

# PREVALENCE OF REFRACTIVE ERRORS IN ADOLESCENTS IN OUT- PATIENT ATTENDEES OF THE PREVENTIVE OPHTHALMOLOGY CLINIC OF COMMUNITY MEDICINE, S K I M S, KASHMIR, INDIA

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## Abstract :

Blindness is one of the most significant social problems in India with uncorrected refractive errors as the second major cause accounting for 19.7% of blindness and low vision.

All adolescents (12-18 years) attending the eye clinic from Jan 2007- Jan 2009 for any eye ailment were examined and screened for refractive error using Snellen's chart.

Out of total 930 adolescents, 508(54.62%) of adolescents had refractive errors. Of the total males and females examined 57.43% and 52.12% respectively had refractive errors. The mean age of presentation was 14.3 years. Most of the adolescents presented with myopia 257(50.59%) followed by astigmatism (35.23%) and hypermetropia (14.17%).

High prevalence of refractive errors warrants early detection and treatment.

Keywords : Refractive errors, adolescents, hypermetropia, myopia, astigmatism

## Introduction :

An estimated 180 million people world- wide are visibly disabled, of whom nearly 45 million are blind, four out of five of them live in developing countries. One third of the world's blind (about 15 million) are in SEAR (South east Asian region) and 50 % of world's blind children live in this region. Blindness is one of the most significant social problems in India with uncorrected refractive errors as the second major cause accounting for 19.7% of blindness and low vision. In India Adolescents constitute 23-25 % of the population. Poor vision in childhood affects performance in school or at work and has a negative influence on the future life of the child.<sup>(1)</sup>

Three main types are considered as refractive errors: hypermetropia (farsightedness), myopia (nearsightedness) and

astigmatism.<sup>(2,3)</sup> The prevalence of myopia is currently attracting worldwide attention as many recent studies report dramatic increases over the last 20 years. Moreover, planning of a youth's career is very much dependent on the visual acuity, especially in jobs for navy, military, railways and aviation<sup>(4)</sup>. This warrants early detection and treatment of refractive errors to prevent permanent disability. Diagnosis and treatment of these errors is relatively simple and is one of the easiest ways to reduce impaired vision.

Children do not complain of defective vision, and may not even be aware of their problem. They adjust to the poor eyesight by sitting near the blackboard, holding the books closer to their eyes, squeezing the eyes and even avoiding work requiring visual concentration. This warrants early detection and treatment to prevent permanent disability.<sup>(4)</sup>

The present study was carried out in the preventive ophthalmology clinic of the department of community medicine. The study was conducted with the aim of

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assessing the prevalence of refractive errors in adolescents (12-18 years) because any residual hypermetropia of childhood usually gets neutralized by this age and this is the age when children start using their visual system to its full extent so that even minor anomalies are noticed by the patients. It presents the prevalence of refractive errors by age, sex, class, type of error and socio-economic status in Srinagar city.

**Material and methods :**

All adolescents (12-18 years) attending the eye clinic from Jan 2007- Jan 2009 for any eye ailment were included in the study. All of them were examined by an ophthalmologist present in the clinic. The screening was done from a six meters distance, on Snellen's chart.

Adolescents with visual acuity less than 6/9 were subjected to refraction test at the clinic. Subjective refraction was performed by achieving best corrected visual acuity, while cycloplegic refraction was advised for adolescents when best corrected visual acuity could not be achieved.

Adolescents presenting organic defects in eye such as corneal opacity, opacity of the lens, choroid and retinal disorders were excluded from study.

**Results :**

Out of total 930 adolescents examined 493 (53.01%) were females rest were males (46.98%). 508(54.62%) of

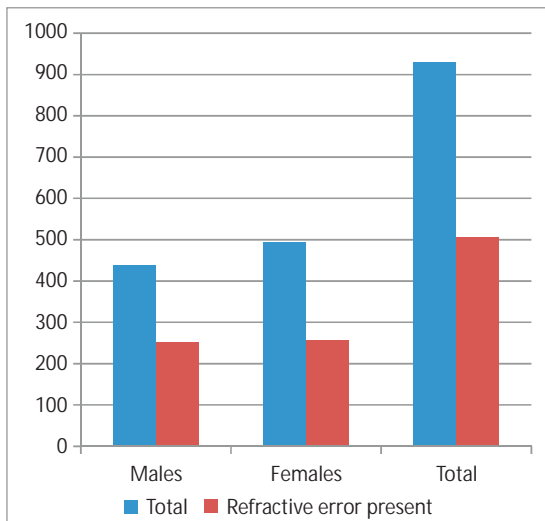


Figure 1 - Gender wise distribution of adolescents with refractive errors

adolescents had refractive errors. Of the total males and females examined 57.43% and 52.12% respectively had refractive errors Fig -1. The mean age of presentation was 14.3 years

TABLE 1: Symmetry of refractive errors

Sex	Isometropia		Anisometropia		Total	
	No	%	No	%	No	%
Male	201	(80.07)	50	(19.93)	251	(49.41)
Female	235	(91.60)	22	(08.40)	257	(50.59)
Total	436	(86.02)	72	(13.98)	508	

Table- I: shows that 436(86.02%) of adolescents with refractive errors had isometric error while rest had anisometropia (13.98%). More females presented with isometropia (91.60%) than males(80.07%)

