



RESEARCH ARTICLE

A study on the prevalence of refractive errors among school going adolescent children in chidambaramR.Chandrasekar¹ P.K.Govindarajan AJW.felix³ N.Ethirajan⁴ T.K.Senthil Murugan⁵ TM.Jayashree⁶ P.Kalyani⁷¹ Post Graduate Department of Community Medicine,²⁻⁷ faculties, Department of community Medicine, Rajah Muthiah Medical College, Annamalai University, Annamalai Nagar India

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ABSTRACT

Introduction: Vision disorders are the fourth most common Disability of children and the leading cause of handicap in childhood. Refractive error is one of the most common causes of visual impairment around the world and is the second major cause of treatable blindness.

Objective: To find out the prevalence of refractive errors among school children of 10-18 years of age group and the association between select socio demographic variables and refractive error.

Methodology: A descriptive cross sectional study was conducted among 1225 school children of Ramakrishna Vidhyalaya School Chidambaram .The magnitude of refractive error was assessed using snellen's chart and confirmed by refractionist.

Results: The prevalence of refractive errors in the school children in the age group of 10-18 years was 13.31%. The prevalence of myopia increases as age increases i.e : 10.0% in the 10 -12 years and it increased to 15.6% in 13-15 year age group. No significant gender difference in the prevalence of refractive error was observed. There was significant association between variables such as age and family income.

Conclusion: The prevalence of undetected refractive error was high among school children and if it is identified early the intervention can be provided as early as possible.

Key words: visual impairment, snellen's chart, refractive error.

INTRODUCTION:

Vision disorders are the fourth most common Disability of children and the leading cause of handicap in childhood. Refractive error is one of the most common causes of visual impairment around the world and is the second major cause of treatable blindness.¹

The global burden of refractive error is 2.3 billion of which 5-15% are children. 153 million people aged over 5 years are visually impaired as a result of uncorrected refractive error, of that 8 million are blind². In the world one third of the blind are in SEAR countries and 50% of blind children in the world live in this region³. Blindness is one of the significant social problems in India. India alone is having 12 million blind people .It is estimated that 2,70000 blind children live in India⁴ .South India has 42.16% of blind people, in that 17.8% is myopia and 18.8% hyperopic (DANDONA)¹

Keeping this scenario in view, the World health organisation and the international agency for the prevention of blindness launched a global initiative by the name "VISION 2020. THE RIGHT TO SIGHT", was initiated

on 18th of February 1999.The objective of this initiative was the elimination of avoidable blindness by the year 2020.They sought to achieve their target of good vision i.e. 6/6 vision for all, by means of global cooperation and a collaborative approach involving the WHO, IAPB, International non governmental organisation and philanthropic institution. There are several causes for blindness among children is preventable or treatable. The "VISION 2020" programme listed the following conditions to be given a high priority to eliminate the problem of blindness. They are cataract, trachoma, childhood blindness and low vision .The choice of these conditions was based on the degree of their contribution to preventable blindness, as well as affordability of measures to prevent them⁵.

In 1992 WHO published the working definition of low vision," a person with low vision is one who has impairment of visual functioning even after treatment and or standard refractive correction and has a visual acuity of less than 6/18 to light perception or a visual field less than 10 degree from the point of fixation, but

who uses or is potentially able to use, vision for the planning and execution of a task for which vision is essential ⁶. VISION 2020 was given second priority to childhood blindness for the reason that a blind child has many years of blindness ahead of him. Blindness in children place a huge emotional in the financial burden on the family of the individual and on the society at large.

OBJECTIVES:

1. To find out the prevalence of refractive errors among school children of 10-18 years of age group.
2. To find out the association between select Socio demographic factors and refractive error.

MATERIALS AND METHODS:

A descriptive cross sectional study was conducted among the school children in Chidambaram from September 2013 to February 2014 and the prevalence of refractive error was 12% according to previous study done by Batra et al in 5-15 years and the sample size calculated for this study was 1100 arrived by the formula $4PQ/D^2$. The strength of the school was 3533 out of that 1225 was between 10-18 years, so to cover all the students the investigator have taken excess of 125 students then sample size.

The present study was made among school going adolescent children to find out the magnitude of refractive error with snellen’s chart and confirmed by the refractionist. The socio-demographic profile like age,sex, parental education ,occupation, and income were collected with pretested structured interview schedule to find out any associated factor for refractive error. Ramakrishna Vidhyalaya School was selected for conducting the study which comes under the field practice area of Rajah Muthiah Medical College.

