Effect of Trataka & Neti Kriya on Efractive Errors Among Youth: A Systematic Review

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Abstract :

Eyes are like the windows for visualization to the world. In present scenario, due to the various reasons, massive population in whole world is lacking visual efficiency that causes refractive errors anomaly. In modern medical sciences, conventional treatments are present for refractive errors but these are not enough. So, hereis a vigorous need to find other therapies to overcome this worldwide problem (RR). Yoga has that potency to overcome such problems. This ability of yogic practices has written into traditional yogic texts also. To decode and find them, different researches are happened. The aim of this research paper is to reviewing different research studies on the context of the effect of yogic practices (Trataka and NetiKriya) on refractive errors among youth.

Keywords: Trataka, Neti Kriya, Refractive errors, Visual Acuity, Ametropia, Hypermetropia, Myopia, Astigmatism.

Introduction:

Eyes are the mirror of the soul and in their transparency the basic nature of a person can be clearly seen. Simultaneously, sight is our most valuable sensory organ.We receive mostly information of the external word or most of the worldly knowledge through the eyes.The human eyes is a part of the sensory nervous system and a sensory organ too, who reacts to thevisible light and allow humans to use that information for various purposes such as seeing things, maintaining circadian rhythm and balance.

In the context of image formation, the eye is like a camera.Its optical elements focus on an image of any object on a light-sensitive film which is called the retina while ensuring the proper amount of light to get the proper exposure.The eye forms clear images of objects on retina, when the refraction or bending of light by the lens or cornea, the change in shape of the lens also constriction or narrowing of the pupil happens correctly.If these processes of forming image are interrupted, refractive error happens.

Various studies say the number of patients with refractive errors increase anomaly in the present scenario.The cause ofabnormal refractive errors with compression of the cornea, visual deprivation change occurs in the cornea or lens and genetic factors.

Lifestyle factors are also causing youth's eyesight to get worse.Numerous studies have now linked increased time spent indoor focusing on near objects such as computers, TVs, mobile phones etc. and greatly reduced outdoor activities or time and in present scenario, due to pandemic, the phenomenal use of online studies increased, as the key factors contributing to the rapid deterioration in youth's eyesight.

As different Hatha yogic text said, there are multiple processes described in Hatha yoga which help to promote visual abilities. Same as some researchers told us about the preventive and curative aspect of some

processes of Hatha yoga like-Trataka and Netikriya.

Hatha yogic practices -Trataka

Tratakais ashat kriyas (Yogic cleansing processes).It is the practice of focusing on a fixed gazing point.Into It, thePractitioner is looking at an object usually a flame, small dot, rising setting sun, the moon and yantra(specific geometric diagrams) without blinking.The focus on these external objects helps to prepare the mind to being able to focus on internal points,in the practice of internal Trataka as well as in other concentration (meditation) practices.(Gheranda Samhita - 1/53, HathaPradeepika- 2/31, Hatharatnavali- 1/54)

NetiKriya

Netikriya is a type of yogic nasal cleansing exercise.It comes in Shat kriyas described in Hatha Yoga.There are two types of netikriya:

JalaNeti, which is practiced using a neti pot filled with saline solution to cleanse the nasal passage.

This technique contains following steps,

- The practitioner's head is tilted to a side(right / left),
- Then salt water is poured into upward nostril,
- So the water exits through another nostril.

SutraNeti, in which -

- Thread is passed through the nostrils and out of the mouth.
- The Practitioner holds both end of the string with his fingers,
- Pull it back and forth to cleanse the nose.

The thread should be made up with rolled cotton and dipped in beeswax.A soft rubber(catheter)could also be used.sutraneti is a more effective cleansing technique than Jalaneti. **(Gheranda Samhita - 1/50, HathaPradeepika- 2/29, Hatharatnavali- 1/40)**

VisualAcuity &Refractive Errors:

Visual acuity(VA) commonly refers to the clarity of vision, but technically rates and examinee's ability to recognize small details with precision. The dependency of visual acuity is upon the optical and neural factors, such as -

1. The image sharpnesswhich is formed on retina
2. Retinal health and functioning
3. Brain sensitivity and the ability tointerpretate.

