

FREQUENCY OF REFRACTIVE ERRORS AMONG CHILDREN OF 5-15 YEARS AGE VISITING EYE OUTDOOR BAHAWAL VICTORIA HOSPITAL OF BAHAWALPUR

Dr Muhammad Shahzzad Iqbal -Dr Hafiz Affan Bin Aziz -

Dr Muhammad Mohsin Khan

ABSTRACT

Topic:

Refractive error is an important cause of visual impairment in school children. Visual impairment in school children may effect education and career development.

Aim:

To determine the Frequency Of Refractive Errors Among Children Of(Age 5-15 Years) Visited Eye Outdoor of Bahawal Victoria Hospital Of District Bahawalpur.

Study design:

Descriptive cross sectional study

Duration:

The study was conducted for 2 months , from 15 Aug to 15 OCT 2017.

Sampling Technique:

Non probability Convenient sampling

Sample size:

Sample size was 100 Children coming to eye OPD of Bahawal Victoria HospitalBahawalpur ,Out of them 50 were boys and rest were girls.

Inclusion criteria:

Children Age 5-15 Years attending Eye OPD
Both Gender.

Exclusion Criteria:

Students who are not willing to be included in this study ,students having corneal opacities , keratoconus, strabismus,nystagmus, corneal abcess, conjunctivitis, any lenticular pathology ,

aphakia, pseudophakia and all other inflammatory diseases.

Children <5 Year

>15 Year

Setting:

Study was conducted in the Eye Opdof Bahawal Victoria Hospitalof District Bahawalpur.

Data Collection and Analysis:

A descriptive cross sectional study was carried out in the children (5-15 years) to find out the frequency of refractive errors by vision screening programme. Their visual acuity was noticed by Snellen's visual acuity chart, with the help of visual acuity and subjective refraction, the frequency of refractive errors was accessed.

Conclusion

More than half of the children had refractive error. According to our result myopia is more common than hypermetropia.

Introduction

The latest global estimates of visual impairment suggest that estimated 2.3 B people worldwide have a refractive error and among children aged 5-15 yrs. 12.8 M were visually impaired due to

refractive representing a frequency of 0.97% with high frequency reported in china and urban areas of south east Asia⁽¹⁾.

There are several epidemiological reports on refractive errors in school age children from Asia and other countries, such as, south Korea, Japan, China, nepal, malaysia, india. The frequency rates of refractive error are different from epidemiological studies from china and frequency of myopia is higher in china indicating that difference in ethnicity regional and economical differences and developmental level could effect the frequency of refractive error for instance, it has been reported demonstrated that different ethnic group show different frequency rates of refractive errors⁽²⁾.

Effective vision and childhood blindness may affect undesireably the life style of particular child for rest of his social and educational life. Childhood blindness needs special attention due to number of years. A child spent with defective vision⁽³⁾.

Refractive errors can have many problems with children and adults including educational loss economics issues low productivity and impaired quality of life. There are many reasons for non correction of refractive error in

children, including lack of service affordability and necessity. However economically sound communities can also 90% with undetected or uncorrected refractive errors in children⁽⁴⁾.

Studies around the world indicate that refractive errors are common in all ages. A100 K at these studies shows that 40% of children and school children in eastern Asian countries are affected with refractive error. Refractive error have received much attention globally over the past decade and studies have been able to answer many questions about these problems⁽⁵⁾.

Myopia and hyperopia can increase the risk of developing some ocular diseases and have impact on vision related quality of life, however for school children, refractive errors can have more direct influence on quality of life and learning ability than ocular diseases. To address the issue of visual impairment in children, the WHO recently launched a global initiative vision 2020⁽⁶⁾.

THE RIGHT TO SIGHT their strategy for elimination of avoidable visual activity and blindness includes the correction of refractive error. So in order to provide and early detection and initiative, a professional based screening

programme for all school aged children is recommended in recent years a number of surveys have been done among students and early subjects in Iran⁽⁷⁾.

