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Review Article

JALA NETI AS A PREVENTIVE PRACTICE FOR ENHANCING RESPIRATORY HEALTH IN TEXTILE INDUSTRY WORKERS: A SYSTEMATIC REVIEW

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ABSTRACT

Textile industry workers are often exposed to dust, fibers, and chemical pollutants, which can lead to respiratory illnesses such as allergic rhinitis, sinusitis, and occupational asthma. In India, approximately 51% of textile workers had one or more respiratory symptoms, while 31% of them had serious issues like respiratory failure. Preventive and non-invasive interventions are needed to reduce these health risks. *Jala Neti*, which is a traditionally practiced yogic cleaning technique, is practiced to maintain nasal hygiene and to also support respiratory health. **Methods:** Various classical *Yogic* texts, like *Charak Samhita* and *Sushrut Samhita*, etc., were analyzed along with peer-reviewed research articles, like PubMed, Scopus, google scholar were collected, compared, and analyzed. Also, clinical studies which are related to *Jala Neti* and nasal irrigation, literature focusing on respiratory health, occupational exposure, and preventive practices were systematically examined to assess the potential benefits of *Jala Neti* for textile industry workers. **Results:** The reviewed evidence states that regular practice of *Jala Neti* facilitates the removal of inhaled dust particles, allergens, and microbial contaminants from the nasal passages. It improves mucociliary clearance, reduces nasal congestion, enhances nasal airflow, and may lower the incidence of upper respiratory tract infections. Studies also report improved respiratory comfort and breathing efficiency among individuals practicing nasal irrigation techniques. **Discussion and Conclusion:** *Jala Neti* almost appears to be a which is, safe, cost-effective, and accessible preventive practice for improving respiratory health in occupational settings with high airborne exposure. Its integration as an adjunctive preventive measure for textile industry workers may help reduce respiratory morbidity and improve overall quality of life. However, further clinical trials specific to this population are necessary to establish standardized guidelines, long-term efficacy, and safety.

INTRODUCTION

Textile workers are often exposed to dust, lint, chemical fibers, and pollutants, especially in dyeing sections, which makes them very easily susceptible to respiratory illness. This chronic exposure leads to several risks, which include allergic rhinitis, sinusitis, and other respiratory tract infections (URTI). [1]

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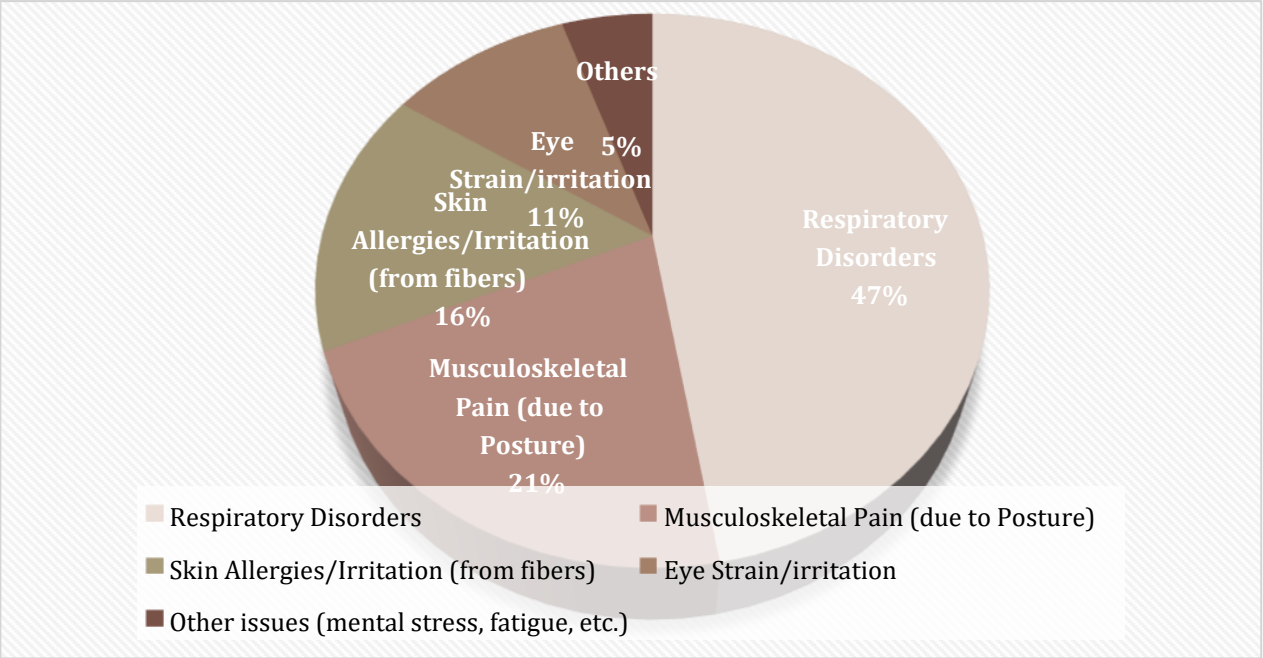
In India, about 51% of textile workers had one or more respiratory symptoms, while 31% of them had serious issues. [3] Sometimes this chronic inflammation also leads to diseases like anaemia, palpitation, CVA, Asthma etc.[1]

