

Pattern of Ocular disorders in Adolescent population : Data from Tertiary care Centre

Rajshekhar Vemparala¹, Neha Chawla², Anurag Narula³

¹Associate Professor, ²Senior Resident, ³Specialist, Department of Ophthalmology, Vardhman Mahavir Medical College and Safdarjang hospital, New Delhi, India

Abstract

Aims: This study was carried out to determine ocular disorders and visual impairment among adolescents attending Out Patient Department of Ophthalmology in a tertiary care center

Methodology: A retrospective study was carried out among adolescents attending out patient department of Ophthalmology in VMMC and Safdarjung Hospital New Delhi. Data of 191 patients between 10-19 years with ocular disorders were analyzed.

Findings: 191 adolescent cases and 382 eyes were evaluated for various ocular disorders and visual impairment. The mean age of the cohort was 14.7 years.

Uncorrected refractive error and difficulty in seeing objects at distance (far vision) is the commonest among the adolescent group. Blindness was observed in 2.8% with a slight female preponderance.

Severe visual impairment is caused by corneal opacity, central nervous system abnormality and phthisis was observed in 13%. Refractive error, corneal opacity, posterior segment diseases and cataract cause moderate impairment in 39.2%. Mild impairment is caused mostly by refractive error.

Conclusion: The frequency was higher in females than males across all categories of visual impairment. Uncorrected refractive error is common in adolescent age group and often detected late in the absence of regular screening among adolescent.

Keywords: Ocular disorders, Adolescent, Refractive error

Introduction

Ocular disorders among adolescents is a common cause of poor vision. Blindness and visual impairment are major public health concerns globally and more importantly in developing world. Global initiative has been set up to achieve goal of eliminating avoidable blindness by 2020. It aims to reduce prevalence of avoidable visual impairment by 25% by 2019 compared

to 2010 data. Majority of the disorders resulting in poor vision are preventable and correctable if detected early. There is often a delay in diagnosis and correction of common ocular disorders. The major causes of blindness differ, depending upon geographical areas.

According to WHO the prevalence of blindness in lower socio economic strata is 1.5/1000 children.

(1) Worldwide about 19 million children are visually impaired of which 12 million are due to uncorrected refractive error. Out of 1.4 million cases of blindness, two-thirds are from Asia⁽²⁾

In India prevalence of childhood blindness or low vision is 0.8/1000. Many of these ocular problems such as refractive error, cataract, glaucoma, amblyopia are amenable to interventional measures, are detected

Corresponding author

Dr. Rajshekhar Vemparala,

Associate Professor, Department of Ophthalmology
Vardhman Mahavir Medical College and Safdarjang
hospital, New Delhi 110029, India. E mail:
vrajshekhar@gmail.com

through vision screening of selected population. (3-5)

These figures and also the fact that timely intervention of visual impairment could not only correct the correctable but also improve the quality of life, academic performance and overall development in the vulnerable age group, encouraged us to analyze our data of ocular disorders in adolescent age group attending Out Patient Department of Ophthalmology at Vardhman Mahavir Medical College and Safdarjung Hospital.

Materials and Methods

Medical records of all patients between 11-19 attending Out Patient Department of Ophthalmology at VMMC and Safdarjung Hospital between Jan 2016-Dec 2017 were reviewed.

191 patients and 382 eyes were evaluable during the study period. All patients underwent routine vision check up irrespective of their complaints.

Ophthalmic examination procedure included

(i) Vision Assessment: Visual acuity was determined separately for each eye at 6 meters using the Snellen’s chart. Where the visual acuity was 6/9 or less, a pinhole was presented for that eye and the test repeated.

(ii) Binocular Motor function by Hirschberg test. Nystagmus assessed by cover test and prism cover test.

(iii) Cycloplegic dilatation and Refraction

(iv) External and Anterior segment : Eyelids, conjunctiva, cornea, iris and pupil were examined.

(v) Best Corrected Visual Acuity

(vi) Fundus examination: Detailed evaluation with direct ophthalmoscopy was performed for all patients to ascertain the diagnosis

Blindness defined as presenting visual acuity in better eye <3/60.

Severe visual impairment is presenting visual acuity in better eye <6/60-3/60.

Moderate impairment is when presenting visual acuity in better eye <6/18-6/60, caused by refractive error, corneal opacity, posterior segment diseases and cataract.

Mild impairment is when visual acuity in better eye is <6/12-6/18, caused mostly by refractive error.

Data including demographic characteristics, clinical symptoms, clinical symptoms and associated ocular disorder were analyzed

Findings

191 adolescent cases and 382 eyes were evaluated for various ocular disorders and visual impairment. The mean age of the cohort was 14.7 years.

The demographic and clinical presentation are summarised in Table 1.

Table 1: Ocular Symptoms n=191.

Symptoms	Frequency	Percentage
Difficulty in vision	123	64.3
Itching	29	15.1
Eye pain	73	38.2
Watering	56	29.3

The distribution of various categories of visual impairment observed in the cohort is depicted in Table 2.

Table 2: Categories of Visual impairment Total number of eyes 382

Age group 11-19 years	Blind <3/60	Severe impairment <6/60-3/60	Moderate impairment <6/18-6/60	Mild impairment 6/12-6/18
Male	3	21	64	74
Female	8	29	85	98
Percentage %	2.8	13	39.2	45

Uncorrected refractive error and difficulty in seeing objects at distance (far vision) is the commonest among the adolescent group. Distribution of various ocular disorders is depicted in Table 3.