LITERATURE REVIEW

According to a study conducting in school going 2340 children in Hyderabad. Out of 2340 children 300(12.8%) had refractive error mean age of children was 6 years. 45(15%) children below 3 years, 180(60%) were between 3-10 years and 75(25%) were between 11-15 years. One hundred thirty five(45%) were male and 165(55%) were female. Myopia occurred in 85(28.33%) hypermetropia occurred in 75(25%) and astigmatism in 140(46.67%) children. Myopic astigmatism occurred in 19(6.7%), hypermetropic astigmatism in 38(12.7%) and mixed astigmatism in 83(27.7%) children. Free glasses were provided to all children. Anisometropia occurred in 19(6.3%) patients. Bilateral amblyopia occurred in 10(3.3%) patients. Unilateral amblyopia occurred in 10(3.3%)⁽¹⁾.

Another study conducting in South Asia the 400 primary school children approximately, 320 were included with approved consent forms from their parents/guardians with their response rate of 80%, from which 50% were girls and

50% were boys. The age of included school children range from 7-12 years with a mean \pm SD of (9.11 \pm 1.62) years and there was no significant differences between the mean \pm SD age of girls (9.06 \pm 1.59) and boys (9.16 \pm 1.64) ($p=0.606$). Mean \pm SD of SE was 1.71 \pm 1.16 range from -2.5 to +8D overall, 1.68 \pm 1.19 ranged from -2.25 to +8D in boys and 1.75 \pm 1.13 ranged from -2.5 to +4B in girls ($p=0.181$). the overall frequency of refractive errors among school children was 64.4% (95% CI: 58.83% - 69.58%), higher among girls than boys (73.1% vs. 55.6%, $p=0.001$), but it was not significantly different age groups ($p=0.790$). In Iran, in the study, 1375 school children were selected through cluster sampling, and 1151 (83.7%) of them participated. We excluded 21 individuals because of poor cooperation and contraindication for cycloplegic refraction. Refractive errors examinations were completed for 1130 children, whose data was used in the analysis. The mean age of the participants was 11.05 \pm 2.93 (range: 6-15) years, and 52 (46.0%) were female. Mean spherical equivalent based on cycloplegic refraction was 0.47 \pm 1.08 (range: -5.56 to 13.39) D. the frequency of eyeglass wear was 6.02% [95% confidence interval (CI): 4.63-

7.41]. Refractive status and frequency in sub urban school age children in China. A total of 3469 children living in 2552 households were selected, and 3070 were examined. The distribution of refractive status were positively-skewed for 6-8 years-olds, and negatively-skewed for 9-12 and 13-15 years old. The frequency of hyperopia ($\geq +2.00$ D spherical equivalent [SE]), myopia (≤ -0.50 D SE), and astigmatism (≥ 1.00 diopter of cylinder [DC]) were 3.26%, 13.75%, and 3.75% respectively. As children's age increased, the frequency rate of hyperopia decreased ($p < 0.001$) and that of myopia increased significantly ($p < 0.001$). Children in academically challenging schools had a higher risk of myopia ($p < 0.001$) and astigmatism (≥ 1.00 DC, $p=0.04$) than those in regular schools⁽²⁾.

Another study conducted in Koman region a total of 2425 children were included and examined. Out of these, 1419 were males and 1006 were females. 450 children were diagnosed to have refractive errors. Among this 272 were males and 180 were females⁽³⁾.

OBJECTIVE

The objective of study was to:

□ To determine the frequency of refractive errors among children age 5-15 years attending to Eye OPD Bahawal Victoria Hospital Bahawalpur.

□ OPERATIONAL DEFINITIONS

Refractive Error:

Decrease in visual acuity.

Ammetropia:

Students of out patient department of victoria hospital were assessed.

Visual acuity was checked of each eye by occluding the other eye. V.A < 6/12 was considered as ammetropia.

Myopia:

Improvement of V.A by > -0.75Ds was considered as Myopia.

Hypermetropia:

Improvement of V.A by > +0.75Ds was considered as Hypermetropia.

Astigmatism:

Improvement of V.A by >+ 1.00Dc was considered as Astigmatism.

Methodology

Objective:

To determine the frequency of refractive errors among children (05-15 years) attending out patient department of victoria hospital of District Bahawalpur.

Sampling Technique:

Non probability Convenient sampling

Study design:

Descriptive cross sectional study

Duration:

The study was conducted for 2 months , from 15 Aug 2017-15 OCT 2017.

Sample size:

Sample size was 100 children coming to eye OPD, out of them 50 were boys and 50 were girls.

