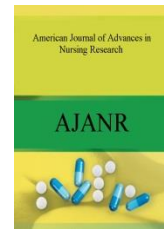




## AMERICAN JOURNAL OF ADVANCES IN NURSING RESEARCH

Journal homepage: [www.mcmed.us/journal/ajanr](http://www.mcmed.us/journal/ajanr)



### PREVALENCE OF REFRACTIVE ERRORS AMONG PRIMARY SCHOOL CHILDREN IN SELECTED SCHOOLS, BANGALORE

Tejeshwari B.V\*

Ph.D Scholar, Guide, HOD & Professor, Department of Community Health Nursing, Rajarajeswari College of Nursing, Bangalore, India.

#### Article Info

Received 25/04/2022

Revised 15/05/2022

Accepted 14/06/2022

**Key word:** Refractive errors, Primary school children, Screening, Awareness, Prevalence.

#### ABSTRACT

**Objectives:** - 1. To assess the prevalence of refractive errors in primary school children. 2. To compare the prevalence rate obtained with known estimates in similar population. 3. To find association between baseline variables and refractive errors. **Design:** - Descriptive survey design was selected for the study consisting of 200 children. Baseline information was collected using an interview schedule. Each child was examined for visual acuity by Snellen's chart and using a pinhole test. Those who were diagnosed to have refractive errors were referred to the ophthalmologist at nearest Health Centers. The collected data were analyzed using descriptive and inferential statistics. **Setting:** - The study was conducted in selected schools, Bangalore. **Result:** - Out of the 200 children examined, 42 children (8.08%) were diagnosed to have refractive errors. There was a strong association between refractive errors and habit of watching T.V ( $X^2 = 3.96$ ;  $p < 0.05$  level of significance), but there was no association seen with refractive errors and other baseline variables. The study findings revealed no significant association between the prevalence rates obtained in the present study and known estimates in similar population. **Conclusion:** - The prevalence of refractive errors is relatively high among primary school children. The findings revealed that, 8.08% (42) of the children had refractive errors. Hence, it is important to identify the cases of refractive errors early in the life and to provide necessary correction. This needs concerned efforts to enhance community awareness and initiate various school screening programmes to prevent blindness due to refractive errors.

#### INTRODUCTION

The school going years are formative for children in determining their physical, intellectual and behavioural development. Vision is an important requirement for learning and communication. Further,

optimal vision is essential for learning, health and educational needs. Poor vision in childhood affects performance in school and has a negative influence on the development and maturity. Further most school children do not realize that they are suffering from the ocular disability as they adjust to poor eyesight in different ways. They compensate for their poor vision by sitting closer to the blackboard, or by holding their books close to their eyes. They may also squeeze their eyes. They may also tend not to undertake any work that needs visual

Corresponding Author

Tejeshwari.B.V

Email:-tejeshwinirajesh@gmail.com

Research Article



concentration thus affecting their performance. [1]

Blindness and low vision are major causes of morbidity and have profound effects on the quality of life for many people. They bar the mobility and economic well-being of individuals, as well as their families. Childhood blindness is one of the challenges faced by the world generally and developing countries in particular. An estimated 1 in 250 children are visually impaired as a result of eye disease. Approximately 1.5 million children in the world are blind; 75% of them live in developing countries. [2]

Refractive errors are the second major cause of blindness in India and the most common reason for patients to consult ophthalmologists. Childhood visual impairment due to refractive errors is a significant problem in school children and has a considerable impact on public health. The World Health Organization has grouped uncorrected refractive errors with cataract, glaucoma, trachoma and vitamin A deficiency among the leading causes of blindness and vision impairment in the world. [3]

WHO revealed the magnitude of the problem as that 160 million people are either blind or visually impaired due to uncorrected refractive errors. The most common cause of visual impairment and second leading cause of treatable blindness, uncorrected refractive error have severe social and economic effects on individuals and communities, restricting educational and employment opportunities of otherwise healthy people. The duration of the effect is also significant – refractive error can account for twice as many blind-person-years compared to cataract, due to the earlier age of onset. [4]

Vision screening for school children can identify children who have a vision problem that might affect physiological or perceptual processes of vision. Vision screening for children provides early diagnosis, therapy, prevention, and health promotion for many eye diseases. School screening programmes have been established part of the school health service since 1907 and remain universally recommended. These programmes are primarily aimed at detecting refractive errors. To ensure early detection of visual defects, students should be examined early in primary school. Eye health service component of school health services has prime importance and is responsible for early detection of refractive errors. [5]

