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Assessment Of Refractive Errors In School Children Among Rural Areas Of District Gonda – An Observational Study

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ABSTRARCT - The purpose of the study was to determine the prevalence of refractive error among senior secondary school students in rural communities of district Gonda. A community based cross-sectional study was done by randomly selected senior secondary school children from 7^{th} – 12^{th} standard of rural areas of district Gonda, UP. Informed and written consent was obtained from the senior secondary school where the data is collected. Between September 2022 to December 2022, 1650 students from rural areas, participated in the community based cross sectional survey. The principal of the school granted permission for the screening of the students. Participant with dry eye, accommodative problems, squint, iris coloboma, corneal opacity, watering eye, amblyopia were excluded from the study. Myopia was identified in 333 (68.6%) of the students, whereas hypermetropia 17 (3.50%) and astigmatism was 135 (27.83%) present. Myopia was determined to be the most prevalent refractive error, followed by astigmatism and hypermetropia. It can be reduced with prevalent screening of school age children and the implemented by glasses (spectacles).

Keywords – Ametropia, Refractive Errors, Myopia, Hypermetropia, Astigmatism, Observational Study.

INTRODUCTION

Ametropia is a type of refractive error condition. It is defined as when parallel rays of light coming from infinity are focused either in front or behind the retina, when accommodation is at rest. The most common refractive error are myopia, hypermetropia and astigmatism, eye problems can cause impaired vision, double vision, headache and fatigue. Eyeglass [spectacles] are the most convenient and safest way to improve vision. In myopia, light are focused in front of the retina while in hypermetropia, parallel rays of light are focused behind the retina. In astigmatism, occurs when an eye can not equally focus light onto the retina.

Refractive Error (RE) is a major public health issue that affects a large ratio of children. Uncorrected refractive error (URE) is an avoidable cause of visual impairment. It is the most common cause of vision impairment and the second leading cause of blindness in the globally. Recent data estimate that about 90% of people with URE are living in rural and low-income countries. Early investigation and treatment can reduce the further deterioration (defect) and the risk of impaired vision.

Studies have found that both hereditary and environmental factors play essential roles in the progression of refractive error. Because early visual defects are usually asymptomatic, uncorrected RE can negatively affect the learning capability of schoolchildren as well as their social and mental development. Uncorrected refractive defects can cause short and long term effect in adults and children, including loss of educational and employment possibilities. Children are generally unaware of the problem and do not complain. This requires early detection and treatment of ocular problems.

Thus, the current study, assessment of prevalence of refractive errors among senior secondary school children in rural area of district Gonda. Most refractive errors are corrected/ treated with laser or surgical correction. This study analysed the prevalence of refractive error in school children in rural areas of district Gonda.

In 1994, a school eye screening program launch as a part of blindness control program. Vision screening program is recommended for pre-school children for early detection and treatment of uncorrected refractive error to ensure normal social and mental development and prevent amblyopia. In it, they will help detect eye conditions such as cataract, glaucoma, opacities and vitamin A deficiency which leads to loss of sight (vision). Ametropia (right eye and left eye) was expressed in percentage. Data was symbolized using suitable tables and diagrams. In children, refractive errors may effect the child's level of reading and have a negative impact on overall learning. It can leads to vision degradation is called refractive amblyopia.

Therefore, the main aim of this study is to estimate the prevalence of refractive errors among school-aged children of 10 to 17 years of age in Gonda, UP.

MATERIAL & METHODS

The purpose of this study was to determine the assessment of prevalence of refractive error among senior secondary school students (7^{th} -12^{th} standards) in rural communities of district Gonda. A community based cross sectional study included 1650 students from rural area from September 2022 to December 2022. It was done by randomly selected senior secondary school students from 7^{th} -12^{th} standards. The study enrolled 1650 students from approved schools.

The aim of this study were explained to principal of each school. All eye examination tests were given in front of a teacher during school hours from Monday to Saturday. Male and female students from 7^{th} – 12^{th} standards present the day of screening.