Inclusion criteria:

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Children <5 Year
>15 Year

Setting:

No : 1

FREQUENCY DISTRIBUTION

Number of subjects (n=100)

	Frequency	Percentage
GIRLS	50	50 %
BOYS	50	50 %

Study was conducted in the out patient department of victoria hospital Bahawalpur.

Data collection and analysis:

Visual acuity of subjects was noticed by snellen's visual acuity chart, with the help objective and subjective refraction. The frequency of refractive errors was assessed. Frequencies were calculated and wer

Table No: 2

Age distribution according to refractive error (n= 61)

Age in year	Frequency
5-10 years	19
10-15 year	42
Total	61

Table No : 3

Distribution of Ammetropes according to Type of refractive error .

Number of Ammetropes (n=61)

Type of refractive error	Frequency	Percentage
Myopia	40	65.57 %
Astigmatism	17	27.86 %
Hyperopia	04	6.55 %

Table no:4

Distribution of Myopia with reference to gender

	Frequency	Percentage
GIRLS	20	50%
BOYS	20	50%

Table No:5

Astigmatism in Myopic Versus Hypermetropic

	Frequency	Percentage
Myopic astigmatism	10	58.82 %
Hypermetropic astigmatism	7	41.17%



Table no:6

Hypermetropic Girls versus hypermetropic Boys

	Frequency	Percentage
BOYS	3	75%
GIRLS	1	25%

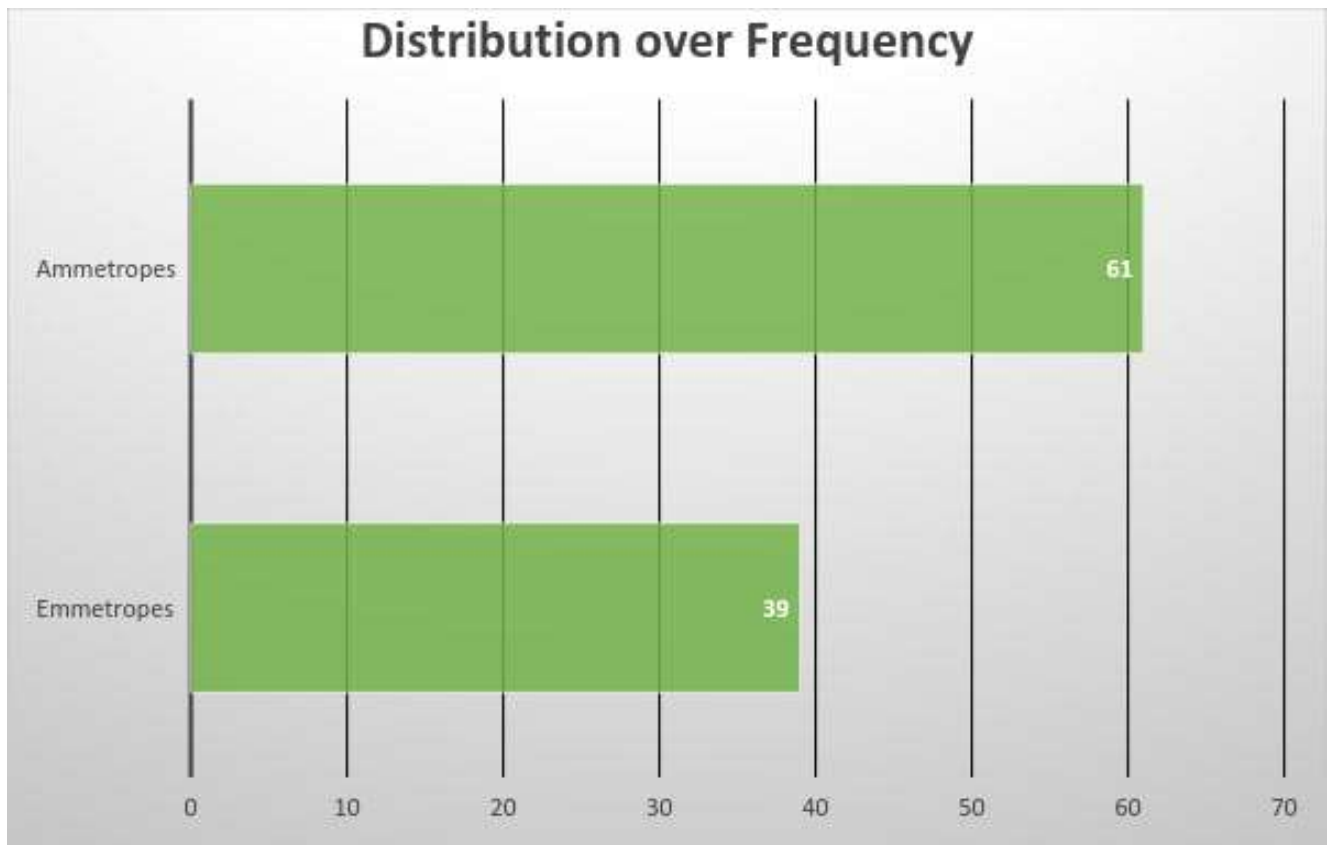


Fig No: 01

DISTRIBUTION OVER FREQUENCY

Results

- क्र My study was conducted on 100 children age 5-15 year who were attending Eye OPD out of which 50% were boys and 50% Girls. (Table 1).
- क्र Regarding age distribution ammetropes out of 61 patient 19 were (5-10 Year)(31.14%) and rest were 10-5 year (68.85%) (Table 2).
- क्र Regarding distribution of refractive error there are 40 myopes (65.57%), 4 hyperopes (6.55%) and 17 astigmatism (27.86%) (Table 3).

- क्र Regarding the distribution of astigmatic error there were 10 myopic astigmatism (58.80%) and 7 were hypermetropic astigmatism (41.17%) (Table 4).
- क्र Regarding the distribution of myopic out of 40 there were 20 girls (50%) and 0 boys (50%) (Table 5).
- क्र Regarding the distribution of hypermetropes 4 were boys (75%) and 1 girl (25%) (Table 6).
- क्र In relation to Refraction we have 39 emmetropic (39%) children and 61 ammetropic (61%) (Fig 1)



Recommendations

1. Screening Services for refractive errors should be integrated at all levels of eye care provision, including outreach and community base primary care.
2. Recommended to conduct refraction by ophthalmologist, or eye doctor, optometrist, orthoptist are refraction specialist.
3. The child with poor vision that can be improved, correction is managed with prescription of spectacles that are good fit to child.
4. Follow up is given to the patients to avoid complication
