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Research Article

A SINGLE ARM CLINICAL STUDY ON EFFECTIVENESS OF SIMPLE *BHRAMARI PRANAYAMA* IN PREVENTION OF PERIMENOPAUSAL SYNDROME

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ABSTRACT

Perimenopause is a transitional phase in a woman's life characterized by hormonal changes leading to vasomotor, psychological, physical, and urogenital symptoms that adversely affect quality of life. According to Ayurveda, this condition is associated with *Rajonivritti*, *Vata* predominance, and *Dhatukshaya*. Simple *Bhramari Pranayama*, a simple yogic breathing technique, is known to promote mental relaxation, reduce stress, and improve overall well-being. A single-arm clinical study was conducted on 52 women with perimenopausal syndrome. Participants practiced Simple *Bhramari Pranayama* according to a standardized protocol, and symptoms were assessed before and after the intervention using validated assessment criteria. Statistical analysis revealed a highly significant improvement ($p<0.001$) in the overall menopausal symptom score. Significant reduction was observed in hot flushes, excessive sweating, anxiety, depressive mood, sleep disturbances, irritability, physical and mental exhaustion, joint pain, vaginal dryness, and bladder complaints. The findings suggest that regular practice of Simple *Bhramari Pranayama* is a safe, simple, cost-effective, and effective non-pharmacological intervention for reducing the severity of perimenopausal symptoms and improving the quality of life of women during the menopausal transition.

INTRODUCTION

The perimenopause, which occurs between the reproductive and postmenopausal stages, is marked by varying levels of oestrogen and gradual ovarian follicular depletion. Many vasomotor, psychological, musculoskeletal, and urogenital symptoms, such as hot flashes, excessive perspiration, sleep disturbances, anxiety, depression, irritability, fatigue, joint pain, and vaginal dryness, are linked to this endocrine transition and significantly lower middle-aged women's quality of life.[1]

In Ayurveda, the menopausal transition is correlated with Rajonivritti, a *Swabhavika* (physiological) event occurring as a consequence of *Jara* (ageing).

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Ayurvedic classics describe *Rajonivritti* as natural cessation of *Artava Pravritti* around the age of 50 years, primarily resulting from *Vata* predominance, *Dhatukshaya*, and *Artava Kshaya*.[2] Although *Rajonivritti* is not considered a disease, the associated manifestations arise due to generalised depletion of body tissues and vitiation of *Doshas*, particularly *Vata*, producing physical, psychological, and emotional disturbances.

Women spend over one-third of their lives in the menopausal and postmenopausal stages due to longer life expectancies, which emphasizes the need for safe, efficient, and non-pharmacological symptom treatment strategies.[3] Yoga, an essential component of *Swasthavritta*, has received widespread scientific recognition for its benefits in neuroendocrine regulation, autonomic nervous system balance, stress reduction, and psychological well-being. It has been demonstrated that Simple *Bhramari Pranayama*, a slow yoga breathing method that produces a humming sound during exhale, increases parasympathetic activity, lessens sympathetic overactivity, promotes

mental calm, and improves general health.[4] Simple *Bhramari Pranayama* may therefore be a straightforward, affordable, and successful supportive intervention for reducing perimenopausal symptoms and enhancing the quality of life for women going through the menopausal transition.

Need For Study

Menopausal women frequently neglect their own health due to financial restraints, familial duties, and other considerations. The focus has largely been on reducing infant and maternal mortality rates, but programs on screening perimenopausal women are still scanty. There are few studies on perimenopausal syndrome and simple *Bhramari Pranayama*, despite the fact that numerous studies have demonstrated the efficacy of certain medications and *Asanas* in treating menopausal syndrome. This is the first attempt to assess the effect of Simple *Bhramari Pranayama* in the prevention of perimenopausal syndrome because it is one such technique with several health advantages and preventative action without adverse effects.

AIM AND OBJECTIVE

Aim: To assess the effectiveness of Simple *Bhramari Pranayama* in the prevention of Perimenopausal Syndrome.

Objective: To study the effect of Simple *Bhramari Pranayama* in the prevention of Perimenopausal Syndrome.

MATERIAL AND METHODS

Selection of Cases

A total of 52 clinically diagnosed patients with Menopausal Syndrome were recruited from the Outpatient Department (OPD) and Inpatient Department (IPD) of SSAM, Pune. Patients fulfilling the predefined inclusion criteria and willing to participate in the study were enrolled after obtaining informed consent, while those meeting any of the exclusion criteria were excluded. Clinical details and follow-up observations were recorded using a predesigned case record form.

