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RESEARCH ARTICLE

Chanting the Breath: A Pioneering Blend of AUM with Yogic Practices to Amplify Respiratory and Psychological Resilience in Asthma Care

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Abstract: Asthma, recognized in ancient Indian medicine as Tamaka Swasa in the Charaka Samhita [1], is a chronic inflammatory airway disease with significant physical and psychological burdens. This heterogeneous disorder presents with variable symptoms and severity, often influenced by environmental and genetic factors. Particularly concerning is adult-onset asthma, which is frequently associated with an accelerated decline in lung function [2,3] manifesting as reduced Forced Expiratory Volume (FEV_1), increased airway remodeling, and greater resistance to standard treatments. This novel study introduces an integrative yogic model combining segmental breathing with different frequency modulation of AUM (OM) Meditation to examine both respiratory parameters and stress resilience. Following GINA 2024 guidelines, twenty adults with mild to moderate asthma were randomly assigned into two groups: a yogic intervention group (n=10) and a control group (n=10), over 12 weeks. The intervention group practiced basic rotations of Sithilikarana Vyayama for joint mobilization and AUM-integrated yogic breathing, targeting upper, middle, and lower lung zones, coupled with different frequencies and modulation of OM Meditation. Pre- and post-assessments included Respiratory Rate (RR), Breath Holding Time (BHT), Perceived Stress Scale (PSS-14), and Body Mass Index (BMI). Results were analysed using paired t-tests with IBM SPSS Statistics Software (V26). Significant improvements were observed in BHT ($t=9.31$, $p<0.001$), RR ($t=10.2$, $p<0.001$), and PSS-14 stress levels ($\chi^2=5.867$, $p=0.032$) in the intervention group, while the control group showed no significant change. Additionally, a shift in BMI classification among participants further highlighted physiological improvements. This study presents a pioneering mind-body framework using the vibrational dynamics of AUM to enhance both respiratory and psychological well-being in asthma care.

Keywords: AUM chanting, PSS-14, Respiratory Rate, Breath Holding Time, Yogic Breathing, Asthma, Stress Reduction, BMI, OM Meditation.

INTRODUCTION

The word "asthma" originates from the term "aazein" from Greek which translates to shallow, rapid or laboured breathing [4,5]. It is a long-term airway inflammation which involves various cellular entities, elements and materials. This long-term airway inflamed condition heightens its sensitivity, triggering repetitive symptoms like high-pitched breathing sound, struggling for breath, chest discomfort, and dry cough, often noticeable during nighttime or early morning hours.

As of 2024, approximately 262 million people globally are affected by asthma, equating to a prevalence rate of about 3,416 cases per 100,000 people. This condition remains a major health issue, with significant regional variations in prevalence and severity [6]. The prevalence is projected to increase by 100 million by 2025 [7,8]. In India, an estimated 34.3 million people are affected by asthma, constituting 13.09% of the worldwide burden of illness, having 13,200 fatalities reported due to the condition [9,10]. The estimated prevalence among adults in India is between 2-4%, with 1.8% for men and 1.9% for women [11].

Asthma-related conditions are often under-reported, primarily due to a general underestimation of the disease's signs and symptoms, resulting in a substantial healthcare burden [12]. Asthma significantly increases healthcare costs due to frequent hospitalizations and ongoing treatments, leading to financial burdens on families and healthcare systems. It also negatively impacts the quality of life, restricting physical activity and daily tasks due to symptoms and fear of attacks. While most asthma patients are managed well with treatments like inhaled corticosteroids and long-acting β-agonists, some still suffer from poorly controlled asthma, placing a heavier burden on healthcare systems. These patients require more resources, and their condition is worsened by environmental triggers such as allergens, chemicals, and particulate pollutants, highlighting the unmet need for optimal treatment options. Aerosol-derived nanoparticles also trigger inflammation and exacerbate respiratory conditions like asthma [13]. This highlights the significant impact of environmental factors on asthma management. Environmental factors play a vital role in asthma management by enhancing airway sensitivity, leading to more severe bronchoconstriction in individuals with asthma compared to those without the condition [14]. One study

demonstrated that the plant-based compounds that encompasses Aegle marmelos (L.) Correa, Chamaesyce hirta, Solanaceae trilobatum, Ouret lanata, Rough Leucas, and could be effectively utilized as a biomedicine for asthma [15].

