

## An analytical study on role of Trataka in childhood eye disorders

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### ABSTRACT

*Trataka* can be described as Yogic gazing which aims at purification of eyes and mind. In this procedure one has to focus on an object without blinking or flickering of eyes till tears roll down. It can be categorized as internal or external as well as near or far depending upon the focus. This type of yogic gazing trains and strengthens upward, downward and lateral movements of eye muscles. It also makes eyes to get accustomed to influence of light and environment. Thus enabling mind to concentrate on one point. Hence the practice of *Trataka* can play an important therapeutic role in various eye disorders like *nystagmus*, *strabismus*, and vision disorders. As it relaxes the nervous system, it enhances concentration and willpower, it can play a good role in childhood behavioral disorders such as ADHD, tics, temper tantrums etc too.

**Key words-** *Trataka*, Yogic gazing, eye disorders, vision disorders

**Introduction-** Global data on visual impairment in the year 2002 estimated 1.4 billion blind children below the age of 15 years. Childhood blindness contributed to 3.9% of global causes of blindness in 2002.<sup>[1]</sup> WHO has classified blindness and low vision in children as descriptive and etiological respectively. The descriptive type refers to the anatomical site

that is mostly affected as the cause. One of the categories of descriptive classification includes conditions where the eye appears normal viz. refractive errors, cortical errors, amblyopia<sup>[2]</sup>

According to WHO, 153 million people worldwide live with visual impairment due to uncorrected refractive errors<sup>[3]</sup>. 1.49% of population in India is blind out of which 7-35% is due to refractive

errors. In India uncorrected refractive errors are the most common cause of visual impairment and second major cause of avoidable blindness.<sup>[4]</sup> Avoidable blindness can be defined as blindness which could be either treated or prevented by known cost effective means.<sup>[5]</sup> Vision 2020 launched in the year 1999 is a global initiative aimed to eliminate avoidable blindness by the year 2020. This partnership includes WHO, different countries and many international NGOs involved in eye care and prevention and management of blindness. IAPB is one of them. The mission of vision 2020 is to eliminate the main causes of all preventable and treatable blindness by treating them as a public health issue. The core strategies of vision 2020 include implementation of specific programme to control and treat major causes of blindness. Others are development of human resources and infrastructure and technology in the field of eye care.<sup>[6]</sup>

The imperfections in the focusing power of eye are called refractive errors. Common refractive errors are myopia, hyperopia and astigmatism in children.<sup>[7]</sup> Strabismus is another common vision problem. They may result in lost education and

employment opportunities, lower productivity and impaired qualities of life. The global action plan targets 25% reduction of avoidable blindness and visual impairment by 2019.<sup>[8]</sup> Thus the task of meeting the needs of people with refractive errors is a monumental one.

Thus the present scenario urges the need of a cost effective as well as patient convenient intervention to find out a solution to this huge problem that could be a part of primary eye care. Here comes the role of yogic gazing which aims at strengthening eye muscles and improvement in focusing of image.

### **Aim**

- To draw attention to huge magnitude of avoidable blindness and early age of setting in of refractive errors in children and the need of cost effective intervention.

### **Objectives**

- To draw Global concern to avoidable blindness
- To explore role of Trataka as an alternative therapy in correction of avoidable vision problems
- To find out Utility of Trataka in primary eye care and its preventive aspect in eye care.

## Materials and Methods

Yoga is an ancient science. It has been practiced for ages in India. Trataka is one of these old practices. It has been described in text books of Yoga as follows--

**Definition** –In *Gherand samhita*, Trataka is defined as gazing at a minute object without moving eyelids till tears roll down. <sup>[10]</sup>

**Benefits-** The author mentions that practice of trataka helps in achievement of Shambhavi mudra, elimination of eye disorders and achievement of great vision <sup>[11]</sup> *Hathayoga Pradeepika*, another yoga text describes Trataka similar to the above one. It says trataka is observing a minute object without eye movement upto rolling down of tears from eyes. <sup>[12]</sup>

**Benefits-** Trataka practice relieves one from all eye disorders and tandra.

## Types of Trataka<sup>[13]</sup>

Basically Trataka is divided into *bahya* and *abhyantar* types. Bahya trataka indicates gazing at an external object whereas in abhyantar trataka eyes are to be focused on nose tip or in between eyebrows.

Bahya trataka is again divided into *sudoor* and *sameep* types. In *sudoor* type vision is focused on distant objects like things visible through a window or sun, moon or stars etc. In *sameep trataka* the distance between the object and eyes is about 45-60 cm. In this type the object could be a dot of ¼ inch size or flame of a candle or eye of a statue of worshipped deity or mirror image of one's eye. Trataka done with a flame is known as Jyoti trataka.

## Procedure:

### Jyoti Trataka-

**Preparation-** Here flame of a candle is selected as the object to be observed. This flame should be stable so that the observer do not get diverted due to its movement. For this room without direct air entry and with dim lights can be selected. The flame should be at eye level of the observer. Other objects should not be visible behind the flame. Therefore background of a plain wall should be preferred.

### Method-

The observer has to sit in a comfortable position preferably in

*swastikasana, padmasana, or vajrasana.*

After the observer is seated comfortably he/she should start gazing at the flame without flickering of eyelids. This will strain eyes and tears will roll down from the eyes. Then close the eye and be still.