Inclusion Criteria

- Women aged between 40-60 years.
- Women having clinical features of perimenopausal syndrome according to menopausal rating scale. (having score 11- 44 according to MRS.)

Exclusion Criteria

- Subjects with known case of malignancy.
- Surgical menopause
- Subjects with K/C/O diabetes mellitus, hypertension.
- Subjects suffering from major systemic illness necessitating long term drug treatment (K/C/O rheumatoid arthritis, psycho-neuro-endocrinal disorders.)
- Symptomatic subjects with clinical evidence of heart diseases.
- Subjects on prolonged medication with corticosteroids, hormone replacement therapy, antidepressants, etc. or any other drugs that may influence on the outcome of the study.

Pre-Treatment Observations

Every participant had a thorough clinical evaluation prior to the start of treatment. Age, sex, address, occupation, education, socioeconomic status, marital status, lifestyle, addictions, and food habits were among the demographic details that were documented. After obtaining a thorough medical history, systemic and general physical examinations were performed. The clinical evaluation included an assessment of mental health. Before beginning the intervention, each participant underwent a baseline Ayurvedic evaluation that included *Ashtavidha Pariksha*, *Dashavidha Pariksha*, *Sharirika Prakriti*, and *Manasika Prakriti*.

Yoga Intervention & Treatment Schedule

Yoga Intervention adopted: Simple *Bhramari Pranayam* (Standard Operative Procedure)

1. Participants were instructed to sit comfortably in *Sukhasana* (or on a chair if required) with the head, neck, and spine in an erect position.
2. The session commenced with the *Patanjali* prayer (*Yogena Chittasya*) to promote mental focus.
3. Participants performed *Nadi Shodhana Pranayama* for 5 minutes (10–15 rounds) in *Dhyana Mudra* as a preparatory breathing practice.
4. This was followed by Simple *Bhramari Pranayama* with *Shanmukhi Mudra* for 10 minutes (approximately 8–10 rounds) according to the participant's comfort and capacity. During exhalation, a slow, steady humming sound resembling that of a bee was produced while maintaining awareness of the breath.[5]
5. The session concluded with the *Shanti Mantra* (*Om Asato Ma Sadgamaya*).
6. Participants were advised to practice on an empty stomach in a calm, well-ventilated environment under the supervision of a qualified yoga instructor.

Duration & Intervention Schedule

Participants underwent Simple *Bhramari Pranayama* training for 7 days according to the Standard Operating Procedure (SOP). Following the training period, they practiced Simple *Bhramari Pranayama* for approximately 20 minutes per session, four sessions per week, for a total duration of 8 weeks. The intervention lasted 60 days, with follow-up

assessments conducted on the 15th, 30th, and 45th days, and a final post-intervention assessment on the 60th day using the Menopausal Rating Scale (MRS).[6] Attendance and adherence to the intervention were monitored throughout the study.

Criteria of Assessment

The efficacy of the intervention was assessed using the Menopause Rating Scale (MRS), a validated and widely accepted instrument for evaluating the severity of menopausal symptoms and their impact on quality of life. The assessment was carried out before and after completion of the intervention. Each symptom was graded according to its severity, and the individual scores were summed to obtain the total MRS score. The difference between the pre-intervention and post-intervention MRS scores was used to evaluate the effectiveness of Simple *Bhramari Pranayama* in reducing the severity of perimenopausal symptoms.

Table 1: Assessment Criteria

Parameter	Grade 0	Grade 1	Grade 2	Grade 3	Grade 4
Hot flushes, sweating (Episodes of sweating)	No hot flushes	Occasional hot flushes	Daily 1-2 times and increased at the time of stress but do not disturb the routine work	Daily more than 5 - 6 times even without any stress and feeling disturbance in routine work	Appearance of hot flushes every 1 - 3 hourly feeling of marked discomfort due to it, and patient asks for medical help
Heart discomfort	No Palpitation	On climbing staircase	On walking small distance or excitement	Even on talking little loudly or on hearing loud voice	Feeling of palpitation at any apparent cause, may be just due to some fearing exciting or irritating thoughts
Sleep Disturbances	Normal satisfying sleep	Occasional delayed sleep without waking episodes	Frequent delayed sleep with 1 -2 waking episodes	Daily delayed sleep with frequent waking episodes followed by delayed re-appearance of sleep	No sleep whole night and fatigue in morning due to it
Depression	No depression	Occasional depression	Mild presence of depressed mood every day but able to carry out routine work	Marked depression whole day, lost the interest in most things and carry out the routine work and even personal activities (like bathing, combing etc) without any interest	Wish to be dead or suicidal ideation
Irritability	No irritability	Can control and recognize irritable situation	uncontrollable irritation with specific cause	Uncontrollable irritation without specific cause	Throwing of things here and there, behaving un-socially due to it
Anxiety	No mood swings or mood remain stable in all conditions	Occasional instability in mood	Mood become instable easily due to any influencing factor	Frequent instability in mood without any influencing factor	Mood never remains stable
Physical and Mental exhaustion	Very good in recalling & remembering	Recalls and remembers with difficulty (occasionally)	Recalls and remembers with difficulty(frequently)	Delayed recalls and remembers with confusion	Unable to recall and remember

