

CONJUNCTIVITIS IN THE MODERN ERA: AN INTEGRATIVE REVIEW OF ENVIRONMENTAL TRIGGERS, DIGITAL STRAIN, AND AYURVEDIC INSIGHTS

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Article Received on
13 June 2025,

Revised on 03 July 2025,
Accepted on 23 July 2025,

DOI: 10.20959/wjpr202515-37757



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ABSTRACT

Conjunctivitis, commonly known as "pink eye," is a prevalent ocular condition characterized by inflammation of the conjunctiva. Its incidence is increasingly influenced by modern lifestyle and environmental factors. This review synthesizes contemporary medical understanding with ancient Ayurvedic wisdom to provide a holistic perspective on conjunctivitis. It explores the roles of environmental triggers like climate change and pollution, the impact of digital eye strain from prolonged screen time, and the insights offered by Ayurveda, which identifies the condition as "Netra Abhishyanda." By integrating these perspectives, this article aims to offer a comprehensive understanding and a multi-faceted approach to the management of conjunctivitis in the modern era.

KEYWORDS: Conjunctivitis, Netra Abhishyanda, Ayurveda, Environmental Triggers, Digital Eye Strain, Integrative Medicine,

Ocular Health.

INTRODUCTION

Conjunctivitis is one of the most common eye conditions seen in primary care and ophthalmology clinics worldwide.^[1] It involves inflammation of the conjunctiva, the transparent membrane that lines the eyelid and covers the white part of the eyeball.^[1,2] While often self-limiting, conjunctivitis can cause significant discomfort and disruption to daily life.

The etiology of conjunctivitis is diverse, encompassing infectious (viral and bacterial) and non-infectious (allergic, toxic) causes.^[2]

The modern era presents unique challenges to ocular health. There is a growing body of evidence suggesting a link between changing weather patterns and an increased incidence of conjunctivitis.^[3,4,5] Factors such as rising temperatures, altered pollen seasons, and increased air pollution can exacerbate allergic and irritant forms of the condition.^[4,6] Furthermore, the ubiquitous nature of digital screens has led to a surge in digital eye strain, a condition that can manifest with symptoms similar to conjunctivitis.^[7,8]

Ayurveda, the traditional Indian system of medicine, offers a unique and holistic perspective on eye diseases.^[9] In Ayurvedic texts, conjunctivitis is described as "Netra Abhishyanda," a condition resulting from the vitiation of the body's humors, or *doshas*.^[10,11] This ancient science emphasizes the importance of balancing internal bodily functions and considers external environmental factors as significant contributors to disease.^[12]

This review aims to bridge the gap between modern and Ayurvedic perspectives on conjunctivitis. By examining the condition through the lenses of environmental science, modern medicine, and ancient Ayurvedic principles, we can develop a more comprehensive and integrative approach to its prevention and management.

NEED FOR THE STUDY

To explore the interconnectedness of modern environmental and lifestyle factors with the ancient wisdom of Ayurveda in understanding and managing the rising incidence of conjunctivitis, providing a holistic and integrative framework for clinicians and patients.

MATERIALS AND METHODS

Modern Medical Perspective on Conjunctivitis

Etiology and Pathophysiology

From a modern medical standpoint, conjunctivitis is broadly categorized based on its cause:

- **Viral Conjunctivitis:** This is the most common form of infectious conjunctivitis in adults, often caused by adenoviruses.^[2,13] It is highly contagious and typically presents with a watery discharge, redness, and a gritty sensation in the eye.^[2]
- **Bacterial Conjunctivitis:** More common in children, this form is caused by bacteria such as *Staphylococcus aureus*, *Streptococcus pneumoniae*, and *Haemophilus influenzae*.^[14] It

is characterized by a thick, purulent discharge that can cause the eyelids to stick together, especially upon waking.^[14]

- **Allergic Conjunctivitis:** This non-infectious type is triggered by allergens like pollen, dust mites, and pet dander.^[15,16] It presents with intense itching, redness, and watery eyes, and is often associated with other allergic conditions like hay fever.
- **Irritant/Toxic Conjunctivitis:** Exposure to irritants such as smoke, chemical fumes, or even preservatives in eye drops can cause this form of conjunctivitis.^[17]

The pathophysiology involves the inflammation of the conjunctival blood vessels, leading to the characteristic redness and swelling.^[1] The type of discharge and accompanying symptoms often provide clues to the underlying cause.

