

# A Study to Assess the Knowledge on Refractive Errors among School Children

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## ABSTRACT

Refractive error is defined as a state of refraction, when parallel rays of light coming from infinity are focused either in front or behind the retina after passing through the dioptric power of the eye when the accommodation is at rest. The objectives of the study is to assess the level of knowledge on refractive errors among school children and to associate the level of knowledge on refractive errors among school children. with their selected demographic variables. Quantitative research approach was adopted for this study to accomplish the objectives of the study. The research design used for this study was descriptive research design. The sample size of the study comprises of 100 school children at Kondancheri Village, Thiruvallur District. The samples were selected by Purposive sampling technique method. The Study shows that among school children, 63(63%) had inadequate knowledge, 34(34%) had moderately adequate knowledge and 3(3%) had adequate knowledge on refractive errors among school children. This study concluded that majority of the school children had inadequate knowledge regarding refractive errors and this suggests that the school children should be educated on the knowledge of refractive errors and measures to be taken to correct it.

**KEYWORDS:** Knowledge, Refractive errors, School children

## INTRODUCTION

Globally, it is estimated that there are 36 million people who are blind, 216.6 million have moderate to severe visual impairment (VI) and 188.5 million have mild VI. The leading cause of VI is uncorrected refractive error (RE). Furthermore, 90% of people with VI live in developing countries. Almost 19 million children aged < 15 years have VI globally. In developing countries, 7–31% of childhood blindness is avoidable, 10–58% is treatable, and 3–28% is preventable. RE is an eye condition in which light from a distant object is not focused on the retina; it might be focused in front of or behind the retina. There are 3 types of RE: myopia, hypermetropia and astigmatism. The exact cause of refractive errors remains unknown with common risk factors being hereditary, nutritional and environmental (Zahra Abdi Ahmed, Saif Hassan Alrasheed and Waleed Alghamdi, 2020).

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**How to cite this paper:** Mary Minolin. T | Nabesha. B | Divya. S "A Study to Assess the Knowledge on Refractive Errors among School Children" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-6 | Issue-7, December 2022, pp.1050-1055, URL: www.ijtsrd.com/papers/ijtsrd52562.pdf



IJTSRD52562

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passing through the dioptric power of the eye when the accommodation is at rest (Khurana AK, 2021). It is estimated that there are 1.4 million blind children in the world, two thirds of whom live in the developing countries, and of all the blind children it is estimated that 2,70,000 live in India. Blindness is one of the significant social problem in India. About 80% of it is avoidable blindness, but a large number of those affected remain blind due to lack of access to eye care. Uncorrected refractive errors are responsible for about 19.7% of blindness. About 13% of Indian population is in the age group of 7-15yrs. And about 20% of children develop refractive error by the age of 16 years.

Most of the children with uncorrected refractive error are asymptomatic and hence screening helps in early detection of refractive errors and timely interventions. In developing countries very few data is available on the prevalence of refractive errors in children. This data can be help full in primary eye health care planning. Uncorrected refractive error may have

impact to a larger extent on the learning capability and potential of the student. Timely detection and intervention can improve child's potential tremendously during the formative years.

The greatest burden of refractive error is myopia, with high prevalence rates in school-age children and adolescents, even greater in those with higher attained education (Parssinen O., 2012). According to Holden et al., half the world population (49.8%) will be myopic by the year 2050 and about 9.8% of people will have high myopia (Holden BA, et al., 2016). Childhood myopia, especially its early manifestation, increases the risk of complications, such as amblyopia, cataract, glaucoma, retinal detachment and myopic macular degeneration (Fricke TR, et al., 2020)

## RESULT AND DISCUSSION

### SECTION A: DESCRIPTION OF THE DEMOGRAPHIC VARIABLES OF SCHOOL CHILDREN.

**Table 1: Frequency and percentage distribution of demographic variables of school children**

Demographic Variables	F	%
<b>Age in year</b>		
11 years	40	40.0
12 years	35	35.0
13 years	14	14.0
14 years	11	11.0
<b>Gender</b>		
Male	60	60.0
Female	40	40.0
<b>Standard of class</b>		
6 <sup>th</sup> class	40	40.0
7 <sup>th</sup> class	35	35.0
8 <sup>th</sup> class	16	16.0
9 <sup>th</sup> class	9	9.0
<b>Religion</b>		
Hindu	74	74.0
Muslim	20	20.0
Christian	6	6.0
<b>Family income per month</b>		
3000	-	-
3001 – 5000	2	2.0
5001 – 7000	18	18.0
Above 7000	80	80.0
<b>Education status of the father</b>		
Illiterate	29	29.0
Primary education	40	40.0
Secondary education	16	16.0
Graduate	15	15.0
<b>Occupation status of the father</b>		
Government employee	13	13.0
Private employee	87	87.0
Unemployee	-	-