Sexual problem	No any definite change in sexual desire	Sexual desire somewhat decreased but enjoy sexual activity at regular interval	Occasional sexual desire and that time enjoy sexual activity	No desire of sex and even perform occasionally cannot enjoy it	Complete stoppage of sexual activity

OBSERVATIONS AND RESULT

The baseline demographic and clinical characteristics of all participants were recorded before the intervention. The observations included age, occupation, diet, religion, addiction, BMI, H/o premature menopause in first-degree relatives (mother) and *Prakriti*. The distribution of these variables is presented in the following table.

Table 2: Observational Table

Variable	Category	Frequency	Percentage
Age	40-45 years	32	61.54%
	46 – 50 years	15	28.85%
	51- 55 years	5	9.62%
Occupation	Housewife	34	65.38%
	Service	10	19.23%
	Labour	6	11.54%
	Teacher	2	3.85%
Religion	Christian	1	1.92%
	Hindu	50	96.15%
	Muslim	1	1.92%
BMI	Less than 18.5	0	0.00%
	18.5- 24.9	23	44.23%
	25-29.9	12	23.08%
	Greater than 30	17	32.69%
Diet	Mixed	35	67.31%
	Veg	17	32.69%
H/O Premature menopause in first-degree relatives (mother)	Less than 40 Yrs	12	23.08%
	40-45 Yrs	25	48.08%
	More than 45 Yrs	15	28.85%
Prakruti	*Kapha Vata*	5	9.62%
	Kapha Pitta	4	7.69%
	Pitta Vata	5	9.62%
	Vata Kapha	11	21.15%
	Vata Pitta	27	51.92%

Among the study population, the maximum number of subjects 32 (61.54%) belonged to the 40–45 years age group. The majority of participants were housewives (34; 65.38%) and 50 (96.15%) belonged to the Hindu community. Most subjects 23 (44.23%) had a normal Body Mass Index (BMI) (18.5–24.9 kg/m^2). A positive history of premature menopause in first-degree relatives (mother) was observed in 25 (48.08%) subjects, predominantly in the 40–45 years age group. Regarding *Prakriti*, the majority of subjects 27 (51.92%) were of *Vata–Pitta Prakriti*.

RESULTS

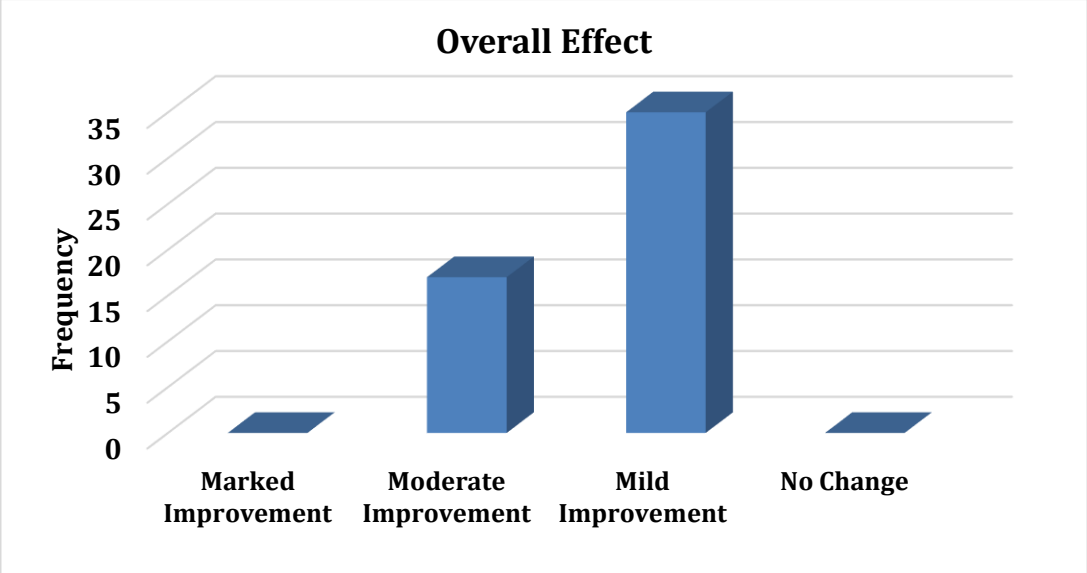
A total of 52 participants completed the study and were included in the final analysis. At baseline, most participants presented with moderate to severe perimenopausal symptoms, including hot flushes, excessive sweating, sleep disturbances, anxiety, depressive mood, irritability, physical and mental exhaustion, joint pain, vaginal dryness, and bladder complaints. Following regular practice of Simple *Bhramari Pranayama*, a statistically highly significant reduction was observed in the overall menopausal symptom score ($p<0.001$). Significant improvement was observed in vasomotor, psychological, musculoskeletal, and urogenital symptoms.