Many individuals with asthma turn to alternative or complementary treatments such as herbal medicine, acupuncture, and homeopathy. Additionally, a significant number of people practice specific breathing techniques to help manage and alleviate asthma attacks. Various studies on breathing techniques have shown that incorporating yogic breathing exercises can significantly improve the condition of asthmatic patients**.** After practicing 'Om' Chanting, there is an enhancement in the measurements of all respiratory endurance parameters [16]. Significant improvements in various lung functions are observed in individuals with asthma with the effect of pranayama and controlled breathing exercises [17]. This study investigates the effects of a structured yogic practice routine, divided into four stages with varying pitches of OM chanting, on adults with mild to moderate asthma. The findings reveal that participants experienced a reduction in respiratory rate and an increase in breath-holding time. These results emphasize the potential of incorporating yogic breathing techniques and OM chanting as valuable, non-pharmacological adjunct therapies for managing asthma.

MATERIALS AND DESIGN:

In accordance with the Global Initiative for Asthma (GINA 2024) directives, the study included both men and women in early adulthood, aged 30-39 yrs with mild to moderate asthma, residing in and around the Chennai area. The experimental period for the yogic practices group was limited to 12 weeks, with sessions occurring five times per week. All participants were briefed about the aim and qualities of the research and provided consent in writing prior to data acquisition. Those who signed the informed consent form were assigned to a controlled randomized study. Utilizing a computer-generated unpredictable number system, participants were arbitrarily assigned to either the experimental or comparison cohort. Throughout the experiment, all participants were instructed to continue their prescribed treatment. The total sample size was set at 20, with the participants allocated into two identical teams of ten individuals each. First group participated in yogic interventions, while Second group served as the comparison group and did not undergo any interventions. The study focused solely on the independent variable of yoga therapy, with the dependent variables limited to Breath Holding Time, Respiratory Rate, and Perceived Stress. Breath Holding Time was measured using a stopwatch [18], while Respiratory Rate (RR) was manually recorded for a minimum duration of one minute [19]. In addition, the Perceived Stress Scale (PSS-14) questionnaire [30] was administered to participants before and after the yogic intervention to assess changes in psychological stress levels. All measurements were carried out both at baseline and post-intervention. A paired 't' test was conducted to analyse information within the two cohorts, examining the variables between the intervention and non-intervention groups using SPSS version 26.

DURATION

The experimental period for the yogic practices group was limited to 12 weeks, with sessions occurring three times per week.

PARTICIPANTS

Participants in the study residing in and around Chennai area between the ages of 30 to 39 were included. 35 participants were screened and 20 were selected finally (who matched the Guidelines of GINA and signed the informed consent) in random as subjects by using a random group sampling method.

INCLUSION CRITERIA

Individuals who do not smoke and have mild to moderate asthma, as outlined by Global Initiative for Asthma - GINA 2024 recommendations, were included in the research study. The present research was restricted to asthmatic adults of both men and women of early adulthood aged 30- 39 residing in and around Chennai.

EXCLUSION CRITERIA

Obstructive lung condition, Kidney impairment, Metabolic disorder, recent respiratory infections (within the past two months), and engagement in any regular exercise or Yogic practices were excluded.

INTERVENTION

The yogic session was carried out for 12 weeks. Following initial exercises, the subjects in the intervention group practiced yogic breathing and OM chanting for 30 minutes, five days a week, for 4 months. In contrast, the non-intervention group did not receive any training during this time

Yogic Breathing:

The Pranavam, Shabda Brahman, [29] is the complete cosmic OM (or AUM), is symbolized as the three unique vibrational rhythms of 'Aa', 'Uu' and 'Mm' means the Brahman, which is the consciousness [31,33]. These three distinct resonant sounds are intimately tied with the three phases of respiration, examined earlier with our segmental breathing practice of Vibhagha pranayama [20-23]. Whoever leaves the body while contemplating Me, the Supreme Being, and reciting the syllable OM, will reach the highest state of spiritual fulfilment, [32].