According to the WHO, respiratory disorders are a very common cause of absenteeism and reduced work capacity at the actual factory site. [2] Preventive respiratory care is often neglected or ignored in such cases or populations.



As per the treatment protocol of modern medicine, include antihistamines, corticosteroids, and inhalers, which may be unsustainable for curing such diseases.

Jalaneti, one of the *Yogic Kriya* from *Shatkarmas*, may offer preventive & also therapeutic benefits in such an issue, which is mentioned in *Hathayoga*. [5] It prevents the dust, mucus, and allergens, which reduces the actual risk of the disease.

Also, there is a lack of awareness about *Yogic Kriyas* and their applications. Currently, there is no field-based *Yoga* module for such an ignored population, which forms the major part of our country.

Integrating lifestyle-based *Upakramas* with occupational health is essential in the present scenario. Hence, a lifestyle-based and health-focused intervention like *Jalaneti* can transform workers' respiratory wellness.

So, this study aims to collect, compile, and analyze classical ayurvedic references related to *Jalaneti* and also evaluate the role of effect of *Jalaneti* for a prevention of occupational respiratory disorders in the textile workers. An attempt is made to look for respiratory health, its complication of textile workers, and the use of *Jalaneti* - a cleansing technique from yoga therapy, as a preventative aspect in it. So, such an integrative understanding can contribute to evidence-based guidelines, strengthen preventive strategies, and promote sustainable respiratory health within the major and most-ignored population group.

Need of Study

High chances of impact - Over 47% of textile workers suffer respiratory issues.

Neglected occupational Group - Respiratory care is rarely taken.

Limitations of modern medicines - they often cause side effects.

Benefits of *Jala Neti* – Its benefits include reducing *Urdhvajatrugat Roga (Pratishyaya, Krimi, Kapalshodhana,* etc.).

Cost-effective and sustainable – Unlike other interventions

This can also be part of a lifestyle that promotes a healthier and quieter, safer preventative model for such a population.

MATERIALS AND METHODS

Study Design

The present work is a systematic narrative review that involves critical appraisal and also the synthesis of Ayurvedic references along with scientific evidence, in accordance with PRISMA guidelines.

Data Sources

Different Classical texts of *Ayurveda*, viz. *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hrudaya* and *Ashtanga Sangraha*, Relevant *Nighantus* and commentaries, as well as Modern literature sources viz. Indexed journals related to nutrition, haematology, and integrative medicine, review articles and clinical studies on anaemia and nutritional deficiencies, WHO reports, and standard nutrition textbooks, databases such as PubMed, Scopus, and Google Scholar, etc., were critically reviewed, compared & analysed.

