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The Impact of Eye Health on School Children: A Study in Rural and Urban Localities

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ABSTRACT

Background: Visual impairment in children refers to a condition where a child's ability to see is compromised, leading to difficulties in processing visual information. It can occur due to various congenital or acquired factors and can range from mild to profound. Visual impairment in children can significantly impact their overall development, education, and social interactions. Around the world, 80% of vision impairment is thought to be preventive or treatable, or avoidable. Early detection of visual acuity issues in children is critical for successful intervention. During the early developmental stages, the visual system is still malleable, and treatment can lead to better outcomes **Aim:** This study aims' to assess the visual acuity and factors affecting school children between the age groups of 10–15 years. **Material and Methods:** This study was a cross-sectional study conducted from December 2022 to January 2023, using purposive sampling technique with 200 samples in Urban Buvana Krishna Matriculation School Kelambakkam and Rural St Joseph's Matriculation School Melakottaiyur. The selected children undergone screening by using Snellen visual acuity chart was used to check the vision at 3 m distance. **Results**: Among these children 11.5% of them <6|18–6|60 had visual impairment of both eyes VA (logMAR) <0.5–1.0 and 5.0% of them <6|60–3|60 had severe visual impairment of both eyes VA (logMAR) <1.0–1.30**. Conclusion:** School children's visual impairment was primarily caused by refractive error. For early detection and management, school screening is advised. To prevent the progression of vision impairment, parents, teachers, and students need education on refractive error early identification and correction. Nurses can promote eye health and prevent visual impairment by educating patients and the community about eye protection, proper use of eyewear, and lifestyle factors that influence eye health, such as diet and avoiding excessive screen time. visual acuity is an important aspect of nursing care, and nurses play a pivotal role in assessing, managing, and supporting patients with visual impairment. By integrating eye health promotion, patient education, collaborative care, and advocacy, nurses contribute to improving the overall eye health and well-being of their patients.

KEYWORDS: Eye health, School going, Visual acuity, Urban rural children, Visual impairment

INTRODUCTION

India has 0.17% of its youngsters that are blind. The leading cause of childhood blindness (33.3%) is correctable refractive error, which is followed by 16.6% of preventable reasons such vitamin A deficiency and post-cataract surgery amblyopia (Ghosh, Mukhopadhyay et al. 2012,1). Children with uncorrected refractive error might have adverse impacts on their academic achievement, career decisions, or chances for employment. The ability to learn and one's potential for education can be adversely affected by refractive error, particularly myopia (Kumah, Abdul Kabir, Ahmed et al. 2013,1). Children who are in school and have refractive error also have slower growth in terms of their minds, bodies, and behaviours. Children in the cities of India who are in school suffer with uncorrected refractive error (Ghosh, Mukhopadhyay et al. 2012,1). Nearly 285 million (4.24% of the world's population) individuals of all ages are visually impaired, and 39 million people are blind, according to numbers from the World Health Organisation from 2010. In addition, 21.9% of the world's visually impaired people live in India, with 90% of them living in underdeveloped nations (Devarajan and Mahesgowri 2022,1). The VISION 2020 initiative to end preventable blindness has prioritised refractive error treatment and labelled it as "childhood blindness" (Padhye, Khandekar et al 2022,1)." Uncorrected RE rates as the world's most significant contributor to vision impairment (VI) and the second most prevalent cause of blindness. According to several international Refractive Error Study in Children (RESC) research, myopia is a serious health issue that affects people from all racial and cultural backgrounds (Paudel, Ramson, et al. 2014,2). Screening helps in early finding and immediate treatment because the majority of children with uncorrected refractive error are asymptomatic (Padhye A, et al. 2022,1)." There are over 18.9 million children under the age of 15 who are blind worldwide. In developing countries, 10%–58% of blind or visually impaired children can be treated, while 7%–31% of cases can be prevented (Devarajan, Mahesgowri 2020,1). Treatments for vision impairment using affordable and timely medical interventions have been tested in wealthy countries. Interventions against disorders that cause vision impairment have also been made over the past 20 years. However, the burden of vision impairment is increasing over time. For instance, the refractive defect affects 12 million school-age children (Bezabih, Abebe et al. 2022,2). The World Health Organisation (WHO) defines visual impairment (VI) as "a corrected VA of 6/18 (20/63) down to and including 3/60 (20/400)" under the ICD-10 categories of visual loss (Hailu, Hiko et al. 2019,2). Myopia development is also influenced by genetic and environmental factors, albeit the intricacies of this gene-environment interaction are not yet fully known. Outdoor activities have a significant preventive impact against myopia, despite environmental variables known to cause it, such as extended indoor and close work (Paudel, Ramson, et al. 2014,2). Children who are of school age are especially vulnerable since untreated RE can seriously impair their ability to learn and academic potential. Due to their ignorance of their underlying problems, some educators label children as passive. Few children with RE are discovered by a parent or teacher and brought to an ophthalmologist. Despite the fact that vision tests are not diagnostic, the outcomes may indicate the need for more testing. When wearing glasses, the cost of vision correction is rather inexpensive (Kannan, Rajendran et al. 2016,1). More than 90% of people with VI reside in developing nations, a geographic discrepancy that could be explained by a higher prevalence of diseases linked to deprivation, the environment, or a lack of access to healthcare. It is well known that, regardless of age, loss of eyesight may cause varied degrees of psychic anguish that is more severe than that caused by other types of sensory impairment (Rajeshkannan Yenuganti and Solomon, 2022,1). According to reports, 0.67% of Indian schoolchildren are affected. Before the age of 6 to 8 years, amblyopia develops. The length of this time depends on what caused the amblyopia. Amblyopia affects up to 5% of the general population and is the most prevalent preventable cause of monocular blindness. Outdoor activities have a substantial protective effect, even if prolonged indoor and close-up activities are known to be linked to

