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Ophthalmology

CLINICAL STUDY OF PREVALENCE OF HIGH MYOPIA IN AGE GROUP 5-40 YEARS

Noor Ayesha	(MBBS, PG in MS Ophthalmology)
Sujatha V	(MBBS, MS Ophthalmology)
Vijay Kumar Srivastava	(MBBS, MS Ophthalmology)
Pallavi B Acharlu	(MBBS, DO, DNB Ophthalmology)

ABSTRACT **INTRODUCTION:** Rising prevalence of myopia is a major challenge worldwide, giving rise to an epidemic in certain regions. It is the most common refractive error and an important cause of ocular morbidity especially affecting school going children and young adults. Uncorrected myopia has huge social, economic, psychological and developmental implications.
AIM: The aim of the study was to know the prevalence of high myopia based on age group and to know the fundus changes in high myopia.
MATERIALS & METHODS: A total of 100 patients, aged 5-40 years, with high myopia attending OPD in the department of Ophthalmology at MVJ medical college, Hoskote, Bengaluru between February 2021-May 2021 will be selected and included in the study. A thorough clinical examination of the anterior segment of each eye will be done using diffuse illumination and slit lamp bio microscope.
RESULTS: Out of 100 patients, 91 were having myopia and out of the 91 cases, 22 cases were having high myopia. Majority of high myopia cases in the age group of 21-30 (31.8%), followed by 11-20 years [27.2%]. The majority of myopic eyes show the spherical error of 1.25 -3D [29.67%].
CONCLUSION: Of 100 cases of age group 5-40yrs, the majority of cases of high myopia were observed in the 3rd decade of life. Myopic fundus changes were seen increasing with increase in degree of myopia.

KEYWORDS : High myopia, Prevalence, spherical error.

INTRODUCTION

Myopia is a condition in which the incident parallel rays of light come to focus in front of the light sensitive layer of the retina, with the formation of larger diffusion circles at retina, when the accommodation is at rest. Approximately one in six of the world's population is myopic. [1] Myopia begins in early life and increases in frequency and severity through childhood and adolescence into adulthood.

The definition of high myopia as ≤ −5 D was adopted as the World Health Organization (WHO) definition in 2015. A person who needs ≤ −5 D of correction has a visual acuity that is far worse than the threshold for blindness (–3/6 in the better eye). High myopia is said to occur when a person's myopia progresses until they need −5 dioptres (D) or more of spherical correction, although the definitions used to grade myopia are variable. [2]

High myopia affects up to 20% of secondary school children in East Asia, and is associated with sight-threatening pathologies that are irreversible. [3] The prevalence of myopia is increasing globally. It has been predicted that, by the year 2050, high myopia will affect 9.8% of the global population; a total of 938 million people. The highest prevalence of myopia is seen in younger adults, particularly in urbanised East and Southeast Asian countries. [4]

The prevalence of myopia is high in oriental race [50-70%] and low in Eskimos, Native Americans and in black Africans. The overall prevalence among Europeans and North Americans is 10-20%. The incidence of myopia among Asian countries especially Japan is 50%. [5]

The prevalence of high myopia varies considerably in different population and ranges from <1% in Afro-American population to more than 10% in Asian populations. [6][7]

In the Beaver Dam Eye Study data collected between 1988 and 1990 showed a significant decrease with age among individuals aged above 43 years. The prevalence of myopia decreased from 42.9% in adults aged 43- 54 years to 25.1% in adults aged 55-64 years, further decreased to 14.8% in the 65-to-74-year age group, and then slightly decreased to 14.4% among individuals aged 75 years and above. [8]

A recent population-based cross-sectional study on preschool American children aged 6-72 months reported a myopia prevalence of 1.2% in non-Hispanic whites, 3.7% in Hispanics, 3.98% in Asians, and 6.6% in African Americans. [9]

Previous studies by the authors have reported a prevalence of myopia of only 13.1% among school going children in north India with an annual incidence of 3.4% [10]. However, due to the large regional differences in culture, habits, socioeconomic status, educational levels and urbanisation, there continues to be an uncertainty about the exact magnitude of myopia burden in different parts of Indian. The study was undertaken to fill up this lacuna which can help in understanding the prevalence of high myopia in a rural city of South India.

MATERIALS AND METHODS

Patients attending OPD in the department of Ophthalmology at MVJ medical college, Hoskote, Bengaluru will be selected and a hospital based cross sectional study which includes 100 patients is done from February 2021-May 2021.

The patients are selected in the age group of 5 to 40 years.
High myopia is refractive error greater than -6 diopters.
Their consent for the study is taken.

The patients are evaluated in the following manner

- Visual acuity will be recorded using Snellen's Chart
- Near vision will be recorded using Jaeger's chart
- Slit lamp examination – to rule out other ocular pathologies

Retinoscopy -All the patients under 16 years of age will be tested using cycloplegics. Homatropine 2% eye drops in patients between 5-8 years, cyclopentolate hydrochloride 1% for patients between 8-20years & Tropicamide 1% or phenylephrine hydrochloride 10% for patients above the age of 20 years.