Table 3: Result

Parameter	BT		AT		Wilcoxon W	P-Value	% Effect	Result
	Mean	Median	Mean	Median				
Hot flushes, sweating (episodes of sweating)	2.10	2.00	0.81	1.00	-6.426b	0.000000000	61.47	Sig
Heart discomfort	1.27	1.00	0.31	0.00	-5.516b	0.000000035	75.76	Sig
Sleep disturbances	2.33	2.00	0.52	0.00	-6.310b	0.000000000	77.75	Sig
Depression	2.15	2.00	0.85	1.00	-6.239b	0.000000000	60.71	Sig
Irritability	2.19	2.00	0.69	1.00	-6.326b	0.000000000	68.42	Sig
Anxiety	2.13	2.00	0.85	1.00	-6.177b	0.000000001	60.36	Sig
Physical and mental exhaustion	1.94	2.00	1.13	1.00	-5.906b	0.000000004	41.58	Sig
Sexual problem	2.58	3.00	2.54	3.00	-1.000b	0.317310508	1.49	Not Sig.

Overall Effect

As a result, it can be concluded that the influence is significant. The observed effect is a mild improvement in 35 (67.31%) participants, and 17 (32.69%) participants showed moderate improvement out of 52 participants. It was noted that the psychological symptoms of Perimenopausal syndrome showed highly substantial improvements. Throughout the course of the trial, adverse effects were not observed.



Graph 1: Overall Effect

The findings demonstrate that Simple *Bhramari Pranayama* is an effective, safe, and non-pharmacological intervention for reducing the severity of perimenopausal syndrome and improving the quality of life in perimenopausal women.