1. Adham Pranayama – A (lower lung breathing)
2. Madhyam Pranayama – U (mid-chest breathing)
3. Adhyam Pranayama – M (upper lung breathing)
4. Mahat Yoga Pranayama – AUM (complete yogic breathing). [29]

Om Chanting:

1. Ahatha chanting of OM – (internal or unstruck sound)
2. Anahatha chanting of OM – (external or struck sound)
3. Silence – AJAPA – (silence meditation)

Vibrational Modulation of AUM in Segmental Breathing

A unique feature of this study is the incorporation of differential modulation of AUM chanting, targeting distinct zones of the respiratory system with vibratory intent. Each part of the AUM syllable was consciously extended to resonate with specific anatomical and physiological regions

Region	**Chanting Style**	**Symbolic Sound**	**Respiratory Target**	**Vibration Zone**
Abdominal	AaaaaaaaaaaaUM	"A"	Diaphragmatic breathing	Lower Lung
Thoracic	AUuuuuuuuuuuM	"U"	Intercostal expansion	Middle lung
Clavicular	AUMmmmmmmm	"M"	Apical chest inflation	Upper lung

Table 1: Outline of Yoga Practices for intervention group with Techniques and Benefits

No.	Technique	ime rame	Techniques	Benefits
1	Prayer & ithilikarana Vyayama Loosening Joints)	Mins	Start with a simple prayer. Perform gentle joint movements such as neck rotation, shoulder rotation, wrist rotation, hip rotation and ankle rotation.	Prepares the body for practice, loosens joints, improves blood circulation, reduces stiffness, and enhances body-mind coordination.
2	Yogic Breathing	15 Mins	Practice deep diaphragmatic breathing, sectional breathing (abdomen, chest, clavicle), and full yogic breath with different modulation	Enhances lung capacity, calms the nervous system, improves oxygenation, reduces anxiety, and supports better breath control. Stimulates the vagal tone and calming the hypothalamic–pituitary–adrenal (HPA) axis,
3	Ahatha & Anahatha OM Chanting with Silent Meditation	8 Mins	Start with *Ahatha* OM—mentally repeating OM in silence. Then shift to *Anahatha* OM—chanting OM aloud with natural rhythm. Finally, move into *Ajapa* meditation—silently observing your natural breath. Let OM continue to vibrate in your mind, rising and falling gently like: OMmmm… OMmmm… OMmmm… maintaining a slow, natural pulse.	Balances the autonomic nervous system, promotes inner peace, reduces stress hormone levels, and enhances emotional stability and focus.

4	Ending Prayer and Relaxation	Mins	Conclude with a short prayer and practice conscious relaxation (like lying down in Shavasana).	Integrates the benefits of the session, reinforces a positive mental state, promotes deep physical rest, and emotional calmness.

STATISTICAL ANALYSIS

After Twelve weeks, both groups were reassessed on the same chosen experimental variables, including physiological measures like Breath Holding Time as well as Respiratory Rate. The data were gathered and organized into tables. Mean and SD were calculated. A paired t-test was conducted to determine the significant differences between the experimental and control samples. The level of significance was determined to be 0.05.

Table 1: Demographic Characteristics of Study Participants

Characteristic	Intervention Group (n=10)	Control Group (n=10)	p-value
Age (years)			
Mean ± SD	37.3 ± 6.1	37.4 ± 6.7	0.972
Range	30–45	28–46	
Gender			
Female	6 (60%)	5 (50%)	0.653
Male	4 (40%)	5 (50%)	
Height (cm)			
Mean ± SD	162.47 ± 8.78	164.48 ± 10.76	0.645
Weight (kg)			
Pre-test (Mean ± SD)	80.86 ± 13.23	82.42 ± 12.42	0.784
Post-test (Mean ± SD)	79.16 ± 13.17	82.06 ± 12.26	0.612
BMI Classification (Pre-test)			0.745
Normal (18.5–24.9)	1 (10%)	2 (20%)	
Overweight (25.0–29.9)	2 (20%)	2 (20%)	
Obese (≥30.0)	7 (70%)	6 (60%)	
BMI Classification (Post-test)			0.861
Normal (18.5–24.9)	1 (10%)	2 (20%)	
Overweight (25.0–29.9)	4 (40%)	2 (20%)	
Obese (≥30.0)	5 (50%)	6 (60%)	

Table 2: Computation of paired t test of Breath Holding Time (BHT)

Group	Pre-test Mean (SD)	Post-test Mean (SD)	Effective Mean	Paired t-test value	P value
Yoga Intervention	16.1 (1.7)	21.1 (2.9)	5	t=9.31	p<.001
Control	17.5 (1.26)	18.7 (1.70)	1.2	t=2.71	p=.024

Note: The results of the paired t-test showed the notable and statistically significant difference between the pre-intervention test (M = 16.1, SD = 01.7) and post-intervention test (M = 21.1, SD = 2.9) where, t (9) = 9.3, p < .001

Table 3: Computation of paired t test of Respiratory Rate (RR)