myopia (Siddharam, Charanya, Pandurangan et al. 2014,1). In Maharashtra, India, a vision screening project of this nature was launched. The community ophthalmology unit's personnel conduct annual screenings of schoolchildren in both urban and rural locations. While instructors in metropolitan schools are educated in vision screening, children from remote rural regions are evaluated in mobile eye units. Any children with refractive defect are offered access to affordable eyewear. We conducted a study in two districts of Maharashtra as part of this screening campaign to look into the prevalence and risk factors of uncorrected refractive error in pupils between the ages of 6 and 15 in both urban and rural Maharashtra. Based on the study's findings, we provided recommendations for children of various ages' eye care (Padhye, Khandekar et al. 2022,1). Addressing refractive errors and low vision is a key focus of global initiatives such as Vision 2020. This initiative aims to improve eye health and reduce the burden of blindness worldwide. India has also taken a strong commitment to combat visual impairment by implementing the strategies advocated in Vision 2020—The right to sight (Devarajan and Mahesgowri 2020,1). Significant efforts have been undertaken to address the conditions that lead to vision impairment over the past 20 years. However, despite these interventions, the burden of visual impairment continues to increase. For instance, there has been a rise in the number of school-age children affected by refractive errors, reaching around 12 million globally. Additionally, approximately 50% of childhood blindness cases are attributed to preventable causes, notably cataract and vitamin A deficiency. It is crucial to address the problem very once because vision impairment has a significant negative impact on the afflicted children's future lives. Visual impairments cannot be corrected during adulthood, underscoring the urgency of treating these conditions in childhood. The necessity of specialised training and experience in order to choose the most suitable treatment options is one of the major problems in treating visual impairment in children. The complexity of managing various eye conditions in young patients demands skilled professionals who can offer the best possible care (Bezabih, Abebe et al. 2022,2). The first indications of visual acuity disorders are evident when the eyes experience strain, accompanied by redness, excessive tearing, and headaches, particularly after long periods of school activities. Even though the child may communicate these issues to their parents, various factors such as unawareness regarding the importance of early and immediate treatment for such conditions, misconceptions, and cultural norms may hinder the effective utilization of existing healthcare services (Datta Bhardwaj Patrikar and Bhalwar 2007,1).

MATERIALS AND METHODS

This cross-sectional study was conducted among school children between the ages of 10 and 15 years. Permissions were obtained from the Institutional Human Ethics Committee at Chettinad Academy of Research and Education, who provided their approval for the study with the proposal number (IHEC-1/1114/22), as well as from the school authorities. The study focused on the children of Buvana Krishna Matriculation Urban Kelambakkam in Tamil Nadu's Chengalpet District, which is situated 27 kilometers from Chengalpet. According to the 2022 census, Kelambakkam has a total population of 5189 and a total area of 176.3 hectares. Similarly, this study targeted the children of St. Joseph Matriculation School Rural Melakottaiyur in Tamil Nadu's Chengalpet District, which is located 35 kilometers from Chengalpet. According to the 2022 census, Melakottaiyur has a total population of 5935 and covers a total area of 11.605 km².The sample size was calculated using the formula $n = Z2 \times P(1–P)/E2$, with a prevalence of 15% from previous studies. Initially, the sample size was 196, but an additional 4 samples were included, bringing the final sample size to 200. The researchers adopted a purposive sampling method to choose the study participants from the 600 students (excluding those under the age of 10 years) in both urban school Kelambakkam and rural school Melakottaiyur. Data collection was carried out in both locations using the purposive sampling