Inclusion Criteria

This systematic review includes classical *Ayurvedic* and *Yogic* texts and commentaries that describe *Jalaneti* and *Shatkriya* - a yogic cleansing procedure, along with published human studies and reviews that examined its effect as a preventative aspect of respiratory disorder. Articles were included if they allowed a meaningful mechanism of action of *Jalaneti* and reported relevant clinical features or haematological outcomes. All the recent studies relevant to our search strategy are included. The studies that did not fall in these categories were excluded from the review.

Exclusion Criteria

Studies were excluded if they lacked a clear dietary component, focused solely on pharmacological intervention, or addressed inadequate reports, if they lacked clarity in methodology, did not address yogic or lifestyle components. The studies that did not fall in these categories were excluded from the review. conference abstracts without full text, letters to the editors, Studies that do not align with Ayurvedic concepts of *Yogic cleansing,* or Respiratory symptoms. Full texts not available or inaccessible, Opinion pieces without a scientific or textual basis.

Conceptual Framework

Occupational Factors Contributing to Respiratory Problems in Textile Workers

Textile workers are individuals employed in the textile and garment industry, involved in processes like fiber production, spinning, weaving, dyeing, printing, finishing, and garment manufacturing. They are commonly exposed to cotton dust, synthetic fibers, chemical dyes and solvents, Noise and vibration, Repetitive work and long hours, and poor ventilation. Because of these risk factors, textile workers are often considered a vulnerable occupational group. In India, approximately 51% of textile workers had one or more respiratory symptoms, while 31% of them had serious issues like respiratory failure. Pulmonary ailments, musculoskeletal disorders, noise nuisance, skin disorders, and psychological stress are the most common occupational disorders in the textile industry. These are due to the inhalation of dust and fibers, chemicals, dyes, and irritants, use of loud machinery, heavy lifting, and exposure to biological agents such as bacteria and fungi, which can lead to infections and respiratory issues.[6]

Pathophysiological Mechanism of Cotton Dust–Induced Respiratory Disorders [7,8]

Cotton Dust Exposure

↓

Inhalation of Particulate Matter (PM) ($PM_{2.5}$ and ultra-fine particles)

↓

Deep Penetration into Lungs (Deposition in alveoli and pulmonary endothelium)

↓

Alveolar Wall Irritation & Damage

↓

Release of Pro-inflammatory Mediators (Leukotriene B4, Interleukin-8, TNF-α)

↓

Inflammation & Necrosis of Respiratory Epithelial Cells

↓

Increased Airway Reactivity

↓

Respiratory Endothelial Dysfunction

↓

Clinical Manifestations (Bronchospasm, shortness of breath, airway inflammation)

↓

Chronic Respiratory Disorders (Chronic Byssinosis, Chronic Bronchitis, COPD)

S.No	Respiratory symptoms in textile workers	*Ayurvedic* term	Likely *Dosha* imbalance	*Strotas* affected	Main organs involved
1.	Dry Cough	*Kasa (Vataj)*	*Vata*	*Pranavaha strotas*	Lungs
2.	Productive cough with mucus	*Kasa (Kaphaj)*	*Kapha*	*Pranavaha strotas*	Lungs, Throat
3.	Shortness of breath/	*Shwasa/*	*Vata, Kapha*	*Pranavaha strotas*	Lungs, heart