The data was recorded on the Excel Sheet. Snellen's vision chart at 6 meters was used to test vision. The refractive error was tested in both eyes by subjective method. When required, a retinoscope cycloplegic refraction was performed by objective method. Accurate binocular visual acuity data was collected and interpreted. This study investigates the prevalence of refractive error in school going students (7^{th} – 12^{th} standards) in rural areas of district Gonda.

Research Design - This study was a cross-sectional study among school-children in rural East India. The study included all the students (7^{th} - 12^{th} standard), who agreed to participate in this study. The study was conducted at five inter colleges of Gonda, U.P.

Time Frame - It was conducted between September to December month of 2022.

Sample Size - It was included 1650 participants including 7th to 12th standard students.

Sampling Procedure - This study was included clustered-sampling methods to collect the data by following the protocol of this study.

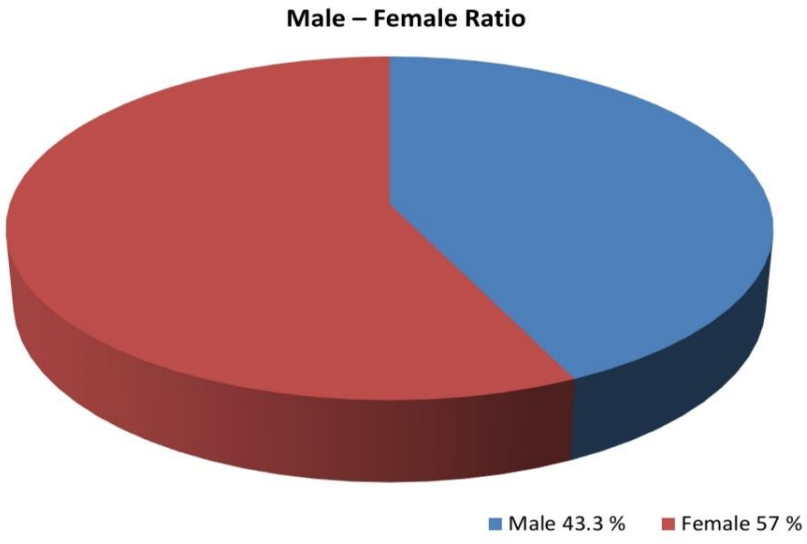
All data score recorded in a excel sheet. Snellen's vision chart at 6 meters was used to test vision. The refractive error was tested in both eyes by subjective method. When required, a retinoscope cycloplegic refraction was performed by objective method. Accurate binocular visual acuity data was collected and interpreted. This study investigates the prevalence of refractive error in school going students (7^{th} – 12^{th} standards) in rural areas of district Gonda.

Inclusion criteria- It was included 7th to 12th standard students, who agreed to participate in this study.

Exclusion criteria- It was excluded primary school students (1st to 6th standards) and who was not agreed to participate in this study.

RESULT

The study analyzed of refractive error in school going students in rural areas of district Gonda. Participants who screened in this survey were between 13-17 +/- 2 years of age from the rural areas. A total of 1650 participants were screened. Among the participants, 710 were male and 940 were female.



Refractive error was found to be the most common in those aged 15 - 17 years and the least common in 13-15 years of age. The study expressed that 705 (42.72%) participants have overall refractive error. In our study, uncorrected refractive error is 485 (68.79%) in male participants is 311 (64.12%) and in female is 394 (81.23%). This survey showed that myopia 333 (68.6%) and followed by astigmatism 135 (27.83%) were the most common refractive error while hypermetropia is 17 (3.50%).

S. NO.	PARAMETERS	OVERALL PREVALENCE
1.	Overall refractive error (RE)	705 (42.72%)
2.	Uncorrected refractive error (URE)	485 (68.79%)
3.	Refractive error (Male)	311 (44.11%)
4.	Refractive error (Female)	394 (55.88%)
-	**Refractive error by type**	-
5.	Myopia	333 (68.6%)
6.	Hypermetropia	17 (3.50%)
7.	Astigmatism	135 (27.83%)

Ametropia

In our study, the overall prevalence of refractive error 705 (42.72%) in the rural areas was found to be 485 (68.79%). Some studies suggested that the assessment of refractive error increased with the increasing age. It is the more seen in the age group of 15-17 +/- 2 years among school children of rural areas. Ametropia due to display devices use, working in dim illumination etc among the rural areas.