Group	Pre-test Mean (SD)	Post-test Mean (SD)	Effective Mean	Paired t-test value	P value
Yoga Intervention	21.2 (0.90)	16.3 (0.9)	-4.9	t=10.20	p<.001
Control	21.2 (0.97)	21.1 (0.87)	-0.1	t=0.3	p=0.798

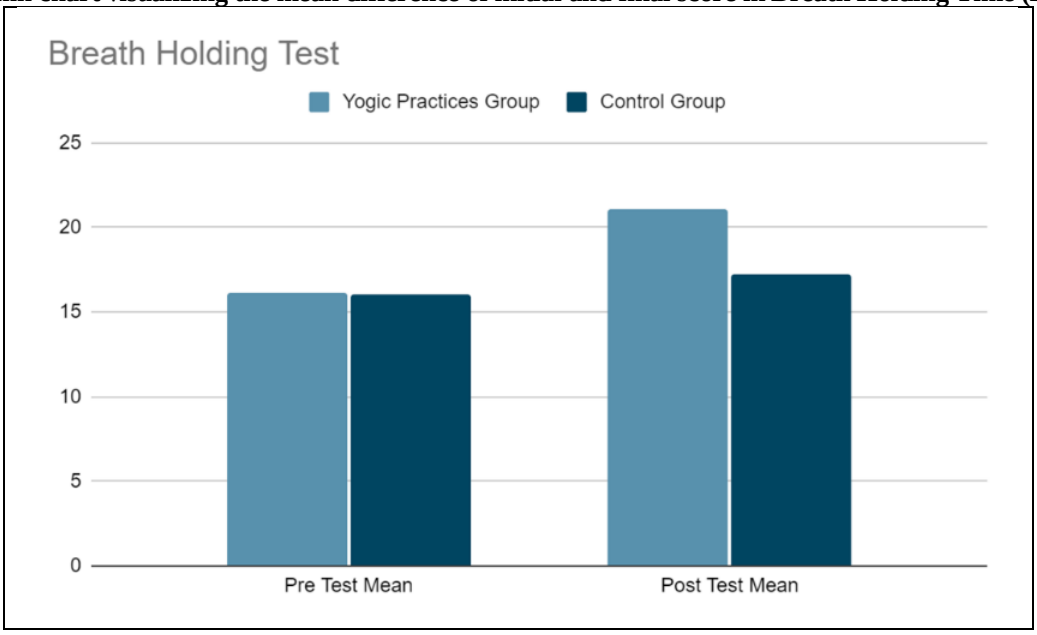
Note: The paired t-test results highlighted a significant and considerable difference between the pre-intervention test (M = 21.2, SD = 0.90) and post- intervention test (M = 16.3, SD = 0.9) where, t (9) = 10.2, p < .001.

Table 4: Changes in PSS-14 Categorization

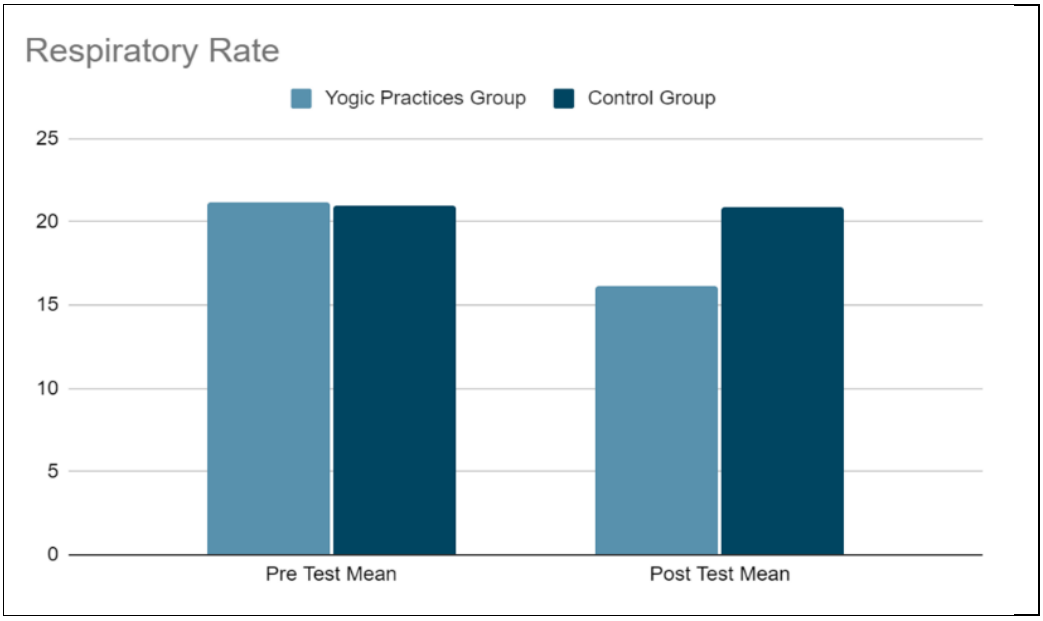
Stress Category	Intervention Group (n=10)		Control Group (n=10)	
	Pre-test	**Post-test**	**Pre-test**	**Post-test**
Low Stress (<14)	0 (0%)	2 (20%)	1 (10%)	1 (10%)
Moderate Stress (14–26)	3 (30%)	6 (60%)	3 (30%)	4 (40%)
High Stress (>26)	7 (70%)	2 (20%)	6 (60%)	5 (50%)