Refractive error is an optic defect, intrinsic to the eye which prevents light from being brought to a single point focus on the retina, thus reducing normal vision. Diagnosis and treatment of refractive errors is relatively simple and is one of easiest ways to reduce impaired vision. Yet, in India, Refractive error is the second major cause for patients to consult ophthalmologists. [6]

Refractive error is one of the most common

causes of visual impairment around the world and the second leading cause of treatable blindness. Childhood visual impairment due to refractive errors is one of the common problems in school children. Five percent of worldwide blindness involves children younger than 15 years of age; in developing countries, 50% of the population is in this age group. According to World Health Organization statistics, worldwide, there are 1.6 million children who are blind. Of all the blind children, it is estimated that 4 lakhs live in India. Out of that many children conditions (infectious, dystrophic, metabolic, neurologic, perceptual etc) that have a negative effect (harmful, unpleasant, interfering with a normal life), refractive eye disorders rank number. [7]

The uncorrected visual problem progresses over the years and may take an accelerated course if not corrected. So, the importance of early detection and treatment of eye diseases and visual impairments as a part of school health not only should be a key component of an effective blindness prevention programme, but also an easy approach for a large scale screening. [8]

So, the various studies conducted reveals that, the refractive errors are the major causes of childhood blindness. Henceforth, the prevalence of refractive errors is to be assessed especially in rural areas, where the school health services are reaching minimum. There is an acute need for preventive, Promotive and curative health services. Identifying and treating the children will eventually reduce the visual morbidity in children. As community health nurses are an integral part of health care, it is their prime responsibility to carry out various school health programmes, especially eye screening programmes, in order to prevent further disabilities. The researcher's personal experience while working in the community and discussion with the experts has motivated to conduct this study. [9]

## OBJECTIVES

1. To assess the prevalence of refractive errors in primary school children.
2. To compare the prevalence rate obtained with known estimates in similar population.
3. To find association between baseline variables and refractive errors.

## MATERIAL AND METHODS

Descriptive survey approach was used for the study. 200 students were recruited by non probability purposive sampling method. Necessary administrative permission was obtained from concerned authority. Oral consent was obtained from all subjects. Tools used were Demographic proforma, structured interview schedule was used to elicit the baseline data and Snellen's eye chart, was used to elicit the refractive errors from the



students. Ethical clearance was obtained from ethical committee. Content validity of the tool was established by split of method. The obtained score was 0.85 & it was found to be reliable. Pre-testing of the tools was done. A pilot study was conducted to see the feasibility. The obtained data were analyzed based on the objectives and hypothesis by using descriptive and inferential statistics.

Data presented in the table 1(a) shows that 20% (40) children belonged to the age group of 9-10 years, 20% (40) children were in the age group of 8-9 years, 18% (36) children were in the age group of 7-8 years, 13% (26) children were in the age group of 6-7 years, 12.5% (25) children were in the age group of 5-6 years and 16.5% (33) children were above 10 years of age. The findings also showed that the majority of the children i.e., 36.5% (73) children belonged to the 5<sup>th</sup> standard, 20% (40) were in 4<sup>th</sup> standard, 18% (36) children were in 3<sup>rd</sup> standard, 18% (26) children were in 2<sup>nd</sup> standard and 12.5% (25) children were in 1<sup>st</sup> standard. Majority of the children were females i.e., 60% (120) and 40% (80) were males.

## RESULTS

Data presented in the table 1(a) shows that 20% (40) children belonged to the age group of 9-10 years, 20% (40) children were in the age group of 8-9 years, 18% (36) children were in the age group of 7-8 years, 13% (26) children were in the age group of 6-7 years, 12.5% (25) children were in the age group of 5-6 years and 16.5% (33) children were above 10 years of age. The findings also showed that the majority of the children i.e., 36.5% (73) children belonged to the 5<sup>th</sup> standard, 20% (40) were

in 4<sup>th</sup> standard, 18% (36) children were in 3<sup>rd</sup> standard, 18% (26) children were in 2<sup>nd</sup> standard and 12.5% (25) children were in 1<sup>st</sup> standard. Majority of the children were females i.e., 60% (120) and 40% (80) were males.

Table 1(b) shows that, 40% (80) of the children were Hindus and 60% (120) were Muslims. The source of light at home for 25% (50) of the children was bulb; the source of light at home for tube light 25% (50) of the children and 50% (100) of the children were using both bulb and tube light as a source of light at home.