Myopia

Myopia was the most common type of refractive error. It is a higher risk factor among the school going students age group of rural communities due to variation in literacy and lifestyles (Dondana et. al. 2002). Srinivas et. al. 2002, myopia was associated with female gender than male due to limited outdoor activity time than males. Myopia was seen more frequently in less than 16 years of age. Myopia was the most common type of refractive error, conducted by G.V.S. Murthy et. al. 2002, Y. Gupta 2011, Mingguang He 2007, Shankar 2011. The World Health Organization (WHO) estimates that half of the population of the world may be myopic by 2050. In recent times, less time spent in outdoor activities has been recognized as a major risk factor for myopia development. The duration and intensity of near-work activities are also associated with myopia.

Some evidence reported that myopia prevalence rate different in India and other countries because of lifestyles, ethnicity and locality among the age groups. This might be due to the usage of displays, digital gadgets, working without prescribed glasses and work in dim/very bright digital lights for the extended period to complete the projects and other educational activities among the rural areas.

Hypermetropia

Hypermetropia is the commonest type of refractive error according to various studies Yekta et. al. 1010, Abdullah 2015, Rezwan 2012, Sheeladevi 2019.

While in this study, the prevalence was seen in less than 17 years with 17 (3.50%) in rural areas.

Astigmatism

The prevalence rate of astigmatism in our study is 135 (27.83%) in 15-17 +/- 2 years of age. In our study, it is also reported that the refractive error is mostly seen in the right eye of the patient as compared with the left eye.

DISCUSSION

Myopia 333 (68.6%), hypermetropia 17 (3.50%) and astigmatism 135 (27.83%) were more prevalent in 7^{th} - 12^{th} standards school students in rural communities. This population based cross sectional study focused on the assessment and prevalence of refractive error in school going children in rural population. The problem worsens if it is not discovered and addressed early in the young age population, particularly among children. The overall prevalence of refractive error in this study was 705 (42.72%). In our study, myopia was found to be the commonest refractive error, followed by astigmatism and hypermetropia. In our study, we have found that refractive error is more common in females than males. Refractive errors was the most common in 10-17 years of age.

The most important factor of vision impairment is the lack of vision screening programs for children and another factor showed low levels of awareness about refractive errors and other visual problems. Therefore, vision screening of children for refractive errors should be conducted at the community level and school health programs, accompanied by public awareness campaigns.

CONCLUSION

Uncorrected refractive error indicates a large population of visual impairment and blindness. Refractive errors affects many school going (7^{th} -12^{th}) children, where many cases go undiagnosed. Refractive errors was more common in rural school children aged 15-17 years in specially females. Now a days, with numerous changes of life styles occured among school going children especially due to excessive amount of near work activity (indoor activity) like computer or smart phones depended life styles rather than outdoor activity like games and exercises.

There are some changes of lifestyle based on their activity can affect on ocular health and refractive status of school going children. Childhood morbidity can be minimized by screening all school aged children using spectacle correction.