technique. Among the school children, there were 280 males and 320 females aged between 10 and 15 years. All students aged 10 years or older were eligible to participate in the study. Each day, 10–15 school children were assessed and screened. A consent form, participation information sheet, and structured questionnaire were given to each participant to be taken home to their parents. Only children who obtained signed consent forms and expressed willingness to take part were included in the study. Children who were already using glasses were excluded from the study.

The participation information sheet explained the purpose of the study and the procedures that would be conducted. It also collected details regarding demographic data, such as age, gender, education status of the child, residence, socio-economic status, education status of the parent, religion, number of siblings in the family, social media usage, average sleep time at night, dietary patterns, mobile phone usage, difficulties in falling asleep, whether parents or siblings wear spectacles, presence of itchy eyes, problems with watery eyes, and a history of allergic conjunctivitis. The structured questionnaire included various factors that may influence visual health, such as performing small tasks, experiencing problems during nighttime, glare during daytime, difficulty seeing street signboards, issues while watching television, problems with seeing moving objects, difficulty seeing in dim light, and challenges in identifying colors. Visual acuity for each child was assessed using the Snellen's chart at a distance of 3 meters. A visual acuity of <6/18–6/60 in either eye or both eyes was considered as a level of visual impairment. Children with such impairment were referred to the Ophthalmic Department at Chettinad Hospital and Research Institute for further treatment and a comprehensive ophthalmic examination. All collected data were entered, and statistical analysis was conducted using SPSS V26. The gathered information was summarized and incorporated into a Microsoft Excel spreadsheet. Continuous data were reported as mean standard deviation, while descriptive analysis was expressed as percentages. The relationship between visual acuity and demographic variables was examined using the chi-square test, resulting in a probability value of 0.005. The findings were presented using pie charts, bar graphs, and frequency distributions.

Table1: Demographic Variables and the Significance of Visual Acuity
N = 200

Category	**No impairment**	**Visual impairment**	**Severe impairment**	**Df**	**Chi square**	**P value**
Age (*Years*)						
10–12 Years	83	12	6	2	0.430	0.807 NS
13–15 Years	84	11	4			
Gender						
Male	81	12	1	2	5.984	0.005 **S**
Female	86	11	9			
Education Status of Child						
5th–7th Std	74	12	6	2	1.334	0.513 NS
8th–10th Std	93	11	4			
Residence						
Urban	73	15	7	2	5.886	0.005 **S**
Rural	94	8	3			
Socio-Economic Status						
Lower Class (<10,000)	16	2	2	4	2.077	

Middle Class (10,001–20,000)	125	19	7			
Upper Class (20,001 & above)	26	2	1			
Parent Education Status						
Illiterate	15	0	1	10	19.824	0.031 **S**
Primary School Education	38	8	7			
Secondary School Education	86	2	9			
Undergraduate	24	0	6			
Masters	3	0	0			
Above Masters	1	0	0			
Religion						
Hindu	90	13	4	6	5.007	0.543 NS
Christian	37	6	5			
Muslim	36	4	1			
Others	4	0	0			
Siblings in the Family						
1	95	1	1	6	48.055	0.000 **S**
2	30	9	9			
More than 2	5	1	0			
No Siblings	37	12	0			
Time Spent in Social Media						
1–2 hours	47	0	9	6	23.302	0.001 **S**
3–4 hours	41	6	9			
More than 4 hours	20	4	0			
I don't use at all	59	0	5			
Average Night Sleep Time						
<7 hour	58	17	5	2	13.37	0.001 **S**
>7 hour	109	6	5			
Dietary Pattern						
Vegetarian	75	5	6	4	12.356	0.015 **S**
Non-Vegetarian	88	3	16			
Mixed	4	2	1			
Use Mobile Phone						
Yes	50	8	1	2	2.153	0.34 NS
No	117	15	9			
Facing Difficulty in Falling Asleep						
Yes	23	3	3	2	2.049	0.359 NS
No	144	20	7			
Parents Wearing Spectacles						
Never	147	17	10	4	4.578	0.000 **S**
Sometimes	14	1	0			
Always	6	5	0			
Siblings Wearing Spectacles						
Never	165	17	10	4	34.700	0.000 **S**
Sometimes	2	4	0			