MANAGEMENT

Treatment for conjunctivitis in modern medicine is cause-specific

- **Viral:** Primarily supportive, with artificial tears and cold compresses to alleviate symptoms.^[2,18] Antiviral medications may be prescribed for specific viruses like herpes simplex.^[1]
- **Bacterial:** Topical antibiotics in the form of eye drops or ointments are the mainstay of treatment.^[14]
- **Allergic:** Topical antihistamines, mast cell stabilizers, and in severe cases, corticosteroids are used.^[15,19] Avoiding the allergen is also crucial.
- **Irritant:** Flushing the eye and avoiding the irritant are the primary steps.

Environmental Triggers and Increased Incidence

Recent research highlights the significant impact of environmental factors on conjunctivitis:

- **Climate Change and Weather:** Studies have shown a correlation between rising ambient temperatures and an increased number of emergency room visits for conjunctivitis.^[3,4] Warmer temperatures can lead to longer and more intense pollen seasons, thus increasing the prevalence of allergic conjunctivitis.^[5]
- **Air Pollution:** Airborne pollutants can act as irritants and allergens, triggering or exacerbating conjunctivitis.^[6]

DIGITAL STRAIN: A MODERN CULPRIT

The digital age has introduced a new challenge to ocular health

- **Digital Eye Strain (DES):** Prolonged use of digital devices can lead to DES, also known as computer vision syndrome.^[7] Symptoms include eye fatigue, dryness, blurred vision, and headaches, which can mimic or contribute to conjunctivitis.^[20,21] Reduced blink rate while staring at screens is a major contributing factor to dry and irritated eyes.^[22]

THE AYURVEDIC PERSPECTIVE: *NETRA ABHISHYANDA*

Ayurveda views conjunctivitis as *Netra Abhishyanda*, which literally translates to "profuse discharge from the eye."^[11,23] It is considered the root cause of many eye disorders if not treated properly.^[10,24]

NIDANA (Etiology) and *Samprapti* (Pathogenesis)

According to Ayurveda, *Abhishyanda* is caused by an imbalance of the three *doshas*: *Vata*, *Pitta*, and *Kapha*, often in combination with *Rakta* (blood).^[12,24]

- ***Vataja Abhishyanda*:** Characterized by dryness, pricking pain, and scanty discharge.^[24]
- ***Pittaja Abhishyanda*:** Associated with burning sensation, redness, and yellowish discharge.^[24,25]
- ***Kaphaja Abhishyanda*:** Presents with itching, heaviness, and thick, white discharge.^[24]
- ***Raktaja Abhishyanda*:** Marked by intense redness and a copper-colored discharge.^[24,26]

The pathogenesis involves the accumulation of vitiated *doshas* in the eye, leading to inflammation and discharge.^[23] External factors like dust, smoke, and seasonal changes are recognized as triggers that can aggravate the *doshas*.^[12]

AYURVEDIC MANAGEMENT (*CHIKITSA*)

The treatment approach in Ayurveda is holistic and aims to pacify the aggravated *doshas*.^[9] It includes

- ***Kriyakalpa* (Local Ocular Therapeutics)**
 - ***Aschyotana*:** Instillation of herbal eye drops.^[24,27]
 - ***Pariseka*:** Pouring a thin stream of herbal decoction over the closed eye.^[24]
 - ***Anjana*:** Application of medicated collyrium.^[23]
 - ***Bidalaka/Pralepa*:** Application of a herbal paste over the eyelids.^[11,24]

- **Internal Medications:** Herbal formulations are used to balance the *doshas* systemically. *Triphala* (a combination of three fruits) is highly revered for its beneficial effects on the eyes.^[10,28]
- **Lifestyle and Dietary Modifications (*Ahara-Vihara*):** Ayurveda emphasizes a diet and lifestyle that supports overall health and pacifies the specific *dosha* imbalance.^{[9][10]} This includes avoiding foods that aggravate the condition and adopting practices like regular eye washing.^[9]

Table 1: Integrative Comparison of Conjunctivitis and *Netra Abhishyanda*.