REFERENCES

1. Ayub Ali, I.A. and Ayub, S., (2007). Prevalence of undetected refractive errors among school children. Biomedica, 23, pp.96-101. Bataineh, H.A. and Khatatbeh, A.E., (2008).
2. Prevalence of Refractive Errors in School Children (12-1 ears of afila Cit. Sudanese Journal of Public Health, 3(4)
3. Padhye, A.S., Khandekar, R., Dharmadhikari, S., Dole, K., Gogate, P. and Deshpande, M., (2009). Prevalence of uncorrected refractive error and other eye problems among urban and rural school children. Middle East African journal of ophthalmology, 16(2), p.69.
4. Pokharel, G.P., Negrel, A.D., Munoz, S.R. and Ellwein, L.B., (2000). Refractive error study in children: results from Mechi Zone, Nepal. American journal of ophthalmology, 129(4), pp.436-444.
5. Triveni C, Divya T, Rama Devi P, Chowdary N, Sirisha G. (2021). Prevalence of Refractive Errors in School Going Children in rural and urban areas -A Cross-Sectional Study. Tropical Journal of Ophthalmology and Otolaryngology. 6(2): 22-26.
6. Zhao, J., Pan, X., Sui, R., Munoz, S.R., Sperduto, R.D. and Ellwein, L.B., (2000). Refractive error study in children: results from Shunyi District, China. American journal of ophthalmology, 129(4), pp.427-435.
7. Correction of Myopia Evaluation Trial 2 Study Group for the Pediatric Eye Disease Investigator Group. “Progressiveaddition lenses versus single-vision lenses for slowing progression of myopia in children with high accommodative lag and near esophoria.” Invest Ophthalmol Vis Sci. 52.5 (2011):2749- 2757.
8. Gessesse SA and Teshome AW. Prevalence of myopia among secondary school students in Welkite town: South-Western Ethiopia. BMC Ophthalmol 2020; 20(1): 1–6. 49.
9. Abayo G, Gessesse GW and Asaminew T. Prevalence and pattern of ocular morbidity among school children in southern Ethiopia. Ethiop J Health Sci 2021; 31(4): 831–836. 50.
10. Worku Y and Bayu S. Screening for ocular abnormalities and subnormal vision in school children of Butajira Town, southern Ethiopia. Ethiop J Health Develop 2002; 16(2): 165–171. 51.
11. Shaffi M and Bejiga A. Common eye diseases in children of rural community in Goro district, central Ethiopia. Ethiop J Health Develop 2005; 19(2): 148–152.
12. Gessesse SA and Teshome AW. Prevalence of myopia among secondary school students in Welkite town: South-Western Ethiopia. BMC Ophthalmol 2020; 20(1): 1–6. 49.
13. Abayo G, Gessesse GW and Asaminew T. Prevalence and pattern of ocular morbidity among school children in southern Ethiopia. Ethiop J Health Sci 2021; 31(4): 831–836. 50.
14. Worku Y and Bayu S. Screening for ocular abnormalities and subnormal vision in school children of Butajira Town, southern Ethiopia. Ethiop J Health Develop 2002; 16(2): 165–171.
15. Shaffi M and Bejiga A. Common eye diseases in children of rural community in Goro district, central Ethiopia. Ethiop J Health Develop 2005; 19(2): 148–152.
16. Sheeladevi S, Seelam B, Nukella PB, et al. Prevalence of refractive errors in children in India: a systematic review. Clin Exp Optom 2018; 101(4): 495–503
17. Zelalem M, Abebe Y, Adamu Y, et al. Prevalence of visual impairment among school children in three primary schools of Sekela Woreda, Amhara regional state, north-west Ethiopia. SAGE Open Med 2019; 7: 9849769
18. Resnikoff S, Pascolini D, Mariotti SP, Pokharel GP. Global magnitude of visual impairment caused by uncorrected refractive errors in 2004. Bull World Health Organ 2008; 86(1): 63-70. [http://dx.doi.org/10.2471/BLT.07.041210] [PMID: 18235892]

19. Aldebasi YH. Prevalence of amblyopia in primary school children in Qassim province, Kingdom of Saudi Arabia. Middle East Afr J Ophthalmol 2015; 22(1): 86-91. [http://dx.doi.org/10.4103/0974-9233.148355] [PMID: 25624680]
20. Rathod HK, Raghav PR, Mittal S. (2011) Profile of School Going Children with Visual Impairment. Ind Med Gaz. 116(7)434–7.
21. Saw, S.M., Chan, Y.H., Wong, W.L., Shankar, A., Sandar, M., Aung, T., Tan, D.T., Mitchell, P. and Wong, T.Y., (2008). Prevalence and risk factors for refractive errors in the Singapore Malay Eye Survey. Ophthalmology, 115(10), pp.1713-1719