5. **Discussion:**

The frequency of different types of refractive errors among school children has already been evaluated in various studies during the past years. In any discussion of the frequency of refractive errors, we must consider that the frequency varies widely from one geographical, racial or occupational group to another. Factors such as types of studied populations, different definitions, and methods of measurement (cycloplegia or non-cycloplegia), patient's age and ethnic differences could be responsible for these differences.(3,4,5)

In our study frequency of myopia was 40%, Hypermetropia was 4% and astigmatism was 17%. Also our study reveals myopia is more common than hypermetropia and astigmatism is more common than hypermetropia. In one study in Iran reveals overall myopia was 3.4%, Hypermetropia 16.6% and astigmatism 18.7%.¹⁶ In a study done by Afghani et al in school children found that myopia was three times more common (3.26%) than hypermetropia (0.99%).¹⁷ Our study also revealed that there was a negative correlation between spherical equivalent and the age of the children. This is consistent with other studies¹⁸ where there was a decrease in the proportion of hypermetropia with age and an increase in myopia. This trend may be attributed to the theory of emmetropization in which there is a shift from hypermetropia in early childhood to emmetropia as the child grows. Myopia has been reported to be associated with female gender, older children, parental educational attainment, ethnicity, urban dwellers and parental and sibling myopia.(3,4,5)

Myopia has a high frequency in countries such as China and Singapore, and affects more than half the children. We know from previous studies that East Asian countries are hotspots for myopia,

and as demonstrated, rates are still lower in European countries. One important explanation for such differences can be study differences in age groups, definitions of myopia, and measurement methods. Nonetheless, even with similar age groups, myopia definition, and cycloplegic refraction, the myopia frequency in this study is considerably high. Recent studies in Iran point to a high frequency of myopia. While this can be difficult to explain, the most important reason seems to be changes in lifestyle, especially an increase in near work activity. This finding could indicate that we are in the pre-epidemic stage of myopia in children, and thus, serious work is needed to identify and treat refractive errors in this age group^(5,6,7).

Conclusion:

More than half of the children had refractive error myopia is more common than hypermetropia.

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