## MATERIALS AND METHODS

The quantitative research approach and descriptive research design was used to assess the knowledge on refractive errors among school children.. The sample size was 100 of school children age between (11-14) years in kondancheri government school who met the selected criteria. Data was collected from the sample using a Purposive sampling technique. The selected criteria were school children age between 11-14 years were included and Individual who did not wish to participate this study were excluded. Data was collected using self-structured questionnaires for demographic variable and Confidentiality was maintained. Collected data was analyzed .The project has been approved by the ethics committee of the institution.

Education status of the mother		
Illiterate	26	26.0
Primary education	42	42.0
Secondary education	20	20.0
Graduate	12	12.0
Occupation status of the mother		
Government employee	7	7.0
Private employee	65	65.0
Housewife	28	28.0
Type of family		
Nuclear family	81	81.0
Joint family	19	19.0

The table 1 shows that most of the school children, 40(40%) were aged 11 years, 60(60%) were male and studying 6<sup>th</sup> class, 74(74%) were Hindus, 80(80%) had family income per month of Above 7000, 40(40%) of fathers had primary education, 87(87%) were private employees, 42(42%) of mothers had primary education, 65(65%) were private employees and 81(81%) belonged to nuclear family.

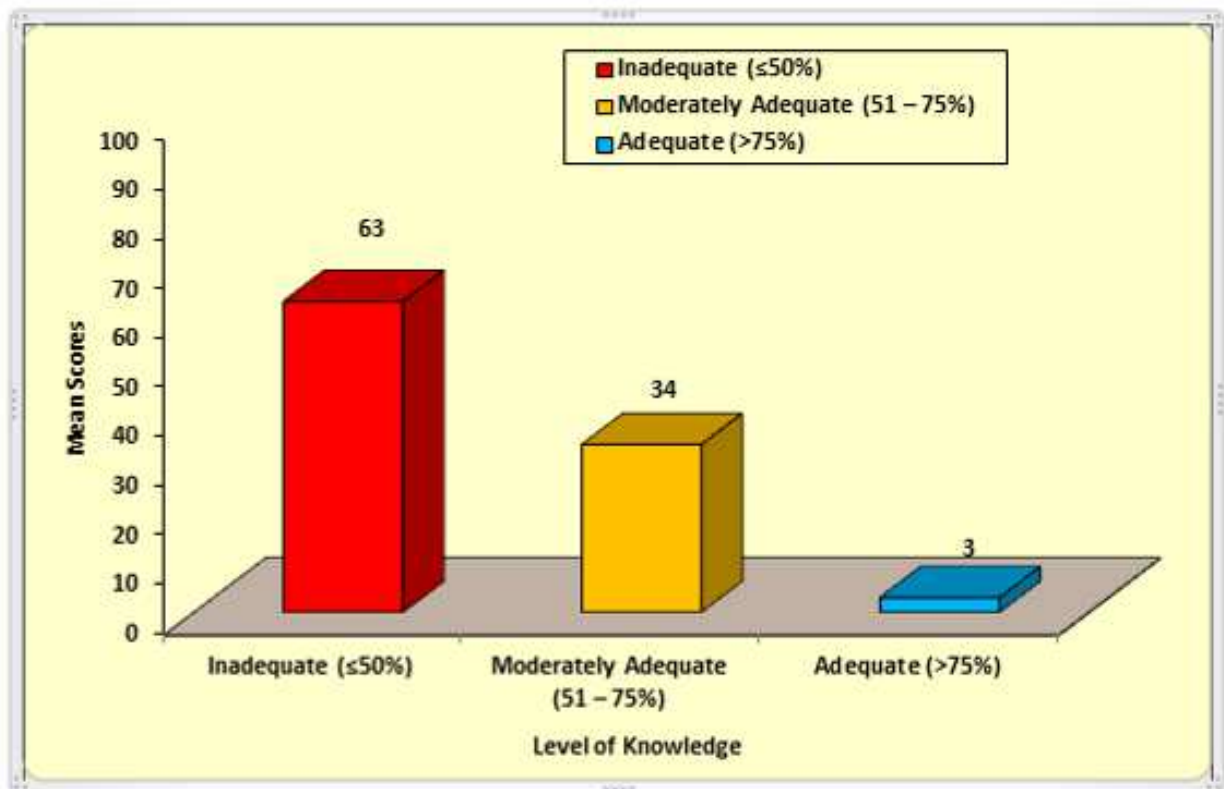
**SECTION B: ASSESSMENT OF LEVEL OF KNOWLEDGE ON REFRACTIVE ERRORS AMONG SCHOOL CHILDREN.**