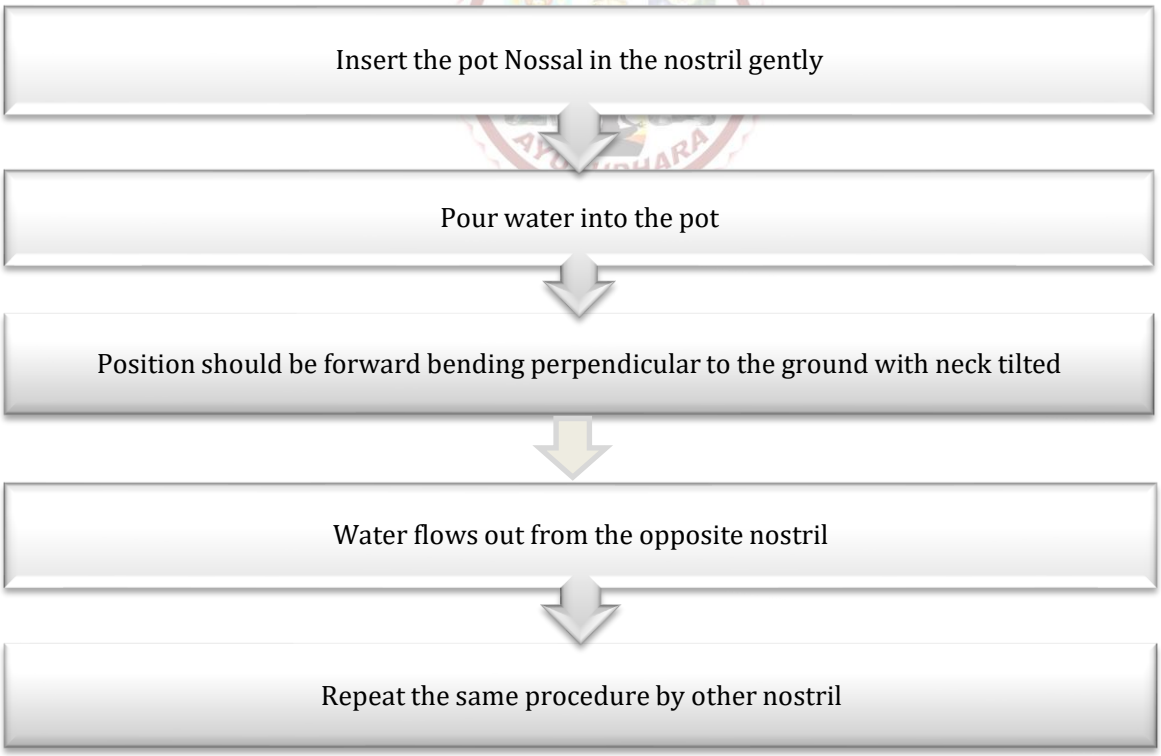
	difficulty breathing	*Tamakshwas*			
4.	Wheezing	*Shwasa*	*Vata, Kapha*	*Pranavaha strotas*	Lungs
5.	Chest tightness	*Shwasa*	*Vata, Kapha*	*Pranavaha strotas*	Lungs, heart
6.	Nasal congestion/ runny nose	*Peenasa*	*Kapha, Vata*	*Pranavaha strotas*	Nose, sinuses
7.	Sneezing	*Pratishyay*	*Kapha, Vata*	*Pranavaha strotas*	Nose, sinuses
8.	Burning sensation in throat /chest	*Urdhwajatrugata Pittaja vikar*	*Pitta*	*Pranavaha strotas*	Lungs, Throat
9.	Sinusitis	*Peenasa*	*Kapha, Vata*	*Pranavaha strotas*	Nose, sinuses, throat, eyes
10.	Rhino sinusitis	*Peenasa/Dushta pratishyay*	*Kapha, Vata, Pitta*	*Pranavaha strotas*	Nose, sinuses, throat, eyes

Neti Karma

Purva Karma

Karma	**Steps**	**Explanation**
Purva Karma	Prepare Tools	*Neti* Pot, Saindhav, Lukewarm water should be prepared.
	Make Solution	Add 2 tsp of Saindhav in 500 ml water, pour into the pot
	Position	Tilt your head on opposite side, which nostril is open

Pradhan Karma



Paschat Karma

Kapalbhati	
Time - 0-2 mins (20-30 Strokes)	**Benefits -** It makes the nasal passage dry and prevents infection happened due to remaining droplets.

***Bhastrika* Pranayam**	
Time - 5-7 mins	**Benefits -** Avoid cold moisture, also dampness.

Anulom-vilom Pranayam	
Time - 5 mins	**Benefits -** To maintain normal Breathing rhythm

Precautions to be taken during *Jalneti*

Always use lukewarm sterile water.