Statistical analysis

The data was subjected to statistical analysis using the package of SPSS/PC version 20.0. The statistical test used to determine the attributes include the chi square test.

RESULTS:

Out of 1225 children examined, the prevalence of refractive error was found to be 13.31%. As age increases, the frequency of refractive error also increases (Table no 1). There was no significant association between refractive error and sex (Table no 2). But other socio demographic variable such as income had highly significant association with refractive error (Table no 3).

DISCUSSION:

The prevalence of refractive errors in the school children in the age group of 10-18 years was found to be around 13.31% with the help of snellen’s chart and confirmed cases was 8.33% by the refractionist, in the present study.

It clearly shows that 13-15 years age group of students had maximum refractive error with 15.6%. Kumar et al carried out a study on ‘Prevalence of refractive error in school children in Luknow India. They reported a prevalence rate of 7.4%. They also showed prevalence rate of myopia as 4.12% in the 5-7 year age group which increased to 12.9% in 7-14 year age group of age 66% at 17 years of age ⁷.

The male students were found to have more refractive error in the study and this difference found to be statistically insignificant (p .248) .this findings are in accordance with study done by Kalkivayi et al ⁸.

In the present study prevalence was more common in the higher income groups as compared to low level income group . Syanatul –Emma hashim carried out a study in Malay primary school showed a positive association seen between a high prevalence rate of myopia with larger housing type, increased family incomes and of parents⁹.

CONCLUSIONS:

It is observed that considerable percentage of refractive error among school children are not identified because of various reasons. This clinical problem will definitely reduce the efficiency of the students in their studies. This can be avoided with regular ophthalmology examination among all school children

Table 1: Refractive error according to their age

| AGE | NORMAL VISION | | REF ERROR | | TOTAL | |
|--------|---------------|------|-----------|------|--------|-----|
| | NUMBER | % | NUMBER | % | NUMBER | % |
| 10- 12 | 389 | 90.0 | 43 | 10.0 | 432 | 100 |
| 13- 15 | 410 | 84.4 | 76 | 15.6 | 486 | 100 |
| 16- 18 | 263 | 85.7 | 44 | 14.3 | 307 | 100 |
| TOTAL | 1062 | 86.7 | 163 | 13.3 | 1225 | 100 |

CHISQUARE=6.780...P=.034

From the above table it is inferred that the age influence refractive error. Maximum number of refractive error is present in the age group of 13-15 year (15.6%) compared to other age groups. The difference is statistically significant (p value 0.034)

Table 2: Sex wise distribution of refractive error

| SEX | NORMAL VISION | | REF ERROR | | TOTAL | |
|-------|---------------|------|-----------|------|--------|------|
| | NUMBER | % | NUMBER | % | NUMBER | % |
| BOYS | 688 | 64.8 | 98 | 60.1 | 786 | 64.2 |
| GIRLS | 374 | 35.2 | 65 | 39.9 | 439 | 35.8 |
| TOTAL | 1062 | 100 | 163 | 100 | 1225 | 100 |

CHISQUARE=1.335.. P=.248

Nearly 60% of refractive error is observed among the boys and 39.9% among the girls .The difference is not statistically significant.

Table 3: Association between refractive error and family income

| INCOME(MONTHLY) | NORMAL VISION | | REF ERROR | | TOTAL | |
|-----------------|---------------|------|-----------|------|-------|-----|
| | NO | % | NO | % | NO | % |
| <5000 | 497 | 90.7 | 51 | 9.3 | 548 | 100 |
| 5000- 10000 | 439 | 80 | 80 | 15.4 | 519 | 100 |
| 10000-20000 | 95 | 79.8 | 24 | 20.2 | 119 | 100 |
| >20000 | 31 | 79.5 | 8 | 20.5 | 39 | 100 |
| TOTAL | 1062 | 86.7 | 163 | 13.3 | 1225 | 100 |

CHISQUARE=16.212... P=.001

FROM TABLE NO 7, IT IS OBSERVED THAT REFRACTIVE ERROR IS INCREASING AS THE INCOME LEVEL INCREASE FROM THE LOWER INCOME GROUP TO HIGHER INCOME GROUP.IN LESS THAN RUPEES 5000 INCOME GROUP IT IS ONLY 9.3% AS COMPARED TO 2.5% IN >20,000 INCOME GROUP.THE DIFFERENCE IS HIGHLY SIGNIFICANT

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