Always	0	2	0			
Have Itchy Eyes						
Never	157	17	1	4	84.116	0.000 **S**
Sometimes	8	6	5			
Always	2	0	4			
Have Watery Eyes						
Never	160	12	6	4	51.083	0.000 **S**
Sometimes	5	11	0			
Always	2	0	4			
Had Allergic Conjunctivitis						
Never	145	12	7	4	24.998	0.000 **S**
Sometimes	14	7	0			
Always	8	4	3			

RESULTS

Demographic Variables

The average respondents were range between (50.5%) with a mean standard deviation of 12.40 ± 1.707. Among the 200 responses female (53.0%) and male (47.0%). Most of the respondents participated in the study were urban (52.5%). Socio economic status of the children was Middle class (10,001–20,000) (75.0%) Considering the educational status of the child average were 8^{th}–10^{th} std (54.0%). Taking into the education status of parent, a majority of parent completed secondary school education (48.5%). More than half respondents were Hindu (53.5%). Siblings in the family, an average of the respondents were 1 (48%). Taking into the consideration of how many are you in social media, a majority of the respondents where I don't use at all (32.0%). Considering the average sleep time at night, a majority of respondents were >7 hours (60.0%). Moreover, half of the respondents are non-vegetarian (53.5%). Taking into the consideration of use mobile phones, a majority of the respondents were No (70.5%). If you are feeling any difficulty in falling asleep a majority of the respondents were No (85.5%). Parents wearing spectacles majority were never (87.0%). Siblings wearing spectacles half of respondents were never 36(96.0%). You have itchy eyes most of the respondents were never (87.5%). Problem with watery eyes majority were never (89.0%). Ever had allergic conjunctivitis half of the respondents were never (82.0%).

Spectrum of Visual Acuity

Among 200 children (n = 167, 83.5%) 6|6–6|18 classification had no visual impairment of both eyes. (n = 23,11.5%) <6|18–6|60 classification had a visual impairment in both eyes. (n = 10, 5.0%) <6|60–3|60 had a severe visual impairment in both eyes.

