

Effect of *Bhramari Pranayama* on Dimensions of Health: A Meta- Analysis

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Abstract

Yogic science is one of the six orthodox systems of Indian philosophy which disciplines the human body at all the dimensions of health. It regulates various functions of the body and harmonises both body and mind. It has various classifications and popular among these is the *Asthangha Yoga* as proposed by Maharshi Patanjali. *Pranayama* is the fourth limb in *asthangha yoga* which sustains life. It is considered as the *antharanga sadhana* along with *Pratyahara*. *Bhramari Pranayama* is a type of *pranayama* owing many beneficial effects on health. The present day, is in need of *bhramari* like yogic practices which soothe the mind and body as well. This article is a compilation and meta-analysis of various clinical studies conducted to prove the beneficial effects of *Bhramari Pranayama* on all the 5 dimensions of health.

Keywords: Antaranga Sadhana; Asthangha Yoga; Bhramari; Pranayama; Pratyahara; Yoga.

Introduction

In the present era of stress, health of Man has been declining in all its 5 dimensions, like physical, mental, spiritual, emotional and intellectual. Yoga in its original form consisted of a system of ethical, psychological, and physical practices; although of ancient origin, it transcends cultures and languages [1]. *Yoga* is one such tool being passed from our ancestors, which can improve health at five dimensions of health.

Among the *Asthangha Yoga*, *Pranayama* is one such yogic practice which sustains life. The word *Pranayama* comprises of two words "Prana" and "Ayama", meaning to control the breath. *Pranayama* cultivates a deep connection with the flow of life force (*Prana*) throughout your body. It is practised in three phases as *Puraka* (Inhalation), *Kumbhaka*

(withholding) and *Rechaka* (exhalation). *Pranayama* has many types as *surya anuloma- viloma*, *Chandra anuloma- viloma*, *nadishodhana*, and *surya and chandrabhedhi pranayama*, *kapalabhati*, *Bhastrika* and *Bhramari pranayama*. *Bhramari Pranayama* involves production of a reverberating sound mimicking the sound of the honey bee during the *rechaka* (exhalation). The vibrations produced during the procedure are believed to have various good effects on different systems of the body. Various clinical studies conducted on *Bhramari Pranayama*, have proven its beneficial effects at all five dimensions of health. This article aims at unleashing the same.

Materials and Methods

Bhramari Pranayama

Bhramari is a sanskrit word which is derived from "Bhramar" the black Indian bumble bee. It describes the characteristic humming sound which is produced while exhaling in this breathing exercise. *Hathayoga Pradeepika* explains *Bhramari Pranayama* as a procedure in which one breathes in quickly, making a reverberating sound like the male black bee, and exhale slowly while softly making the sound of the female black bee. By this yogic practice one becomes lord of yogis and the mind is absorbed in bliss. The procedure has acquired this name, as the sound produced during the practice resembles the sound of black bee [2]. *Bhramari* helps to reduce stress and

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anxiety, expand joy and relaxes both body and mind. Moreover, the exhalation clears and vibrates the throat.

According to *Gheranda Samhita*, at midnight when the surroundings are quite around, one should adopt any of the *dhyanatmaka asana* i.e *siddhasana*, *padmasana*, *attain shanmukhi mudra*, and inhale (*puraka*) with a sound of bee and after the practice one will analyse the sound of himself/ herself, which resembles the sound of a bee first, then sound of a *vamsli*, *roaring clouds*, *bhramara gunjan*, that of various musical instruments like *turahi*, *bheri*, *mrudanga* etc. The sound heard in the *Anahata* (pectoral region), is nothing but the *brahma jyoti*, if one concentrates on this, then it is equivalent to having the touch of holy feet of Lord *Vishnu* [3].

Physical Dimensions of Health and *Bhramari Pranayama*

The state of physical health means the “perfect functioning” of the body. It explains health biologically where in every cell of the human body, functions at its optimum level [10]. *Pranayama* is a yogic practice which ensures an optimum level of health. Various studies have proven promising effects of *Bhramari Pranayama* on the physical dimensions of health. In general, *dhyanatmaka* posture i.e *padmasana* or *vajrasana* opted during the practice, complete the circuit, channelize the flow of *Prana*, and also strengthen and tone the muscles of thighs, calves, pelvis and lower abdomen.

The study conducted by Chanda et al, to evaluate the effect of *bhramari pranayama* on cardio-respiratory parameters in hyper reactors to cold pressor test in young healthy preclinical medical students, showed that the collective practise of *bhramari pranayama*, *asanas*, *om* chanting, meditation, *nadishodhana pranayama*, daily twice for a period of 12 weeks, decreased systolic blood pressure due to increased parasympathetic activity. Collective impact of *Nadishodhana*, *Bhramari Pranayama* and *Omkar* chanting modulated the sympathetic and parasympathetic activity thereby resulting in relaxation [4].

In an article by Taneja (2016), it is discussed that the humming procedure done during the exhalation in *Bhramari Pranayama*, increases vital capacity of lungs, and endogenous secretions of nitric oxide which prevents various sinus infections, bronchial asthma or delay the aging hearing loss [5]. Immediately after 5 min of practice of *Bhramari Pranayama*, the heart rate and blood pressure is influenced in healthy subjects because of the

parasympathetic dominance [6]. *Bhr. P* practice produces relaxed state and in this state parasympathetic activity overrides the sympathetic activity. It suggests that *Bhramari pranayama* improves the resting cardiovascular parameters in healthy adolescents [16].