1. Non-iodised salt is used to reduce irritation.
2. Breathing should be done by mouth.
3. Make a proper schedule and then go for neti.
4. It should be done under observation when done first time.

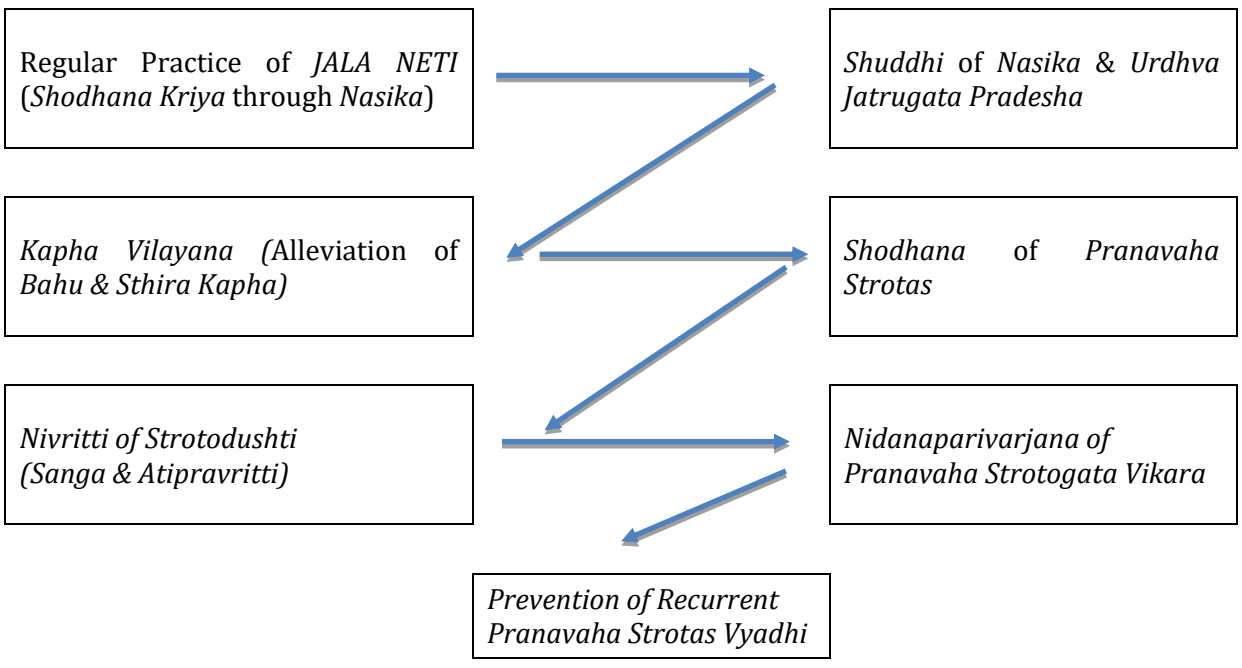
Contra-Indications

Those who have severe ear pain, otitis media, active infection, nasal infection and common cold.

Role of *Saindhava* & Warm Water [14]

In *Ayurveda*, *Saindhav Lavana* is described as a *Tridoshghna*, *Sukshma*, *Snighdha,* and *Laghu*. These properties cause cleansing of the nasal mucosa without any irritation. Also It reduces the *Vata* and *Kapha* vitiation. Warm water is *Ampachak*, *Strotoshodhak*, and *Vata-Kapha Shamak*, which improves local circulation, giving quicker mucosal recovery after irritation.

Probable Mode of Action and Preventive Role of Jala Neti



Mechanism of Neti as per Ayurvedic Science [8,9]

Table – 2.1 Mechanism of neti as per Ayurvedic Science

S.No.	Principle	Mechanism of Action
1.	*Kapha Shamana*	Warm Saline water reduces accumulated *Kapha* in the nasal and Frontal site.
2.	*Strotoshodhana*	Clears nasal and sinus channels, which reduces obstruction caused by *Kapha*
3.	*Prana Vayu Shuddhi*	Removes the obstructed flow of *Prana*, which make easy for respiration, and also increases cognitive power
4.	*Indriya Prasadana*	It makes clarity in the sense organs like *Ghrana, Chakshu, Karna*, etc.