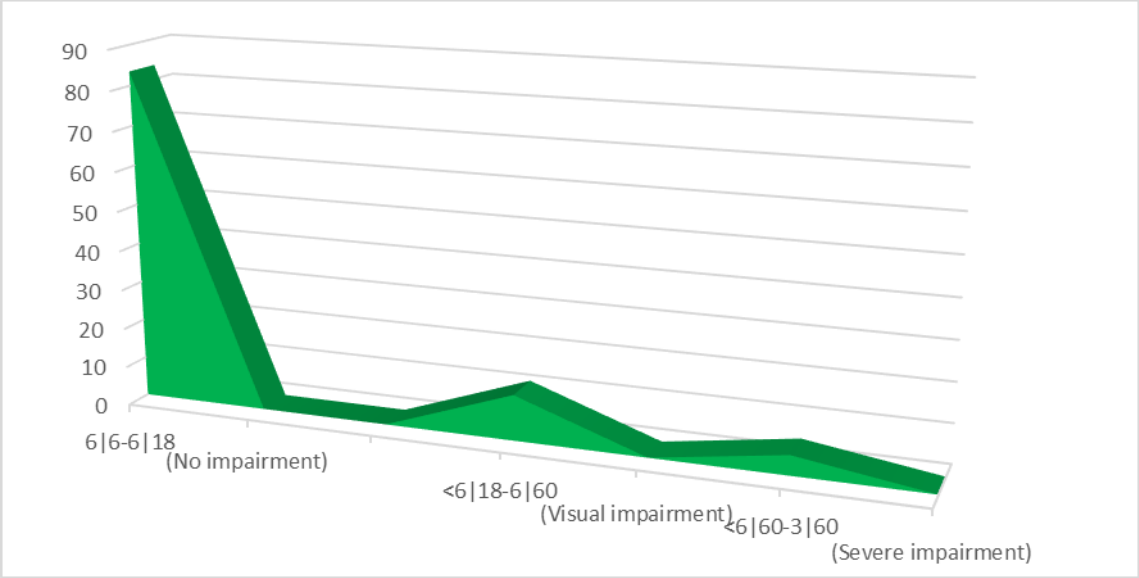

Figure 1: Spectrum of visual acuity

Extent of Visual Impairment Among Children

The study findings Regarding performing small task, a majority of the respondents were Never (n = 165, 82.5%). Problem during night time half of the respondents were Never (n = 174, 87.0%). Regarding experience glare during daytime, a majority of the respondents were Never (n = 159,79.5%). Considering difficulty while seeing street board, a half of the respondents were Never (n = 175, 87.5%). Problem while watching the television majority of the respondents were never (n = 153,76.5%). Problem while seeing moving objects most of the respondents were never (n = 169,84.5%). Problem to see in dim light majority of the respondents were never (n = 160, 80.0%). Taking into difficulty in identifying colors half of the respondents were never (n = 173, 86.5%).

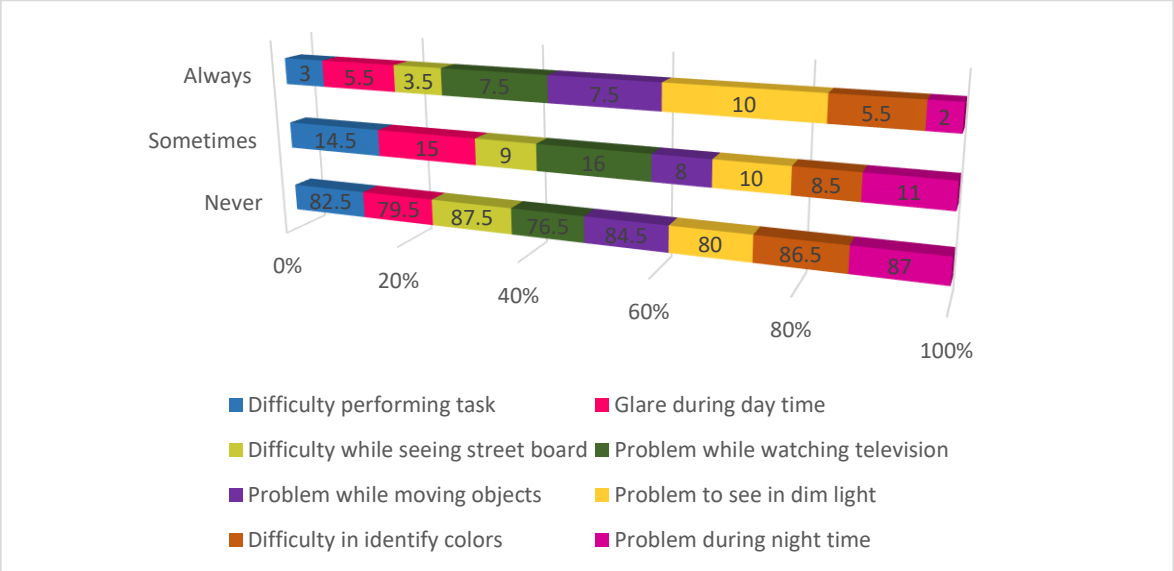

Figure 2: Extent of visual impairment among children

Association of Visual Acuity with Demographic Variables

The analysis conducted on the data indicated that there were no significant relationships found between the respondents' age, socio-economic status, education status of the child, religion, use of mobile phone, or facing any difficulty falling asleep. These variables did not appear to have a considerable impact on the outcomes being studied. However, several demographic variables showed a highly significant relationship with the studied factors at a significance level of 0.005 or lower. The significant variables included gender, residence, education status of parents, number of siblings in the family, hours of watching TV/mobile, average sleep at night, dietary pattern, parents wearing spectacles, siblings wearing spectacles, experiencing itchy eyes, experiencing problems with watery eyes, and a history of allergic conjunctivitis.

