especially the Mahamantra, have significant effects not only on neurophysiological functioning but also on psychological well-being as well. The neuroelectric activity appears to correlate with the secretion of hormones or neurotransmitters that cause vasodilation, supporting a relaxed physiological state and enhanced mental well-being.The chanting of Mahamantra and other mantras resulted in measurable reductions in stress-related biomarkers, including decreased serum cortisol, decreased salivary alpha-amylase (SAA), and increased DHEA (a hormone linked to stress resilience). Among high-stress populations like nursing professionals, these biomarker changes were accompanied by improvements in metabolic parameters and general cheerfulness, suggesting that mantra chanting acts as a natural physiological stress regulator. The combination of sound, breath, and repetition appears to create a stabilizing effect on the mind, improving its ability to focus, let go of negative thoughts, and process emotional experiences more effectively. As a result, reduced anxiety and depression symptoms are seen. Beyond the cognitive and physiological outcomes, the practice also fostered deeper spiritual insight and emotional maturity, such as "a sense of inner peace and expanded perspective", a reduction in negative thought patterns, which was described as healing "on a cellular level".

Discussion

The current systematic review aimed to explore the effect of sacred sound like mantra chanting, prayer recitation or meditative vocalization on cognition, emotion and psychological well-being. After conducting the systematic review, synthesis of results indicates that neurophysiology effects illustrate that mantra chanting and meditation have quantifiable impacts on brain activity and functioning. For instance, a study disclosed substantial reduction in EEG frequency bands during OM mantra chanting, stipulating changes in states of relaxation and focus (Harne & Hiwale 2018) [19]. Another study identified augmented theta power after meditation (Lagopoulos *et al*., 2009) [26]. Improved cognitive functions have been suggested in most studies. Improved attention and memory were suggested by the study on Gayatri Mantra chanting (Samajdar & Mukherjee, 2020) [49]. Improved reaction time was suggested by the study on Mahamantra chanting (Mohanty *et al*, 2024) [35]. These results suggest that mantra chanting can be utilized to enhance cognitive function. Countless research has documented the stress reducing effects of these practices. For example, the Mahamantra chanting study established reduced cortisol levels and increased parasympathetic tone. Prayer research also established increased emotional regulation and increased acceptance of one's problems. This suggests that these practices may be key resources for stress reduction and emotional well-being.

Few studies encompass multiple research investigations examining the impacts of mantra chanting, notably the Mahamantra and the AUM mantra, on psychological health and overall well-being. The principal themes addressed throughout these studies include the recitation of the Mahamantra is associated with increased alpha wave activity in the central and parietal regions of the brain, indicating an increased level of mental refreshment and relief. This effect is associated with the release of vasodilating hormones and neurotransmitters, which lead to increased psychological well-being, relaxation, and reduced anxiety and depressive symptoms (Mohanty et.al, 2024) [35]. The particular facets of sound, i.e., amplitude, resonance,

waveform, pitch, and tone, when changed, are capable of providing an 'energy waveform' to change brain chemistry and form new pathways in the brain, resulting in improved mental well-being, peace, wisdom, and equanimity (Jiao, 2025) [20].

Major implications of the arguments presented are that chanting mantras is a low-cost, simple, and convenient way of lowering stress, anxiety, and depression, as the research carried out among nurses and university students has proven. Regular practice of mantra chanting can have long-lasting effects in the development of intuition, creativity, energy levels, and performance and self-awareness in general. Overall, the study suggests that the use of mantra chanting can be an effective complementary or alternative treatment for mental illness and overall well-being.

Despite of having some major evidences of how sacred sound have a significant effect on mind, there are some limitations in the evidences that we have collected, such as some findings are collected from websites written by well-known experts, yet they are not empirical evidences, in case of synthesis of the result, only positive results are reported, some review also missed the authentic sources, could be a part of gray literature.

The review process itself carries some limitations as well.

First, most of the studies reviewed have small sample sizes, which may limit the generalization of their findings.

Second, the heterogeneity of types of mantras, practice duration, types of participants, and methodologies used makes it even more challenging to ensure conclusions or compare outcomes between studies directly

Third, most studies are short-term in nature and cannot provide insights into long-term outcomes or long-term maintenance of the observed benefits

Fourth, the lack of standard protocols also complicates replication and verification of results.

Furthermore, some studies draw conclusions heavily based on self -report data, which may be vulnerable to bias or inaccuracy. Cultural and spiritual beliefs may influence outcomes as well.

The review compiles various studies on mantra chanting, meditation, and prayer, and their important findings. From neurophysiological effects, mantra chanting and meditation are measurable influences on brain activity, specifically in EEG frequency bands.

This suggests potential cognitive enhancement and stress reduction. Based on the study, interventions such as AUM chanting have beneficial effects on various physiological parameters and therefore, can be a suitable choice for integrative medicine and wellness programs. Mantra practice is also found to be promising as a culture-based mental health intervention that can potentially complement conventional therapies

Lastly, there is also a clear need for more rigorous neurophysiological studies to irrefutably establish causal mechanisms between the practice of chanting and changes in brain function. Although the role of acoustic parameters is often postulated, the precise mechanisms by which pitch, tone, and resonance impact neural activity are currently not well studied and require additional empirical validation.

Conclusion

In conclusion, taken together, the findings from these reviews indicate that sacred sound activities—whether in the form of formalized chants, repeated prayers, or sound meditations—act as highly effective means of mental health improvement. They appear to work via neurophysiological processes of brainwave modulation, hormonal regulation, and sensory-motor synchrony. Although further empirical research is required for more profound causal insight and long-term impact, the existing corpus of research robustly indicates therapeutic and transformational potential for sacred sounds in cognitive improvement and emotional health.

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Registration: Not registered.

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