**Table 2: Frequency and percentage distribution of level of knowledge on refractive errors among school children**

N = 100

Level of Knowledge	Frequency	Percentage
Inadequate ( $\leq 50\%$ )	63	63.0
Moderately Adequate (51 – 75%)	34	34.0
Adequate ( $>75\%$ )	3	3.0

The above table 2 shows that among school children, 63(63%) had inadequate knowledge, 34(34%) had moderately adequate knowledge and 3(3%) had adequate knowledge on refractive errors among school children.



**Figure 1: Percentage distribution of level of knowledge on refractive errors among school children**

**Table 3: Assessment of mean and standard deviation of knowledge scores refractive errors among school children**

**N = 100**

Knowledge	Score
Minimum Score	3.00
Maximum Score	9.00
Median	5.00
Mean	5.02
Standard Deviation	1.36

The table 3 depicts that the mean score of knowledge on refractive errors among school children was  $5.02 \pm 1.36$ . The median was 5.0 with minimum score of 3.0 and maximum score of 9.0.

#### SECTION D: ASSOCIATION OF LEVEL OF KNOWLEDGE WITH SELECTED DEMOGRAPHIC VARIABLES.

**Table 4: Association of knowledge on refractive errors among school children with their selected demographic variables**

**N = 100**

Demographic Variables	Frequency	Chi-Square Test & p-value
<b>Age in year</b>		$\chi^2 = 3.275$ d.f=6 p=0.774 N.S
11 years	40	
12 years	35	
13 years	14	
14 years	11	
<b>Gender</b>		$\chi^2 = 0.142$ d.f=2 p=0.931 N.S
Male	60	
Female	40	
<b>Standard of class</b>		$\chi^2 = 3.543$ d.f=6 p=0.738 N.S
6 <sup>th</sup> class	40	
7 <sup>th</sup> class	35	
8 <sup>th</sup> class	16	
9 <sup>th</sup> class	9	
<b>Religion</b>		$\chi^2 = 2.228$ d.f=6 p=0.694 N.S
Hindu	74	
Muslim	20	
Christian	6	
<b>Family income per month</b>		$\chi^2 = 1.465$ d.f=4 p=0.833 N.S
3000	-	
3001 – 5000	2	
5001 – 7000	18	
Above 7000	80	
<b>Education status of the father</b>		$\chi^2 = 6.209$ d.f=6 p=0.400 N.S
Illiterate	29	
Primary education	40	
Secondary education	16	
Graduate	15	
<b>Occupation status of the father</b>		$\chi^2 = 1.713$ d.f=2 p=0.425 N.S
Government employee	13	
Private employee	87	
Unemployee	-	

<b>Education status of the mother</b>		$\chi^2 = 4.718$ d.f=6 p=0.580 N.S
Illiterate	26	
Primary education	42	
Secondary education	20	
Graduate	12	
<b>Occupation status of the mother</b>		$\chi^2 = 4.946$ d.f=4 p=0.293 N.S
Government employee	7	
Private employee	65	
Housewife	28	
<b>Type of family</b>		$\chi^2 = 1.254$ d.f=2 p=0.534 N.S
Nuclear family	81	
Joint family	19	
Gravid 3 or more	3	

N.S – Not Significant

The table 4 shows that the demographic variables had not shown statistically significant association with level of knowledge on refractive errors among school children.

## CONCLUSION

The analysis revealed among school children, 63(63%) had inadequate knowledge, 34(34%) had moderately adequate knowledge and 3(3%) had adequate knowledge on refractive errors among school children. The mean score of knowledge on refractive errors among school children was  $5.02 \pm 1.36$ . The median was 5.0 with minimum score of 3.0 and maximum score of 9.0. This study concluded that majority of the school children had inadequate knowledge regarding refractive errors and this suggests that the school children should be educated on the knowledge of refractive errors and measures to be taken to correct it.

## ACKNOWLEDGEMENT

We would like to extend our gratitude to the authorities of Saveetha College of Nursing and Government school in Kondancheri village, Thiruvallur district for this study.

## AUTHORS CONTRIBUTION

All the authors actively participate in the work of study. All the authors read and approved the final manuscript.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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