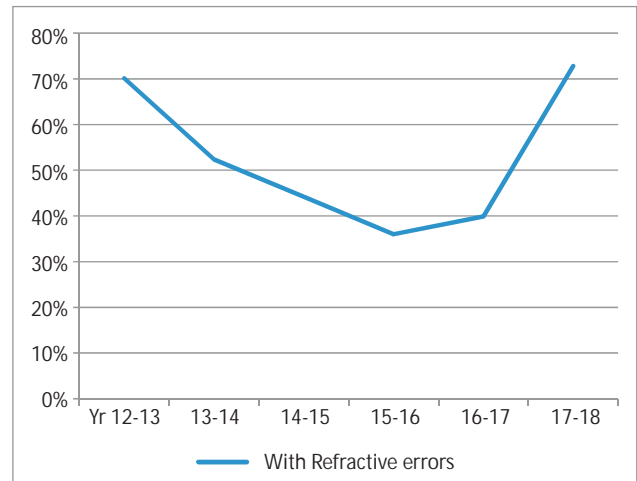


Figure 2 : Line diagram showing age wise distribution of students with refractive errors

158 adolescents presented to the clinic in the age group Of 17-18 years with 73% of them having refractive errors followed by 12 -13 year age group in whom 70.09% had refractive errors this was followed by other age groups showing presence of more refractive errors at two extremes of adolescence. Figure -2

Most of the adolescents presented with myopia 257(50.59%) followed by Astigmatism (35.23%) and hypermetropia (14.17%). Both myopia (54.48%) and Hypermetropia (52.78%) was found more in females as compared to males. Astigmatism was more prevalent in Males. Fig-3

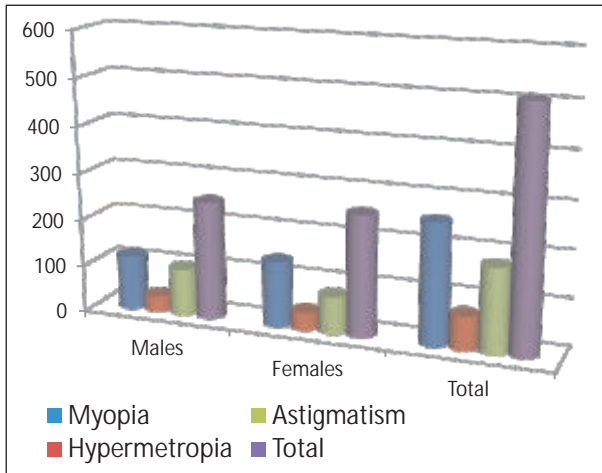


Figure 3-Type of refractive errors

TABLE 2: Family history of adolescents with refractive errors

Type of error	Family h/o refractive error		
	Total (%)	not present	Present
Myopia	100 (38.91)	157 (61.09)	257 (50.59)
Hypermetropia	21 (29.17)	51 (70.83)	72 (14.17)
Astigmatism	36 (20.11)	143 (79.89)	179 (35.24)
Total	157 (30.90)	351 (69.10)	508

Table-2 shows that 31% had a family history of refractive errors. Family history was more in myopics (38.91%) followed by hypermetropia and Astigmatism 29.16% and 20.11% respectively.

We also found that 50.00% of adolescent's belonged to social class 11 followed by class 111,1v, and v 28.00%, 17.00%, 2.00% respectively.

Discussion :

In our study the prevalence of refractive errors was quite high at 54.62%. The overall incidence in India has been reported to vary between 21% and 25% in patients attending eye outpatient departments.<sup>(5)</sup> Similar prevalence of refractive errors has been observed among children of 12-17 years in Ahmedabad city.<sup>(6)</sup> A (32%) prevalence rate of refractive errors has been reported among school children of age 3-18 years from South India.<sup>(7)</sup> However Matta et al reports a prevalence of 12.5%.<sup>(8)</sup> Datta et al report a low prevalence of refractive errors (2%) from Eastern India among primary school children (5-13 years), which could not be explained.<sup>(9)</sup> Padhye et al reports cluster-weighted prevalence of uncorrected refractive

error in urban and rural children was 5.46% (95% CI, 5.44-5.48) and 2.63% (95% CI, 2.62-2.64), respectively. A study reports prevalence of myopia, hypermetropia and astigmatism in urban children as 3.16%, 1.06% and 0.16%, respectively.<sup>(10)</sup>

Internationally, lower prevalence of refractive errors (2.7-5.8%) has been reported among children of age 5-15 years from Africa, Finland, Chile and Nepal as compared to the present study.<sup>(11,12,13,14)</sup> These differences may be explained by the different diagnostic criteria used by different authors, racial or ethnic variations in the prevalence of refractive errors, different lifestyles or living conditions .High rate of refractive errors in our study population can also be attributed to racial or ethnic variations or different lifestyles or living conditions like watching TV for long hours, or using computers as most of our adolescents are confined indoors due to long standing turmoil in the valley.

Refractive errors found in our study did not differ significantly between males and females. Similarly in a study by Sonam Sethi no significant differences were found between males and females.<sup>(6)</sup> while in other studies refractive errors were found to be more common in girls than in boys.<sup>(7,15)</sup> In these studies the differences were related to the possible differences in the rate of growth between girls and boys.

It was also found that 50.59% were myopics followed by hypermetropia and astigmatism. Matta S, Laatkein and Sonam Seth also report that myopia was more common followed by Astigmatism and Hypermetropia. In our study 17-18 year age group presented with more refractive errors compared to studies which report higher prevalence in 12-13 year age group.<sup>(6,8)</sup>

38.91% of Myopics had a family history of myopia, various studies have also proved some relation with respect to family history particularly in myopia<sup>(11)</sup>

Conclusion :

Prevalence of refractive errors in our study was found to be very high, thereby warranting early diagnosis and treatment to prevent permanent blindness.

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