**Duration**-Initially the time required for rolling down of tears is the ideal duration for practice of *trataka*. With regular practice this duration goes on increasing.

**Post procedure** –After closing of eyes the image of the flame is perceived for a while .when this image disappears, gently press the eyes with palms and then slowly open the eyes. Now splash eyes with cold water.

### **Bindu Trataka**

The procedure for this practice is same as that of *jyoti trataka*. Instead of flame a dot of ¼ th inch size is used as the object to be observed. This dot can be made by a pen or pencil on a light coloured wall or paper. A sticker bindi can also be used.

### **Sudoor trataka**

In this type focusing on sun should not be practiced. Moon, stars, tip of a temple can be preferred.

### **Precautions**<sup>[14]</sup>

- During the practice of *trataka* eyes should not be stretched.
- It should be done without spectacles.
- The light arrangements should neither be dark nor bright.
- The process should not be repeated as cycles.

### **Observations**

The practice of *Trataka* is very simple to perform .It do not take much time of the observer. It does not require too many preparations which make it very cost effective. It has got dual benefits of eye strengthening and increasing concentration in children. Hence, it can be implemented as a playful activity in children easily.

### **Discussion:**

Accommodation of human eye refers to adjustment of eye for seeing objects at various distances which is achieved by changing the curvature of lens due to contraction and relaxation of ciliary muscles. Binocular accommodation is the coordinated movement of both the eyes jointly .In ordinary use eye muscles generally act

asymmetrically which may aggravate or produce eye strain or weariness or vision problems.(15)

Binocular vision is the ability of the brain and eyes to see an object simultaneously with both eyes when they are straight. But when divergent squint is present it does not happen. Binocular vision is necessary for normal depth perception or 3-D vision. Children who can maintain binocular vision are less prone to develop lazy eye(amblyopia).(16)

Vision is a combination of the clarity of the image captured by eyes and processing of those images by brain. When one eye can see clearly and other sees a blur, the brain tries to inhibit(block, ignore, suppress) the eye with the blur. The brain can also suppress one eye to avoid double vision. This suppression can lead to permanent decrease in the vision of the blurry eye non-correctable with glasses, lenses or lasik.(17) The increase in prevalence of myopia has also led to increase in related problems like retinal detachment, posterior staphyloma, CNVM and amblyopia.(18) Surgical treatment has its own limitations.

Spending long hours in front of TV or computer or cell phone encourage

a habit of fixed staring without changing focus at frequent intervals in children. Eye muscles get used to such type of reduced movements. Here excessive use of some muscles and reduced use of other muscles occur. When a muscle is not in use it loses its tone as is evident after removal of plaster.<sup>[19]</sup> In a similar manner flexibility of eye muscles gets affected. Therefore early attention needs to be paid to maintain and regain the flexibility of muscles.

Robert Brooks Simpkin's theory suggests that accommodation is a twofold process where not only ciliary muscles but external eye muscles of eyes also play a role.<sup>[20]</sup>

The gaze in *trataka* train and strengthen four types of eye muscles controlling upward, downward, right and left movement of eyeballs. Gazing at various objects of nature accustoms the eye to the varied influences of light and environment. *Trataka* helps in vitalization of vision by accelerating blood transfusion in and around areas of the eye.<sup>[21]</sup> It may also help in cleansing of eyes through tears.

*Trataka* kriya enhances the metabolism of rods and cones through the mechanism of dark and light adaptation.<sup>[22]</sup>

Critical fusion flicker is defined as the frequency at which an intermittent light stimulus appears to be completely steady to the average human observer. [23]

Decrease in critical fusion flicker has often been used as an index of central fatigue. [24] CFFF is accepted and used as an indicator of the cortex arousal level and as an indicator of physical human fatigue and mental workload. [25] An increase in critical fusion flicker was noticed from  $37 \pm 2.84$  to  $38.66 \pm 2.91$  after the yogic concentration practice *trataka*. This increase in CFF after *trataka* indicates the use of gazing in decreasing mental fatigue and bringing about relaxation. [26] Thus it can also be beneficial in distressing children. The *Tratak* Candle Flame Meditation had significant contributing change over the concentration and the Memory level of the subjects. [27] Concentration and good memory are pre requisites to excel in studies during school days. Thus the yogic gazing can be a good tool in enhancing school performance too.

**Conclusion** –In this study an attempt has been made to understand the extent of growing refractive errors in present lifestyle. These are the conditions which

if avoided won't lead to preventable blindness. Glasses when used may help in correcting these defects but can't contribute to restoration of harmonious activities of eye muscles. As children have a lifetime of blindness, large will be the magnitude of future blind people. Hence there is urgency in managing eye disorders in children as delay may lead to lazy eye. Eye disorders have emerged as a major health problem. Hence preventive aspects need to be considered and explored to protect the normal ocular health. *Trataka* could be a non pharmacological and economic option for this purpose. As *ayurveda* aims for prevention first and treatment later, the habit of practicing *Trataka* may be the key to fulfill the need of preventing eye disorders. Thus efficacy of *trataka* in putting a check to preventable blindness needs to be explored positively. So it's positive effects on cognitive functions can also be helpful in children in behavioral disorders and studies. Thus the effects of *trataka* may help in formulation of a policy for school children. It will prove to be a great contribution to integrated primary eye care at root level with least infrastructure in developing as well as developed countries.

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