The most commonly referred visual acuity is the far acuity(e.g. 6/6 or 20/20 acuity), which describes the ability of examineeto recognize far distancedetails and is relevant to people with myopia. However, for people with hyperopia, the near acuity is used instead to describe the ability of examinee to recognize small details at a near distance.

A common reason of low visual acuity is refractive error (ametropia).Refractive erroris a problem of focusing light accurately on the retina because of the shapeof the eye and or cornea. It is also known as refraction error.

According to The Oxford handbook of Ophthalmology estimate, almost 1/4 of entire world population survives with some kind of refractive error.

Ametropia:

Ametropia is an abnormal refractive condition (such as - myopia, hyperopia or astigmatism) of the eye in which light rays fails to focus upon the retina.

ShreenandanBansal (2003),Myopia(Near-sightedness) :

The ability to see things close by more clearly than things far away.The inaccurate bend (refract) of light rays caused by the shape of eye or the shape of certain part of the eye. So that,light raysfocused in the front of the retina rather than focused on nerve tissues at the back of the eye (retina)are called Myopia causes

impaired visual acuity in both school childrenand adults and it accounts for a major percentage of refractive errors.

Symptoms:

Signs or SymptomsNear-sightedness may include:

- ✧ Headache and eye strain,
- ✧ Persistently squint,
- ✧ Blinkexcessively,
- ✧ Frequentlyeye rubbing,
- ✧ The feeling of squint or closing the eyelidspartly to see the object clearly,
- ✧ Blurry vision when looking at distant objects.

Hypermetropia(Far-sightedness):

It is also referred to as hyperopia or long - sightedness or far - sightedness.Hypermetropia is a situation of the eyes where the image of a nearby object is formed behind the retina.Here, the focus of light is behind the retina instead of focusing on the retina.

Symptoms:

Signs or Symptoms of Far-sightedness may include:

- ✧ Blurry vision &eyes strain,
- ✧ Tiredness of eyes,
- ✧ Frontal or temporal headache,
- ✧ Near blur is usually seen after close work, especially in the evening or night,
- ✧ Difficulty seeing with both eyes,
- ✧ Difficulty with depth perception.

Astigmatism:

Tortora, J. Gerard, Derrickson, Bryan (2017), Astigmatism tends to happened, when the cornea has an symmetrical curvature at the frontal area of eye.The cornea is usually smooth and equally rounded in both direction and the rays of light is entering the cornea are equally entered on the plane or both directions.This irregularity may bring about vision that is a lot like investigating a twisted,wavy mirror.

Symptoms:

- ✧ Blurred vision,
- ✧ Double vision,
- ✧ Squinting,
- ✧ Eyes strain,
- ✧ Fatigue or headache,
- ✧ Some research has pointed to the link between astigmatism and higher prevalence of migraine headache.

Approximately 2.3billion people worldwide have a refractive defect, but only 1.8 billion people have access to eye tests or effective treatment.

The World Health Organization (WHO) initiated refractive errors management by 2020 and for its emergency put it in the 5th position.

A refractive error occurs when the eye shape prevents light from focusing directly on the retina.This should be caused by a number of things, such as the length of the eyeball beingtoo short / too long, changes in the corneashape, or a result of aging.

Considering the different researches (as given below) and these needs and causes justified:

- ➢ **The global action plan of the World Health Organization2014 to 2019,**found refractive errors as a priority to reduce blindness globally.Working on such aims and exemptions, different studies happen to find out the impact of refractive error on children's growth, mental health, visual development, classroom and academic progress of them.

- **Efrain Castellanos; PinakinGunvant Davey; Kristy RemickWaltman (2019),** found that the academic performance by student with hyperopia tends to be poorer than the student with myopia.Above basic level, the Hyperopic groups have 38% of students on the other hand, above basic level;the myopic group has 62% of students.Below basic level, the hyperopic groups have 26% of studentson the other hand, below basic level;the myopic group has 16% of students.