Feature	Modern Medical Perspective	Ayurvedic Perspective (<i>Netra Abhishyanda</i>)
Primary Cause	Infectious (Viral, Bacterial), Non-infectious (Allergic, Irritant)	Imbalance of <i>Doshas</i> (<i>Vata</i> , <i>Pitta</i> , <i>Kapha</i>) and <i>Rakta</i>
Pathophysiology	Inflammation of conjunctival blood vessels	Vitiation and accumulation of <i>Doshas</i> in the eye
Key Symptoms	Redness, discharge (watery, purulent), itching, irritation	Based on <i>Dosha</i> : Pain, burning, itching, specific discharge color/consistency
Environmental Role	Recognized as triggers (pollen, pollutants)	External factors (<i>Bahya Karana</i>) aggravate <i>Doshas</i>
Treatment Focus	Eradicate cause (antibiotics, antivirals), symptom relief	Pacify <i>Doshas</i> , detoxify, rejuvenate ocular tissues
Therapies	Eye drops (antibiotic, antihistamine, steroid), artificial tears	Local therapies (<i>Kriyakalpa</i>), internal herbs, diet, lifestyle changes

DISCUSSION

An integrative approach that combines the strengths of both modern medicine and Ayurveda can offer a more comprehensive and personalized management strategy for conjunctivitis.

- **Synergistic Diagnosis:** Modern diagnostic tools can precisely identify the causative pathogen in infectious conjunctivitis, while Ayurvedic principles of *dosha* assessment can help understand the individual's constitutional susceptibility and the underlying imbalance that made them prone to the infection. For instance, a person with a *Pitta* constitution may be more susceptible to inflammatory conditions like allergic or viral conjunctivitis.
- **Complementary Treatment:** For bacterial conjunctivitis, modern antibiotics are effective in eradicating the infection. Ayurvedic therapies like *Triphala* eyewash can be used as an adjunct to soothe the eye, reduce inflammation, and promote healing.^[27] In cases of allergic conjunctivitis, while modern antihistamines provide immediate relief,

Ayurvedic internal medications and dietary modifications can work on strengthening the immune system and reducing hypersensitivity in the long run.^[29]

- **Addressing Modern Triggers:** The Ayurvedic concept of avoiding causative factors (*Nidana Parivarjana*) aligns perfectly with the modern advice of avoiding allergens and irritants. In the context of digital eye strain, Ayurveda's recommendations for eye exercises and therapies like *Tarpana* (retention of medicated ghee in the eyes) can be highly beneficial in lubricating the eyes and relieving strain. Similarly, Ayurvedic lifestyle recommendations (*Dinacharya*) that include waking up early, and practices like massaging ghee on the soles of the feet are said to be beneficial for overall eye health.^[10]
- **Holistic Well-being:** Ayurveda's emphasis on diet, lifestyle, and stress management addresses the root cause of disease from a holistic perspective.^[9] This is particularly relevant in the modern era where stress and poor lifestyle choices are significant contributors to various health issues, including a weakened immune system that can make one more susceptible to infections like conjunctivitis.

CONCLUSION

Conjunctivitis in the modern era is a multifaceted condition influenced by a confluence of infectious agents, environmental triggers, and lifestyle factors. While modern medicine offers effective treatments for acute episodes, Ayurveda provides a holistic framework for understanding individual susceptibility and managing the condition from its root. An integrative approach that judiciously combines the diagnostic precision and targeted therapies of modern medicine with the holistic and individualized strategies of Ayurveda holds immense potential for not only treating conjunctivitis but also for promoting long-term ocular health and well-being. This integrated model encourages a shift from a purely disease-centric view to a patient-centric approach, acknowledging the intricate interplay between the individual, their environment, and their lifestyle. Further research into the efficacy of combined treatment protocols and the validation of Ayurvedic therapies through modern scientific methods is warranted to strengthen this integrative paradigm.

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