Mental, Emotional Dimension of Health and *Bhramari Pranayama*

Healthy mind in a healthy body is the way, health is defined since ages. Mental health is not merely an absence of mental illness, but it is the ability to respond to the varied situations what the Man faces around him daily. Earlier, mind and body were considered as two independent entities. Various studies proved this as a myth, and established the fact that disease manifests by the imbalance of physical and mental health. Present day is the scenario of stress, tension, anxiety, depressions which not only creates the chaos to the mental health, but also disturb the emotional and physical health. Mental health deals with cognition and emotional health deals with feelings. All together, a disturbed mind leads to disturbed feelings, leading to the disturbed attitude towards life.

This can be well managed by practice of *Yoga* which calms the mind and builds right attitude towards life. *Bhramari pranayama* has been proven effective in various mental and emotional disturbances. An article by Karel, Netspar and Bhuti, Swarup (2000) states that *Bhramari Pranayama* reduces anxiety, stress, aggression, insomnia, depression and is effective after neurosurgery. A study conducted by Suprabha Srivastav et al (Jan- Mar 2007), to evaluate effect of *Bhramari Pranayama* on Mental Health in college Students using a standard mental health scale with good psychometric properties, revealed increased mental health score after practise of *Bhramari Pranayama* in comparison to pre mental health score. They have established in the study that *Pranayama* like *Bhramari Pranayama* stimulates the reflex of Autonomic Nervous System, and raises the level of noradrenalin. This hormone increases with a deeper breathe and resonates while exhaling and decreases the level of neuro-hormones responsible for various stresses, anxiety and aroused mental state in deeper form through bio-feedback mechanism [7]. High frequency paroxysmal gamma wave pattern is observed in the participants immediately after practicing the *Bhramari Pranayama* [8,9]. The stress level was reduced after a practice of various *pranayamas* for 2 months indicating reduction in sympathetic drive and increase in parasympathetic dominance to the heart [13].

Spiritual Health and *Bhramari Pranayama*

It is an intangible component of health, which transcends physiology and psychology. It brings a state of bliss to the mind. It is superior to the other levels of health; it defines meaning of life, by awakening the self realisation. During *Bhramari Pranayama*, the sound heard in the *Anahata* (pectoral region) while exhalation, is interpreted as the *brahma jyoti*, if one concentrates on this, then it is equivalent to having the touch of holy feet of Lord *Vishnu* [2]. The regular practice of *bhramari* renders complete bliss and aids in self realisation.

Intellectual Health and *Bhramari Pranayama*

It is defined as the ability to learn, grow from experience, and utilise intellectual capabilities [11]. This dimension of wellness encourages creative, stimulating mental activities. An intellectually well person uses the resources available to expand one's knowledge, improve one's skills and potential for sharing with others.

Bhramari pranayama enhanced response inhibition and cognitive control in nonclinical participants. *Yoga* lays emphasis on manipulation of breath movement (*Pranayama*), which contributes to a positive neurophysiologic response. Earlier study has shown resonating and repetitive effects of humming bee sound in the *Bhramari pranayama* breathing technique, increased theta activity. We hypothesize that improvement in response inhibition may be due to enhanced theta activity [12].



Picture 1: *Bhramari Pranayama*

Discussion

Bhramari pranayama has been found to be effective in controlling blood pressure both high and low, reducing tension, bringing relaxation, improving condition of ear, throat, nose and sinus, reducing cerebral tension, hypertension, anxiety and in healing many other mental problems claimed by different subjects [14,15]. In deep breathing pulmonary stretch receptors are stimulated which lead to withdrawal of sympathetic tone on the skeletal muscle causing pervasive vasodilatation with decrease of peripheral resistance. *Bhramari Pranayama* probably relaxes the cerebral cortex (supported by the presence of gamma waves) and by increasing parasympathetic predominance and/or inhibition of vasomotor centre (VMC) in medulla by cortico-hypothalamic descending pathway which was reflected by reduced hyper-reactivity to cold pressor test after 3 months training of *Bhramari Pranayama* [17].

Nitric oxide is produced endogenously from the blood vessels and mucosa of nose and paranasal sinuses. Nitric oxide is naturally produced in youth and goes down with aging, mainly hampering the blood circulation to ear, brain, heart, and sex organs. Release of nitric oxide production is reduced in sinusitis. Chronic infection hampers the production and minimizes the action of nitric oxide. Humming increases the production of nitric oxide from sinuses and nasal mucosa. Eby explained humming as a sonic cleanser, cures the infection of sinuses by decreasing the swelling of sinus ostea resulting into better drainage and oxygenation. Humming exercise also increases the vital capacity. It is estimated that humming increases the endogenous generation of nitric oxide level by 15 fold as compared with the quiet exhalation. Nitric oxide helps memory and behavior by transmitting information between neurogenic cells in the brain, apart from calming the brain by improving the quality of sleep. *Bhramari Pranayama*, releases nitric oxide and when combined with *Kumbhak*, *Greeva Chalan* along with modification of diet and life style can prevent or delay the aging hearing loss. It potentiates the general immunity of an individual [5].

Conclusion

Yoga remains as the only ideal option and alternative form of physical therapy that is beneficial both for body and mind. It has strong effects on physiological system in improving the physical

fitness along with the mental performance by enhancing the cognitive function. Thus *Bhramari pranayama* helps to keep all the 5 dimensions of health fit. Exploration of mechanism of *Bhramari Pranayama* can put it further as the alternative healing system for many neuronal disorders.

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