- **KS Smitha, VD Patilet. Al. (2019),**studied in children with Global Developmental Delay (GDD) due to the effect of refractive error on mental and visual development and found harmful effect of sensory visual deprivation on the development and functioning can be dampened by simple and cost-effective approach of spectacles therapy which makesa spectacular effect in the case of children with GDD.

- **SethuSheeladevi, BharaniSeelam, et.al. (2018),**theoverall refractive errorexpansion every 100 children was 8.0%.Same as,it was 10.8%in school. The myopic, hyperopic and astigmatism expansion of refractive error (population based) was 5.3%, 4.0%, 5.4% respectively.When thecomparison of urban and rural area happened, the combined effective error and myopic alone were higher in urban area.The expansion of combined refractive error and only myopia was higher among girls than boys in the schools,on the other hand, the hyperopia was more dominant among boys than girls in school.

- **National Library ofMedicine(2018),**Significantly, estimated increment in refractive error according to geographical heterogeneity and found in 2018, The age adjusted primacy of refractive errors was 16.32% (95% uncertainly interval [UI]: 12.44-21.48%) in both sexes.In women 17.98% (95% UI: 13.74-23.61%) and in men 14.66% (95% UI: 11.14-19.36%). The refractive errorsprevalence shows that it increases with age.In men and women, refractive error contributed to 441.41 and 348.38 YLDs respectively. From the years 1990 to 2018, the age standardized prevalence growth was 31.30% in females and 24.32% in males.

- **Francisco Gomez-Salazar, Abraham Campos-Romero et al. (2017),**inthis study, the proportion (95% confidence interval) among all the subjects was myopia 24.8%,ametropia 40.7%, hyperopia 21.0% and astigmatism alone 13.5%.In the all refractive error, myopia was the one of the common and frequent also appears theincrement of youth population aged 10 to 29 years.Although, the hyperopia increased among the population ofaged 40 to 79 and astigmatism showsa decreasing trend with age 6 to 90 years,(19.7% to 10.8%).This studyhas showed the strong relationship between all refractive errors and age (approximately 60%, aged 50 and older).

- **A Global estimate of VisualImpairment(2010),**refractive errors is a major reason behind the loss of healthy life of approximately 44.8 years per1,00,000 population globally with an increasing trend and advance in age from 40 years onwards.

The above facts express that refractive error has a great challenge to modern medical science and affects worldwide health with generational deformities today there is a great necessity to develop different complementary therapies such as Trataka and

NetiKriya to cope up and manage this worldwide problem of refractive error.

ConventionalTreatment of Refractiveerror and itsLimitations:

Eye doctors have the correction of refractive errors with glasses / contact lenses / fix the refractive error with surgery according to the situation of the patient.Eyeglasses are the first step for a child who is anisometropic.

- **Paul J. Rychwalski, MD(2013),** associate professor of ophthalmology and staff pediatric ophthalmologist at the Cleveland Clinic and consultant in ophthalmology at the Cleveland Clinic Abu Dhabi, said that "Glasses balance the prescription so that the retinal images from both eyes are equally in focus and as a result, the brain does not pick up favourite.Polycarbonate glasses protect the eyes, which is especially important for the sound eye. We always want the child to go into glasses first and ifamblyopia develops, we start patching." and also added that contact lenses are another option, but they may be difficult for some patients to tolerate and for some families to manage.

- **Erin Stahl, MD (2013),**assistant professor of ophthalmology at the university of missouri, said that some families with an anisometropic child come to see her because for an reason of another,their child does not want to wear glasses or contact lenses and the parents want to know why the child cannot just have the surgery. Then Erin says,"I tell parents that their child is not a good candidate because the eyes are still changing and have more growing to do and that refractive surgery might be appropriate when their eyes stop growing."

This is seems criticalto educate parents of early aged patients, especially when they don't want their children to wear glasses because of social or cosmetic concern and because the child is resist to wearing the glasses.

Observations:

These are given below -

According to the different Hatha yogic textslike-

- In **GherandaSamhita**(1/50)**,**Netikriya means attainment of khechari, retirement from phlegm defects and attainment of divine vision.

