

A Comprehensive Literature Review on Myopia with Homoeopathic perspectives

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Abstract

Myopia, or short-sightedness, is a common refractive error in which distant objects appear blurred due to the focal point of light being in front of the retina. With the increasing global prevalence of myopia, particularly among children and adolescents, there is an urgent need to explore and understand its etiological mechanisms, risk factors, and alternative approaches to its management. This literature review delves into the risk factors and theories behind the progression of myopia, the clinical classification of various forms of myopia, and the holistic homeopathic approach to its treatment. It discusses the role of therapeutically indicated remedies and repertorial rubrics with a focus on muscular asthenopia, ciliary muscle dysfunction, and accommodative strain.

Key Words: Myopia, Homoeopathy, Snellen Chart, Autorefractor

Introduction

Myopia, or short-sightedness, is a common refractive error where distant objects appear blurred while near vision remains relatively unaffected. It results from light focusing in front of the retina, often due to an elongated eyeball or increased curvature of the cornea. The global prevalence of myopia has seen a sharp rise, especially in urban settings and among children engaged in prolonged near work ^[1,2].

Etiology and Risk Factors

Age and Refraction

Younger age with less hyperopic refraction has been identified as a significant predictor for myopia onset. Delayed stabilization of refraction can increase myopic progression, with studies indicating an approximate increase of 0.27 diopters (D) per year of delay ^[3].

Hereditary Influence

Parental myopia significantly elevates the risk of developing myopia in children. The risk is over six-fold higher when both parents are myopic. Additionally, children of myopic parents exhibit faster myopia progression (0.63 D/year)^[4,5].

Urbanization and Near Work

Urban environments contribute more significantly to myopia due to reduced outdoor exposure and increased near work. Children in cities are twice as likely to develop myopia as their rural counterparts ^[6]. The condition is also more prevalent among students, professionals, and individuals involved in intensive visual task

Theories of Myopia Progression

Multiple hypotheses have been put forward to explain the underlying mechanisms contributing to the progression of myopia. Key theories include:

Accommodation Lag Theory

This concept suggests that during activities requiring close focus, such as reading or screen use, myopic individuals often experience a lag in accommodation. This delay leads to hyperopic (farsighted) defocus on the central retina (fovea),^(15,16) which is believed to stimulate abnormal elongation of the eyeball, thereby worsening myopia.

Mechanical Tension Theory

According to this theory, temporary changes in the eye's axial length following brief periods of near work are significant. It proposes that when the ciliary muscle contracts during accommodation,⁽¹⁷⁾ it pulls the choroid forward and inward. This tension may limit outward growth around the eye's equator, reshaping the eyeball into a more elongated form and contributing to increased axial length, a key characteristic of myopia.^(18,19)

Peripheral Defocus Theory

Research has indicated that consistent exposure to hyperopic blur—particularly in the peripheral retina—can accelerate axial elongation.^(20,21) While early assumptions focused on central (foveal) blur as the primary trigger for eye growth, more recent studies emphasize that peripheral retinal defocus may play a more prominent role in the onset and progression of myopia.^(22,23)

Clinical Classification of Myopia

Myopia can be classified into several distinct types based on its origin, onset, and progression:

Congenital Myopia: This type is present at birth and is typically linked to an increased axial length and an overall enlargement of the eyeball. It is more commonly observed in infants born prematurely or those with genetic disorders such as Marfan syndrome or homocystinuria.

Simple Myopia (School Myopia): This is the most frequently encountered form of myopia. It usually begins between the ages of 8 and 12, progressing along physical development and stabilizing in adulthood, generally around the age of 25 to 30. The refractive error in this form is typically mild to moderate, usually ranging below 4.00 to 6.00 diopters.⁽²⁴⁾

Degenerative (Pathological or Progressive) Myopia: This severe type of myopia often begins early in childhood, between 5 and 10 years of age, and continues to worsen over time. It is characterized by extensive structural changes in the retina and choroid, such as posterior staphyloma, and is associated with high degrees of refractive error (greater than 6 diopters) and poor vision even after correction.⁽²⁵⁾

Acquired Myopia (Pseudomyopia): This form is usually temporary and is caused by a spasm of the eye's focusing system, leading to blurred distance vision. It is not due to structural changes in the eye but rather a functional disturbance.⁽²⁶⁾

Nocturnal Myopia: In low-light or twilight conditions, the shift from daytime (photopic) to nighttime (scotopic) vision can cause some individuals, especially those with normal vision, to experience mild myopic shifts due to increased sensitivity to shorter wavelengths of light.⁽²⁷⁾

