Myopia or short sightedness is one of the common ocular disorders worldwide. It is not merely a disorder of refraction, but a wide range of pathology affecting vision. The severity ranges from mild or moderate (usually School myopia of 0.5 to 5 D) to high and pathological myopia of -5 D or more. The school myopia as name suggests, may start in school age developing to high pathological myopia in adulthood posing increased risk of blindness. (WHO 2016). Myopia has emerged as a public health problem especially in the east Asian countries. The prevalence of myopia in urban population of these countries has risen up to 80 to 90% (Lin 2004). There are approximately 1950 million people with myopia (28.3% of the global population) and numbers are predicted to increase to 4758 million (49.8% of the global population) by 2050 (Holden BA 2016). In Nepal, the prevalence of myopia ranges from 3 to 25% in different studies with high rural urban disparity. (Adhikari 2013, Pokhrel 2010).

Various factors play role in etiopathogenesis of myopia such as the role of choroid in ocular biometric changes with increased choroidal thinning and axial length, the visual environment affecting emmetropization, monochromatic higher order aberration, accommodation. Similarly, studies suggest environmental factors such as near work, outdoor activities and its duration, genetics and parental history, rural and urban disparity, housing, sex, sleep, smoking etc play an important role in development and progression of myopia. Among many of these factors, education and time spent outdoor have the strongest correlation with myopia progression. The societies where provision of education is limited, the prevalence of myopia is low (less than 10% myopia in young adults), societies with western style education where education is less intense the prevalence is between 10 and 60%; in developed countries in East and Southeast Asia, where education is intense, time outdoors is low, and the prevalence of myopia is high at 70–90%, particularly in urban areas. (Ang 2020).

Is myopia a treatable disease? The answer very simple yet very complicated. Well, we can say “yes” because we can get rid of myopia by laser or surgeries, (Though treatments themselves have many limitations for different types of myopia and its associated ocular disorders). At the same time, we can say “no” because we can’t remove myopia but can only correct the visual blur it creates. The only point where we can intervene is the prevention of myopia or halt its progression. Most of today’s research chiefly revolves around this issue. Increased outdoor activities is an important environmental factor which may help in prevention of myopia. Some modalities of treatment which have shown to decrease or eliminate the progression of myopia are: Spectacle lenses, bifocal or multifocal spectacles, peripheral myopic defocus glasses, RGP contact lens contact lenses, orthokeratology, soft bifocal and multifocal contact lenses, atropine, time spent outdoor etc.

Use of atropine is one of the popular therapies practiced in many parts of world with promising results. Among these, ATOM (Atropine Treatment Of Myopia) study leads the race and is a landmark study in the control of myopia progression. The initial high doses of atropine (i.e.0.5% or 1.0%) slowed myopia progression by more than 70% in Asian children aged 6–13 years over 1–2 years

(Chua 2006) However, lower doses (0.1% or less) can also slow refractive progression by 30–60% with less side effects (pupil dilation, glare, or blur). (Chia 2016). ATOM studies showed that there was a myopic rebound if atropine was stopped suddenly, especially at higher doses and in younger children. (Chia 2014) The effect of low dose atropine on refractive growth but not the axial length growth is another controversial issue and subject to further research.

Table 3. Clinical guidelines for children aged 6-10 years with myopia > 1.0 D and documented myopia progression >0.5 D per year

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Tilganga Institute of Ophthalmology started atropine therapy for myopia progression control from September 2018 with enrollment of 150 children in the first batch. It was the first-time atropine in myopia study was introduced in Nepal. The mean age of subjects was 12.26 years among which, 42% fall in age group of 6 – 10 years and 77 % in the age group of 11-16 years of age. The minimum age of onset of myopia is found to be 4 years and maximum age is 15 years of age Mean refractive error seen in the baseline data is -3.24 in right eye and -3.15 in left eye respectively. With completion of two years we are entering into the wash out phase. use 0.01% commercially available atropine drop. We follow the protocol recommended by WHO (Adaptation with slight modification in age group of children). Children with myopia of 1D or more with progression of >0.5D in last one year and associated astigmatism of not more than 1.5D are included in the study.

Periodic follow up of children with monitoring of accommodation- vergence interaction, axial length, near vision, pupillary diameter, refractive status is done. Thus, in this line, pediatric ophthalmology department in conjunction with optometrists, orthoptists lead the service-oriented observational study of atropine 0.01% in myopia control in Nepal.

References