All the calculations will be done taking retinoscope results.

The tonus allowance will be taken as 0.5D in case of Homatropine and 0.75 D for cyclopentolate.

In case of tropicamide and phenylephrine hydrochloride, no tonus allowance was given.

Fundoscopy will be done using Indirect Ophthalmoscope

RESULTS

In this study, 100 cases of age group 5-40 years were taken, of which 91were having myopia (graph-1) and 22 cases were having high myopia (graph-2)

Majority of high myopia cases in the age group of 21-30 (31.8%), followed by 11-20 years [27.2%] and the least incidence was observed in the 1-10 years [18.1%] age group. (Table-1)

The majority of myopic eyes show the spherical error of 1.25 -3D [29.67%], followed by 0.25-1.0 [25.27%]. The incidence of myopia over 6 D was observed in 24.18%. The degree of spherical error in this study ranged from 0.25 to 10D. (Table-2)

It was observed that myopic fundus changes increase with increase in degree of myopia.

Table – 1 Frequency of high myopia in different age groups

Age in years	No cases	Percentage (%)
5-10	4	18.1
11-20	6	27.2
21-30	7	31.8
31-40	5	22.7

TABLE – 2 Incidence of Degree of Spherical Error in Myopia [In Dioptres (D)]

Degree of error(inD)	No of cases	Percentage(%)
0.25-1.0	23	25.27
1.25-3.0	27	29.67
3.25-6.0	19	20.88
6.25-10.0	22	24.18
Total	91	100

DISCUSSION

A study of 5000 eye OPD patients in year 1966 by I.S.Jain et al(11) has shown 15% incidence of myopia of which 16% had high myopia. 84% were simple myopic. However, in this present study we found that out of the 100 cases, 91% were found to be myopic and out of 91 cases, 22 (24.17%) were high myopic.

In a study by Mohan Kumar et al[5] the majority of high myopia cases were observed in the age group of 21-30 years (31.6%), followed by 11-20 years [29.8%]. The least incidence was observed in the 1-10 years [5.3%] age group. The present study showed similar trends having majority of high myopia cases in the age group of 21-30 (31.8%), followed by 11-20 years [27.2%] and the least incidence was observed in the 1-10 years [18.1%] age group.

The majority of myopic eyes show the spherical error of 1.25 -3D [29.67%], followed by 0.25-1.0 [25.27%]. This was similar to a study by Mohan Kumar et al, (5) which showed that the majority of myopic eyes show the spherical error of 1.25 -3D [32.52%], followed by 0.25-1.0 [27.91%].

CONCLUSION

Of 100 cases of age group 5-40yrs, the majority of cases of high myopia were observed in the 3rd decade of life. Myopic fundus changes were seen increasing with increase in degree of myopia.

REFERENCES

1. Gilmartin B. Myopia: precedents for research in the twenty-first century. Clin Experiment Ophthalmol. 2004 Jun;32(3):305–24.
2. Williams K, Hammond C. High myopia and its risks. Community Eye Health. 2019;32(105):5–6.
3. Morgan IG, Ohno-Matsui K, Saw S-M. Myopia. Lancet Lond Engl. 2012 May 5;379(9827):1739–48.
4. Holden BA, Fricke TR, Wilson DA, Jong M, Naidoo KS, Sankaridurg P, et al. Global Prevalence of Myopia and High Myopia and Temporal Trends from 2000 through 2050. Ophthalmology. 2016 May;123(5):1036–42.
5. Kumar HM, Channbasappa S, Geethanjali BS et al. Clinico-epidemiology study of high myopia in different age groups. Int J Health Sci Res. 2016; 6(1):119-125.
6. Wu HM, Seet B, Yap EP, Saw SM, Lim TH, Chia KS. Does education explain ethnic differences in myopia prevalence? A population-based study of young adult males in Singapore. Optom Vis Sci Off Publ Am Acad Optom. 2001 Apr;78(4):234–9.
7. Sperduto RD, Seigel D, Roberts J, Rowland M. Prevalence of myopia in the United States. Arch Ophthalmol Chic Ill 1960. 1983 Mar;101(3):405–7.
8. Wang Q, Klein BE, Klein R, Moss SE. Refractive status in the Beaver Dam Eye Study. Invest Ophthalmol Vis Sci. 1994 Dec;35(13):4344–7.
9. Multi-Ethnic Pediatric Eye Disease Study Group. Prevalence of myopia and hyperopia in 6- to 72-month-old african american and Hispanic children: the multi-ethnic pediatric eye disease study. Ophthalmology. 2010 Jan;117(1):140-147.e3.
10. Saxena R, Vashist P, Tandon R, Pandey RM, Bhardawaj A, Menon V, et al. Prevalence of myopia and its risk factors in urban school children in Delhi: the North India Myopia Study (NIM Study). PloS One. 2015;10(2):e0117349.
11. Jain IS, Jain S, Mohan K. The epidemiology of high myopia-chanding trends. Indian J Ophthalmol. 1983 Nov 1;31(6):723.