TratakaKriyagive rise to the state of Shambhavi mudra and divine vision is attained by removing the defects of the eyes (GS-1/53).

- In **Hathapradeepika**(2/29),Netikriya purifies the head (brain) provides divine vision and quickly destroys the disease groups above the scapular region.

Trataka removes eye diseases and prevent drowsiness etc. and also give a title to Trataka"Golden Box" (HP-2/31).

- In **Hatharatnavali** (1/40-42),Netikriya purifies the skull and gives divine vision.

Trataka cleanses the eyes and removes the dullness of the eyes.So, it is suggested to be kept secret like pearls (HR-1/54-55).

- **SwamiKarmanandaSaraswati (2013),**describes in detail the yogic therapy for eye diseases. He said,Netikriya affects positively on cranial nerves and directly on visual acuity and Trataka is powerful practices of Hatha yoga. It helps to reduce the muscles strain and intraocular pressure in eyes. It really improves the near-sightedness patient's condition as well as other refractive error patients.

- **SwamiShivanandaJi(2013),** Trataka improves eyesight, disease of the eyes are removed. Many

have thrown away their spectaculars after some practice of Trataka. It develops the power of concentration to a great degree.Netikriya also improves the working of cranial nerves and improves visual quality qualities.

- **Ali Mohamadali Ismail, et. al.(2021),** observed in their research study that are yogic complementary therapy which is called 'Jyoti-Trataka' is able to regulateblood glucose, autonomic functions and intraocular pressure in patients.

- **Roopa Desai, TusharPalekar, DharaPatel, et. al.(2020),**In this study, they found minimal change in refractive power of participants of the experimental group after 4 weeks intervention of yogic eye exercises including Trataka as-individual were fix their gaze looking at the tip of index finger at the level of eyes without blinking until tears start running down on the cheeks.Then close their eyes and keep gazing at the same point from behind their eyelid for 10 seconds. The described process had been repeated 3 times.

- **Bansal C (2014),** did a comparative study on the effect of Yoga Therapy and SaptamritaLauhain myopia among adult children aged 13 to 27.In this study,He divided 60 samples into 2 groups-Group A intakes of SaptamritaLauhaas well as the Group B practices JalaNeti,Nadishodhan,Sheetalipranayama,Trataka .Afterthree months, reduced eye pain, eyes strain, watering of eyes and heaviness of eyes in Group

- **B. G. Gopinathan, Kartar Singh Dhiman, et. al.(2012),**found in their study that by the help of Tratakakriya the power of imagination increases, efficiency of extra ocular and intraocular power increases. To work and enhance the metabolism of rod and cones through the mechanism of dark and light adaptation functionally also found a better relief comparatively other group. The finding of that study is encouraging, cost effective, non - pharmacological. This technique of relaxation will be able to improve the vision quality also helps to check out the progress of the disease condition indirectly.

- **Gour, M.M.(2003),** such Hatha yogic practices like Trataka and Netikriya improve vision abilities and help to cope up with eye muscle tension, irritations and somewhere in myopia like refractive errors also.

- **Dr.Chamanlal Gautam(1981),** widely describes the different processes for practice of Trataka according to the symptoms of eye issues.Such as - concentrate on the letter 'shree' or 'om'- for weakness of vision, for eye pain with headache-do Trataka on green clothes, glasses or other things etc.He also points out that faith is needed for patients to treat them well and get better result.

- **Dr. R. S.Agrawal(1951),** illustrated different practices for concentration (Trataka) processes, precautions and methods like- concentrate on moon, flame, black dots and sun also. Tratakaalso helps to fix central fixation of eyes and powers of mind.

Conclusion:

Yoga has a wholesome aspect of a 'Therapy'. It contains preventive, curative and promotive properties but due to lack of realization of such whole knowledge, Yoga has been enclosed within the limits of complimentary therapies. In present scenario,

different researches are working for decoding and finding of therapeutic properties of various Yogic practices. On such way, in this reviewed paper, different observations of research studies, Hatha yogic texts and relevant books expressed their results in the favour of preventive, curative and promotive aspect of Trataka and Netikriya on refractive errors among Youth.

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