3.9 Mechanism of Neti as per Modern Science. [11,12]

Table – 2.2 Mechanism of neti as per Modern Science

S.No	Principle	Mechanism of Action
1	Anti-Inflammatory Effect	Reduces mucosal oedema & nasal hyperresponsiveness, which is shown in allergic rhinitis
2	Increased Muco-ciliary Clearance	Saline water promotes ciliary action, enhancing clearance of microbes and debris, etc
3	Mechanical Cleansing	It cleanses away dust, pollen, allergens, and excess mucus from the nasal cavity
4	Enhances local immunity	Supports secretory activity, which improves the barrier function of the nasal mucosa
5	Activates the parasympathetic system	This induces relaxation and calmness. This reduces Stress and promotes psychological well-being

DISCUSSION

All the *Ayurvedic* approaches, breathing practices, and yogic kriyas which are mentioned in various *Samhitas* will help to live healthily and help to prevent such respiratory disorders.

Yogic kriyas like *Jalaneti*, one of the kriyas from *Shatakarma*, provide preventive and therapeutic benefits in minimizing the respiratory hazards. Modern prevention of respiratory diseases includes improving air quality, using protective equipment, and promoting vaccinations and health screenings. Early detection through spirometry and some lifestyle changes.

Modern preventive therapies may cause some side effects, like throat irritation from inhalers, allergic reactions due to vaccines, or discomfort from prolonged mask use.

According to Ayurveda, exposure to dust, fibers, and chemicals in the textile industry aggravates the *Vata* and *Kapha* doshas, leading to *Prana Vayu Dushti* (disturbance in the respiratory channels). This can cause symptoms like cough, breathlessness, chest tightness, Headache, and reduced vitality. [13]

Accumulated *Ama* further blocks the respiratory channels, increasing susceptibility to diseases like *Shwasa* (asthma) and *Kasa* (cough disorders). [14]

In Ayurveda, respiratory diseases are primarily described under the categories of *Shwasa* (dyspnea/ asthma) and *Kasa* (cough). This condition occurs when one is mainly caused by excessive talking, cold air, consuming heavy, spicy, and dry foods etc.

Nasa is a Stana of *Prana & Udana Vayu.* So the karmas of these Vayu, like breathing, Swallowing of food is performed by *Prana Vayu,* while speech, effort, energy, memory is performed by *Udana Vayu*. Neti helps to balance these *Vayu* in the body.

Jalneti primarily benefits the upper respiratory system (nose, sinuses, throat, lungs), but also supports the eyes and brain by improving circulation, sensory function, and reducing inflammation

Modern medicine focuses on diagnosis and pharmacological intervention, while practices like *Jalneti* (nasal irrigation) are gaining recognition as complementary preventive tools.

These can help reduce dust load in the nasal passages, improve mucociliary clearance, and lower the risk of upper respiratory infections.

Jalneti offers a safe, cost-effective, and natural method to cleanse the respiratory passages, making it a sustainable preventive option with fewer side effects.

Conclusion

Jala Neti is not just a cleansing kriya, but an enhancing respiratory hygiene practice for reducing occupational relevance. Its simplicity, affordability, and easy-to-use nature make it suitable for mass use among vulnerable and comparatively low socioeconomic populations like textile workers. It requires a lifestyle correction rather than a mere symptomatic remedy. Respiratory disorders in textile workers represent a neglected occupational health concern which is to be addressed. Using such traditional yogic practices as *Jala Neti* in workplace wellness programs can bridge the gap between modern occupational health and ancient preventive systems. Such modules could significantly reduce healthcare costs and absenteeism, improving workers' working capacity. There is a need for an hour to include processes like these in a daily module for these workers.

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