Table 3: Distribution of Ocular disorders n=382 eyes

Disorder	Frequency(%)
Refractive error	297(77%)
Corneal opacity	16(4.1)
Posterior segment disorder	11(2.9)
Cataract	22(5.7)
Others	36(9.4)
Glaucoma	2
Trauma	2
CNS*	2
Strabismus	28(14 eyes)

*CNS Central Nervous System

Blindness was observed in 2.8% with a slight female preponderance. Of the 11 eyes 3 had leucomatous corneal opacity, 2 had glaucoma, 2 had CNS abnormalities and remaining 4 had traumatic optic atrophy

Severe visual impairment is caused by corneal opacity, central nervous system abnormality and phthisis was observed in 13%. Refractive error, corneal opacity, posterior segment diseases and cataract cause moderate

impairment in 39.2%. Of 149 eyes refractive error was seen in 115, corneal opacity was observed in 13 eyes and 11 had macular degeneration. Glaucomatous and traumatic optic atrophy was observed in the remaining 6 eyes. Mild impairment is caused mostly by refractive error, intermittent exotropia observed in 28 eyes. The frequency was higher in females than males across all categories of visual impairment.

Discussion

The present study was intended to determine ocular disorders and visual impairment among adolescents attending a tertiary care center. Our study observed refractive error (77%) as the most common cause of visual impairment. Similar observation was made by Sarkar et al and Kumar et al⁽⁶⁻⁷⁾ though the figures are higher in our study which could be attributed to ethnic variations and life style. Several other studies have also reported similar finding⁽⁸⁻¹⁰⁾ However the present study showed a higher proportion of children with refractive error compared to existing literature possibly due to difference in sample size, and all cases were already symptomatic while seeking ophthalmic services in contrast to cases picked up at screening. The current study also reported that the frequency was higher in females than males across all categories of visual impairment. This was in line with observation by Sarkar et al⁽⁶⁾. However this was in contrast to other studies reported from Maharashtra and Puducherry where higher prevalence was reported in males⁽¹⁰⁻¹¹⁾

The common barriers for accessing eye care could possibly be include need not felt which is commoner in females, cost of treatment, poor access to health care. This highlights younger children should be regularly and thoroughly examined for detection and reducing long term visual impairment.

Health education campaign to improve awareness among parents and adolescent children will be helpful in resource constraint setting for ophthalmic services.

Conclusion:

From the findings of the above study the leading causes of preventable blindness and visual impairment in adolescent population remains to be uncorrected refractive error, corneal opacities. Detection is often late

in the absence of regular screening among adolescent. However our results may be interpreted with caution due to retrospective nature of the study. A larger sample size and a prospective study in future would be helpful .

Conflict of Interest Nil

Source of Funding : Nil.

Ethical Clearance: Taken from Institute ethics committee of VMMC & Safdarjung Hospital, New Delhi

References

1. World Health Organization. Coding Instructions for the WHO/PBL Eye Examination Record (Version III). Geneva: WHO; 1988 WHO document PBL/88.1. <https://www.who.int/blindness/causes/priority/en/index3.html>
2. Waddell A, Heseltine E, editors. Vision 2020 Global Initiative for the Elimination of Avoidable Blindness: Action Plan 2006-2011. Geneva, Switzerland: WHO press; 2007. WHO Disease control and prevention of visual impairment; pp. 9–39.
3. Jose R. Present status of the national programme for control of blindness in India. *Community Eye Health J.* 2008;21:103–4.
4. Abubakar S, Ajaiyeoba AI. Screening for Eye Disease in Nigeria School Children. *Nig J Ophthalmol* 2001; 9: 6-9.
5. Johnson GJ, Foster A. Prevalence, Incidence and Distribution of Visual Impairment. *Epidemiology of Eye Disease.* In: Johnson GJ, Minassian DC, Weale RA, West SK. Eds. 2nd ed. London: Arnold publishers 2003; 3-28.
6. Sarkar A, Medhi GK, Bhattacharyya H, Pala S², Gogoi S. Pattern of ocular morbidities: A cross-sectional study on school-going children in Shillong city. *J Family Med Prim Care.* 2019 Jun;8(6):2124-2128
7. Kumar P, Pore P, Dixit AK, Jha AK, Ahmad A, Chauhan N. Demographic profile of ocular morbidity in school children in India. *Scholars J Appl Med Sci.* 2013;1:645–52.
8. Stanly AM, Devasena MA. Ocular morbidity screening among school children in Chennai. *Int J Adv Med.* 2015;2:337–40.

9. Parmar A, Kartha G, Baria M. A study on the prevalence of ocular morbidities amongst school children (10-16 years) of Surendranager district. *Int J Res Med.* 2014;3:90–4.
10. Deshpande JD, Malathi K. Prevalence of ocular morbidities among school children in rural area of North Maharashtra in India. *Natl J Community Med.* 2011;2:249–54.
11. Vishnuprasad R, Bazroy J, Madhanraj K, Prashanth HR, Singh Z, Samuel AK, et al. Visual impairment among 10-14-year school children in Puducherry: A cross-sectional study. *J Family Med Prim Care.* 2017; 6:58–62.