Near Work-Induced Transient Myopia (NITM): This refers to a temporary nearsighted shift in vision that occurs immediately after engaging in sustained close-up tasks such as reading or using screens. Some researchers suggest this phenomenon might contribute to long-term myopia development in susceptible individuals.^(28,29)

Drug-Induced Myopia: Certain medications or systemic conditions can lead to temporary myopic changes. For example, sulfonamides may cause swelling of the ciliary body, which shifts the lens forward, while cholinergic drugs like pilocarpine may trigger accommodative spasms. High blood sugar levels can also cause swelling of the lens due to sorbitol accumulation, resulting in short-term myopia. Additionally, oxygen toxicity or certain therapies (e.g., hyperbaric treatment) may also contribute to drug-induced refractive changes.^(29,30)

Iatrogenic Myopia: This arises as a side effect of medical treatments. For example, the placement of a scleral buckle during retinal detachment surgery can increase the eye's axial length, leading to myopia.⁽¹⁹⁾

Index Myopia: Caused by alterations in the refractive index of the eye's internal structures, this type is often seen in conditions like nuclear cataracts, where changes in lens composition increase its refractive power, causing a myopic shift.^(18,30)

Chief Complaints:

1. Diminished distant vision
2. Difficulty shifting focus from near to far

Associated Symptoms:

1. Headache
2. Eye strain
3. Heaviness
4. Pain
5. Lacrimation

ICD-10 Classification And Diagnosis

Visual Acuity Test

Snellen Chart Test is commonly used.

Measures how well the patient can see at a distance (e.g., 20/20 or 6/6 vision).

In myopia, the patient has reduced distance vision but normal near vision.

H52.1 – Myopia (Disorders of ocular muscles, binocular movement, accommodation, and refraction)

Homoeopathic Materia Medica Perspective

Anacardium Orientale

Visual distortion with the impression that objects appear too far off is a key indication for Anacardium. It also causes a sensation of pressure, as if a plug is pressing on the upper orbit. This remedy is suited to individuals with weak memory, duality of will, and marked indecisiveness^[31].

Agaricus Muscarius

Indicated for spasmodic twitching of the eyelids, pressure and heaviness in the eyes, and muscular asthenopia. Patients often report flickering before the eyes and left-sided

headaches. It is suited for individuals who are sensitive to cold and exhibit nervous excitement ^[32,33].

Ammonium Carbonicum

Muscular fatigue of the eyes from prolonged exertion, and yellow spots seen on white objects, are typical symptoms. This remedy suits sluggish, obese individuals who tire easily and may experience symptoms of anemia ^[32].

Phosphorus

Noted for seeing black spots and red letters. Patients often report better vision when shading the eyes. Suitable for lean, tall individuals with nervous tendencies, and craving for cold drinks. It addresses fatigue in the eyes with minimal exertion ^[31,32,33].

Carbo Vegetabilis

Indicated in cases with floating black spots and ocular fatigue. Burning in the eyes and diminished vision after overexertion suggest this remedy ^[31].

Conium Maculatum

Severe photophobia, excessive lachrymation, and hazy vision when looking at moving objects are leading features. A classic remedy for sluggish eye accommodation. Suited for older individuals with vertigo and weakened eyesight due to muscular dysfunction ^[31,32,33].

Onosmodium Virginianum

Blurred vision, ocular fatigue especially on the left side, and drawing pain in eye muscles are keynotes. The patient may desire to gaze into the distance. Effective for strained vision from overuse, especially in intellectuals ^[31,32].

Physostigma Venenosum

This remedy targets spasms of the ciliary muscles and photophobia. A notable indication is blurred vision due to overstrain and spasm of accommodation. Suitable in progressive myopia cases caused by persistent near work ^[31,32].

Ruta Graveolens

Best for myopia due to overstraining of ocular muscles. Symptoms include painful, red, and fatigued eyes, headaches post reading or sewing, and blurred vision with running letters. A primary remedy for asthenopia due to close work ^[31,32,33].

Jaborandi (Pilocarpus)

Indicated in ciliary muscle spasms with tension of accommodation. The patient experiences hazy vision of distant objects. Effective in transient or spastic myopia from overexertion ^[32].

Repertorial Approach –

In Synthesis Repertory some of the rubrics given are –

EYE – PAIN – accompanied by – myopia

EYE – DETACHMENT of retina - myopia

VISION – MYOPIA

VISION – MYOPIA- candlelight than by daylight; slight worse by

VISION – MYOPIA – children; in

VISION – MYOPIA – exerting the eyes; after

VISION – MYOPIA – looking away from work amel.

VISION – MYOPIA – reading agg.

VISION – MYOPIA – myopic astigmatism

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