Table 1(c) shows that, majority of the children i.e., 75% (150) had the habit of watching T.V. Among the 200 children, 70% (140) children had the habit of playing mobile games.

Table 2 reveals that, the distribution of refractive errors were 11.91% (5) in the age group of 5-6 yrs, 9-10 yrs and greater than 10 yrs. The distribution of refractive errors was 19.04% (8) in the age group of 7-8 yrs. The highest distribution of refractive errors was seen in the age group of 8-9 yrs i.e., 23.81% (10).

Table 3 reveals that, there is an overall equal distribution of refractive errors in males & females i.e., 50% (21) cases were identified as refractive errors in males and 50% (21) cases were identified as refractive errors in females.

Data presented in table 4 depicts that, the highest distribution of refractive errors were seen in children studying in 3<sup>rd</sup> standard i.e., 30.95% (13) and the least number of cases were identified in children studying in 1<sup>st</sup> standard i.e., 11.90% (5).

**Table 1(a):- Frequency & percentage distribution of children according to baseline variables.**

**n=200**

Sl.No	Baseline variables	Frequency	Percentage
1.	<b>Age</b>		
	5-6 yrs	25	12.5
	6-7yrs	26	13
	7-8yrs	36	18
	8-9yrs	40	20
	9-10yrs	40	20
	10+	33	16.5
2.	<b>Standard of studying</b>		
	1	25	12.5
	2	26	13
	3	36	18
	4	40	20
	5	73	36.5
3.	<b>Gender</b>		
	Male	80	40
	Female	120	60



**Table 1(b):- Frequency & percentage distribution of children according to baseline variables** **n=200**

Sl.No	Baseline variables	Frequency	Percentage
4.	<b>Religion</b>		
	Hindu	80	40
	Muslim	120	60
5.	<b>Source of light at home</b>		
	Bulb	50	25
	Tube light	50	25
	Both Bulb & Tube light	100	50

**Table 1(c):- Frequency & percentage distribution of children according to baseline variables** **n = 200**

Sl.No	Baseline variable	Frequency	Percentage
6.	<b>Habit of watching T.V</b>	150	75
	<b>No habit of watching T.V</b>	50	25
7.	<b>Duration of watching T.V per day</b>		
	1hr	30	15
	2hr	50	25
	3hr	50	25
	> than 3hrs	70	35
8.	<b>Habit of playing mobile games</b>	140	70
	<b>No habit of playing mobile games</b>	60	30

**Table 2:- Frequency & Percentage distribution of refractive errors according to age** **n= 42**

Sl.No	Age	Frequency	Percentage
1.	5-6yrs	5	11.91
2.	6-7yrs	9	21.42
3.	7-8yrs	8	19.04
4.	8-9yrs	10	23.81
5.	9-10yrs	5	11.91
6.	>10yrs	5	11.91
	Total	42	100

**Table 3:- Frequency & Percentage Distribution of Refractive errors according to Gender** **n= 42**

Sl no:	Gender	Frequency	Percentage
1.	Male	21	50
2.	Female	21	50
<b>Total</b>		42	100

**Table 4:- Frequency and percentage distribution of refractive errors according to standard of studying** **n= 42**

Sl no:	Standard	Frequency	Percentage
1.	1	5	11.90
2.	2	9	21.43
3.	3	13	30.95
4.	4	9	21.43
5.	5	6	14.29
<b>Total</b>		42	100

**Implications of the study**

Blindness due to refractive errors is preventable. The present study finding indicates that, there is an urgent need in creating awareness in the schools regarding refractive errors and its management. The findings of this study are an eye opener, indicating the need for Blindness

control programmes.

**Nursing practice**

- The nurse should be equipped with updated knowledge on identification of Refractive errors, so that, they would be able to impart appropriate



knowledge in the schools and in the early identification of Refractive errors and its treatment.

- The nurse must be competent to identify the cases of Refractive errors and to provide appropriate referral cases

#### **Nursing education**

- Nursing educator should emphasize on a curriculum which include school health programme, diagnosis and treatment which helps in identifying cases of refractive errors.
- Nurse educator should encourage school teachers to identify cases of Refractive errors, by carrying out regular school health checkups.

#### **Nursing administration**

Nurse administrators influence the quality of nursing care through the formulation of various policies and protocols.