Note: The chi-square test revealed a statistically significant shift in stress categorization among participants in the intervention group between the pre- and post-test periods, $\chi^2(2, N = 10) = 5.867$, $p = .032$, indicating a meaningful reduction in perceived stress levels following the intervention. In contrast, no significant change was observed in the control group, $\chi^2(2, N = 10) = 0.267$, $p = .875$

Column chart visualizing the mean difference of initial and final score in Breath Holding Time (BHT)



Column chart visualizing the mean difference of initial and final score in Respiratory Rate (RR)



OUTCOME MEASURES
Pre- and post-intervention assessments included:

Respiratory Rate (RR): Manually recorded for a minimum duration of one minute [19]
Breath Holding Time (BHT): Measured using a stopwatch [18]
Perceived Stress Scale (PSS-14): Standardized psychological assessment [33]
Body Mass Index (BMI): Calculated from height and weight measurements

RESULTS

DEMOGRAPHIC CHARACTERISTICS
The study included 20 participants with similar baseline characteristics between groups. The intervention group had a mean age of 37.3 ± 6.1 years (range: 30-45), while the control group had a mean age of 37.4 ± 6.7 years (range: 28-46). Gender distribution was 60% female and 40% male in the intervention group, and 50% female and 50% male in the control group (p=0.653).

RESPIRATORY PARAMETERS
BREATH HOLDING TIME (BHT)
The intervention group showed significant improvement in BHT from pre-test (M = 16.1, SD = 1.7) to post-test (M = 21.1, SD = 2.9), with an effective mean difference of 5.0 seconds (t = 9.31, p < 0.001). The control group showed minimal change from pre-test (M = 17.5, SD = 1.26) to post-test (M = 18.7, SD = 1.70), with an effective mean difference of 1.2 seconds (t = 2.71, p = 0.024).

RESPIRATORY RATE (RR)
The intervention group demonstrated significant reduction in RR from pre-test (M = 21.2, SD = 0.90) to post-test (M = 16.3, SD = 0.9), with an effective mean difference of -4.9 breaths per minute (t = 10.20, p < 0.001). The control group showed negligible change from pre-test (M = 21.2, SD = 0.97) to post-test (M = 21.1, SD = 0.87), with an effective mean difference of -0.1 breaths per minute (t = 0.3, p = 0.798).

PSYCHOLOGICAL OUTCOMES

PERCEIVED STRESS SCALE (PSS-14)
The intervention group showed statistically significant improvement in stress categorization (χ^2 = 5.867, p = 0.032). Pre-intervention, 70% of participants were in the high stress category (>26), 30% in moderate stress (14-26), and 0% in low stress (<14). Post-intervention, this distribution shifted to 20% high stress, 60% moderate stress, and 20% low stress.

The control group showed no significant change in stress categorization (χ^2 = 0.267, p = 0.875), with distributions remaining relatively stable from pre-test to post-test.

BODY MASS INDEX CHANGES
The intervention group showed favourable changes in BMI classification. Pre-intervention, 70% were obese (≥30.0), 20% overweight (25.0-29.9), and 10% normal weight (18.5-24.9). Post-intervention, 50% were obese, 40% overweight, and 10% normal weight. The control group showed minimal change in BMI distribution.

NEUROPHYSIOLOGICAL MECHANISMS
The modulated AUM chant acted as a neuro-respiratory biofeedback tool, enhancing baroreflex sensitivity, improving cardiorespiratory synchronization, and regulating chemoreflex drive—a key marker in asthma pathophysiology. Vagal stimulation through vocal tract vibration helped reduce airway hyperreactivity, improved breath-holding capacity, and induced systemic anti-inflammatory responses through the cholinergic anti-inflammatory pathway.