DISCUSSION

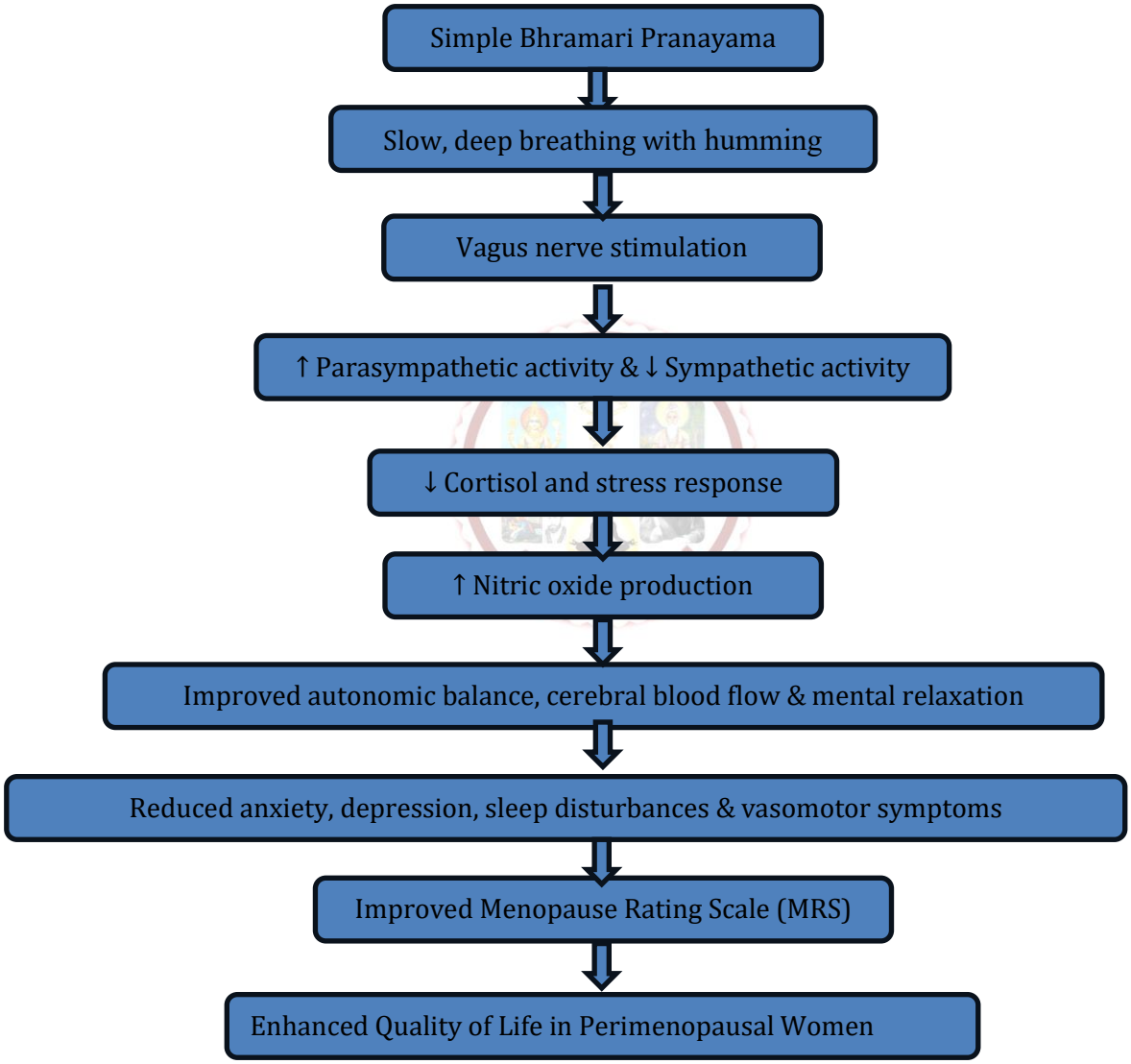
The present study found that frequent practice of simple *Bhramari Pranayama* resulted in a statistically significant reduction in the Menopause Rating Scale (MRS) score, indicating that it can help reduce the intensity of perimenopausal symptoms.

The beneficial effects of Simple *Bhramari Pranayama* can be explained through both modern and

Ayurvedic principles. Slow, controlled breathing with humming during exhalation stimulates the vagus nerve, enhances parasympathetic activity, suppresses sympathetic overactivity, and improves autonomic balance. The humming vibration increases nitric oxide production within the paranasal sinuses, which improves oxygenation, cerebral blood flow, and endothelial function.[7] Regular practice also reduces the secretion of stress hormones such as cortisol, promotes emotional stability, decreases anxiety and depression, improves sleep quality, and enhances mental relaxation. These neurophysiological changes may contribute to the reduction of vasomotor symptoms, psychological disturbances, fatigue, and musculoskeletal discomfort observed in perimenopausal women.[8]

From an Ayurvedic perspective, Simple *Bhramari Pranayama* promotes the normal functioning of *Prana Vata*, thereby helping to maintain the balance of other subtypes of *Vata*. It calms the mind (*Manas*), improves mental clarity, reduces *Rajas* and *Tamas*, and supports the maintenance of *Sattva*, leading to improved psychological well-being. [9]

Probable Mode of Action (Flow Chart)



CONCLUSION

The present study's findings show that Simple *Bhramari Pranayama* is an effective and scientifically supported Yogic intervention for the management of perimenopausal syndrome. Regular practice produced a statistically highly significant reduction in the Menopause Rating Scale (MRS) score ($p<0.001$), reflecting improvement in the overall severity of somatic, psychological, and urogenital symptoms.

The observed therapeutic benefits may be attributed to the modulation of autonomic nervous system activity, reduction in psychological stress, enhancement of parasympathetic tone, and improvement in emotional and physical well-being.

From an Ayurvedic perspective, simple *Bhramari Pranayama* helps maintain the equilibrium of *Prana Vata*, thereby mitigating the manifestations of *Rajonivritti* associated with *Vata* predominance and *Dhatukshaya*.

Considering its simplicity, safety, cost-effectiveness, and ease of practice, simple *Bhramari Pranayama* can be incorporated as a preventive and supportive lifestyle intervention for women during the perimenopausal transition.

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