- Nurse administrator can plan with Government and Non-Governmental agencies for massive surveillance of Refractive errors among school children and continue follow up for cases identified.
- Can arrange In – service education programme for nurses and for the grass root level workers eg: ANM, on Refractive errors and prevention of further blindness.
- General awareness programmes can be carried out in community regarding improvement of health status of the children.

#### **Nursing Research**

- Community Health Nurse plays a vital role in preventing diseases in the schools. Therefore, various studies should be conducted from time to time to find out the prevalence of Refractive errors.
- Research can be conducted in larger scale to find out the prevalence of Refractive errors as well as education and guidance should be an ongoing process in case of knowledge aspect.

#### **ACKNOWLEDGEMENT**

We extend our thanks to management of schools, Bangalore for giving us permission to conduct study. The authors are also grateful to authors, editors, and publishers of all those articles, journals and books from where the literature for this article has been reviewed and discussed. My sincere thanks to all people who helped us directly or indirectly to complete this study.

#### **CONFLICT ON INTEREST:**

None

#### **SOURCE OF SUPPORT:**

Self Funded

#### **ETHICAL CLEARANCE:**

Obtained from Institutional ethical committee

#### **REFERENCES**

1. Srijana Thapa Godar. Magnitude of refractive errors in children in tertiary care hospital of western Nepal June 2020, Journal of Chitwan Medical College 10(2):54-58.
2. Winstond Prakash, Srinivas Marmamula. Visual impairment and refractive errors in school children in Andhra Pradesh, India, June 2022, Indian Journal of Ophthalmology 70(6):2131-35.
3. Pavithra MB, Maheshwaran R. A study on the prevalence of refractive errors among school children of 7-15 years age group in the field practice areas of a Medical College in Bangalore January 2013 International Journal of Medical Science and Public Health 2(3):641-45.
4. Clinical Profile of Refractive Errors in School-going Children of Bareilly, Uttar Pradesh, India December 2017 International Journal of Advanced and Integrated Medical Sciences 2(4):169-172.
5. Dr Dharmvir Ranjan Bharati .A cross-sectional study on pattern of ocular morbidity and the prevalence of refractive errors among school children of 11 to 16 years in the rural area of Maner, Patna Bihar, India February 2019.
6. Tarannum Shakeel .Pattern of Refractive Errors in Primary School Children in Dehradun City of Uttarakhand State December 2016 Delhi Journal Of Ophthalmology 27(2):106-110.
7. Naren B. Shetty. Changing trend in prevalence of refractive errors: a hospital-based study, February 2020 International Journal of Community Medicine and Public Health 7(3):1127-30.
8. Naveen Kumar M, Sumeet Chopra. Refractive Errors In School Children In Urban And Rural Areas Of Ludhiana, Punjab. August 2017 Journal of Evidence Based Medicine and Healthcare 4(63):3779-3781.
9. Vidusha Karavadi, Damayanthi M. N. Prevalence of refractive errors among school children in the rural field practice area of a tertiary care hospital, Bengaluru, March 2018, International Journal of Community Medicine and Public Health 5(4):1471-75.
10. Ziaul Haq Yasir, Rajiv Khandekar. Prevalence and determinants of refractive status and related ocular morbidity among Indian school children in Riyadh, Saudi Arabia, January 2021, Saudi Journal of Ophthalmology 35(2):97-100.



11. Krupa Philip, Prakash Paudel. Refractive Error and School Eye Health, August 2021, In book: South-East Asia Eye Health 145-168.
12. Sanitha Sathyan, Melanie Unnikrishnan. Demographic profile of newly detected refractive errors among school going children in Thrissur district of Kerala, January 2018, Kerala Journal of Ophthalmology 30(1):32-35.
13. Geetha Periasamy, Harivanzan Vijayakumar. Clinical Pattern Of Refractive Errors Among School Children Between 7 To 15 Years Of Age Who Presented To Riogoh, Chennai, May 2018, Journal Of Evidence Based Medicine And Healthcare 5(23):1731-1735.
14. Atheer Ayouna, Shaymaa Abdul, Lateef Alfadhul. Prevalence and Possible Attributes of Decreased Visual Acuity among Primary School children in Kufa City, Al-Najaf Governorate, November 2021, Medical Journal of Babylon 15(1):57-62.
15. Sana Beg, Sohan Lohiya. Prevalence of Refractive Errors and Color Blindness in School Going Children of Wardha Tehsil: A Prospective Study, March 2020, Journal of Clinical and Diagnostic Research 14(3).