DISCUSSIONS

Asthma is a complex, multifactorial disease that causes breathing difficulties and narrowing of the air passages, leads to various symptoms. These include dyspnoea (difficulty in breathing, particularly during exhalation), persistent wheezing (a high-pitched whistling sound during breathing), coughing, aggravation of the above symptoms during the night and early morning, sleeplessness, discomfort increases when lying down in bed. Pathologically, asthma involves mucosal inflammation, mucus hypersecretion, bronchial constriction, air trapping, and airway remodeling [24]. Though it is difficult to control all the triggers at a time, understanding these mechanisms is essential for developing effective treatment strategies aimed at controlling symptoms and preventing exacerbations. Breath holding time and Respiratory Rate is a simple, non-invasive, inexpensive test to assess pulmonary function which can provide useful information in healthy and diseased lungs. These variables also be used to assess the prognosis of such respiratory diseases. Breath-holding time (BHT) is influenced by baseline lung volume and mental determination. Breathing techniques, including respiratory retention, improve respiratory stamina and increase BHT. Research shows that pranayama regulates autonomic function by affecting the sensitivity of medullary respiratory control. Enhanced BHT is achieved by strengthening the respiratory muscles, which raises the partial pressure of carbon dioxide (pCO_2) and lowers the partial pressure of oxygen (pO_2). These improvements are attained through regular practice of OM Chanting [25- 27]. In the present study we could see the improvement in the variables measured in the 20 patients in the yoga group to the regular practice of yogic breathing and OM chanting. The vibrations generated during prolonged exhalation in OM chanting and yogic breathing are thought to activate the aural Vagal branch, which innervates the Auditory Canal. This branch, known as the Arnold's nerve, transmits sensory signals to the brain. The stimulation of this nerve can induce a parasympathetic response, promote relaxation, and reduce stress [28]. This stimulation can lead to immediate relief by altering the Autonomic Nervous System (ANS) promoting vagal activity which is essential for the regulation airway's function. Also, the prolonged exhalation helps to expel more trapped air in asthmatic patients. Thus, the current research concluded that the consistent practice of yogic breathing & OM chanting improves increased tolerance to CO2 by prolonged BHT and decreases the respiratory rate of respiration.

The current study's findings align with previous research demonstrating that yogic practices can significantly improve respiratory parameters in asthmatic patients. The unique contribution of this study lies in the systematic integration of vibrational modulation with segmental breathing, creating a comprehensive mind-body intervention that addresses both physiological and psychological aspects of asthma management.

LIMITATIONS

A significant limitation of this study is that the intervention combines two relaxation practices (yogic breathing and OM chanting), making it challenging to attribute the observed beneficial effects to any single practice. Additionally, the relatively small sample size (n=20) limits the generalizability of findings.

CLINICAL IMPLICATIONS

The study suggests that regular practice of yogic breathing and OM chanting improves the ventilatory function of the lungs as shown by the increase in BHT and decrease in RR. Patients experienced reduced symptoms, became more actively involved in their healthcare, and showed considerable improvement in stress management. The intervention is convenient, requiring only 30 minutes and can be practiced anywhere without specialized equipment.

FUTURE DIRECTION

Considering the positive effects of yogic breathing and OM chanting, further large-scale studies are needed for other respiratory parameters like FVC and PEFR, with better methodological designs to understand the mechanisms involved with yogic breathing. Future research should also investigate the long-term effects of these interventions and explore optimal dosage and duration for maximum therapeutic benefit.

CONCLUSION

This study demonstrates that the combination of AUM-integrated yogic breathing and OM chanting significantly improves respiratory parameters and psychological well-being in adults with mild to moderate asthma. The intervention showed significant improvements in breath holding time (increased), respiratory rate (decreased), and stress levels (reduced) compared to the control group. The vibrational dynamics of AUM chanting, when systematically integrated with segmental breathing practices, presents a promising non-pharmacological complementary approach for asthma management.

The findings support the incorporation of yogic breathing and OM chanting as beneficial interventions for asthmatic individuals to enhance and maintain respiratory parameters and psychological resilience. This pioneering mind-body framework offers a holistic approach to asthma care, addressing both the physiological and psychological dimensions of the condition.

INSTITUTIONAL ETHICS APPROVAL

This study was reviewed and approved by the Institutional Ethics Committee (IEC) of Meenakshi Academy of Higher Education and Research (MAHER), Chennai, Tamil Nadu, India.

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None

CONFLICT OF INTEREST
There is no conflict of interest.

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