Gender was found to be highly significant, with a chi-square value of 5.988 and a p-value of 0.005. This suggests that there may be differences in the studied factors based on the respondents' gender. Residence also showed a significant relationship with the variables under investigation, as indicated by a chi-square value of 5.886 and a p-value of 0.005. This could imply that the living environment plays a role in the outcomes being studied. Education status of parents had a considerable impact on the studied factors, with a chi-square value of 19.824 and a p-value of 0.031. This indicates that the educational background of parents might influence the results. The number of siblings in the family was highly significant, with a chi-square value of 48.055 and a p-value of 0.000, suggesting that having more or fewer siblings could be associated with differences in the variables being examined. Additionally, the time spent watching TV/mobile showed a significant relationship, with a chi-square value of 23.032 and a p-value of 0.001, implying that screen time might be connected to the outcomes being investigated. The average sleep duration at night also exhibited a significant relationship, with a chi-square value of 13.37 and a p-value of 0.001. This suggests that the amount of sleep a person gets at night could be linked to the variables being studied. Furthermore, dietary patterns showed a significant relationship, with a chi-square value of 12.356 and a p-value of 0.015, indicating that what individuals eat might be associated with the studied factors. Parents and siblings wearing spectacles were both highly significant, with chi-square values of 14.578 and 34.700, and p-values of 0.000, respectively. This implies that visual impairments within the family might have an impact on the outcomes being analysed. Moreover, experiencing itchy eyes and problems with watery eyes both showed highly significant relationships, with chi-square values of 84.116 and 51.083, and p-values of 0.000, respectively. This suggests that eye-related issues may play a significant role in the studied variables. Finally, a history of allergic conjunctivitis was highly significant, with a chi-square value of 24.998 and a p-value of 0.000, indicating that a previous occurrence of this condition might influence the outcomes being studied. Overall, this analysis highlights the demographic variables that were found to have a substantial impact on the factors being investigated, providing valuable insights into potential factors affecting the studied variables.

DISCUSSION

Here the visual acuity was measured by Snellen chart by using of letters or numbers which is placed at 3 m of distance. In this study no one was blind. Among these children 11.5% of them <6|18–6|60 had visual impairment of both eyes and 5.0% of them <6|60–3|60 had severe visual impairment of both eyes. Similar study was done by Haile Fentahun Darge et al., (2017), The study's findings revealed that less than 6/12 in either eye, less than 6/18 in either eye, and less than 6/18 in the better eye were all more prevalent, with respective prevalence of 5.8%, 1.1%, and 0.53%. This conclusion is consistent with the findings of earlier studies. The study finding was supported by the previous study by Mohammed Derese Biru, Teshome Gensea Geta et al., (2017), According to the results of the study, 55 participants (5.2% [95% CI, 3.9–6.6]) in the

better eye had visual problems (VA 6/12). 41 (3.9%), 12 (1.1%), and 2 (0.2%) of the participants in the study, respectively, had mild, moderate, or severe vision impairment.

Same type of study was done by Prakash Paudel Ramson Prasidh et al, (2014), The better eye's VA was split into three categories: normal or nearly normal (6/9.5), low vision (6/12 to >6/120), and blindness (6/9.5). Of these, 161 (8.2%) or 83 wore glasses. Blindness was present in 71 (3.2%) of the 434 adolescents (19.5%) with uncorrected VA of 6/12 in both eyes. There were six blind neonates, and 271 children had a VI prevalence of 12.2% (95% CI, 8.8–15.6) and improved eye vision of 6/12. Not all of them were special education pupils. According to the most accurate VA, there were no blind persons. In the current research, 3|60, no one is blind. A study by Priya Maheshgowri et al. that was related to the current study provided support for it. According to the research, children of school age had an average visual acuity of Grade I in 83.6% of cases, Grade II in 16%, and Grade III in 0.4% of cases.

The study findings show about the extent of visual acuity while performing small task, a majority of the respondents were Never (n = 165, 82.5%). Problem during night time half of the respondents were Never (n = 174, 87.0%). Regarding experience glare during daytime, a majority of the respondents were Never (n = 159,79.5%). Considering difficulty while seeing street board, a half of the respondents were Never (n = 175, 87.5%). Problem while watching the television majority of the respondents were never (n = 153,76.5%). Problem while seeing moving objects most of the respondents were never (n = 169,84.5%). Problem to see in dim light majority of the respondents were never (n = 160, 80.0%). Taking into difficulty in identifying colors half of the respondents were never (n = 173, 86.5%).

Similar study was done by M. Nishi. Et al. (2000), The participants' parents' myopia and the fact that they were at least 30 years old when they gave birth to them were also important factors. Although "distance from TV" was only marginally significant, lifestyle and food-related parameters were not significant. In the same manner in a study undertaken by Gnana Deepa (2011) the findings were regarding the type of light source, among which 133 people (88.67%) had used tube light source, while 7 people (4.67%) used other types. Regarding the number of hours spent on homework, 67 (44.67%) were 40 to 1 hour and 27 (18%) were 30 to 40 minutes. Regarding the child's position during homework, the majority of 119 (79.33%) were seated and 31 (20.67%) were lying down. The majority of readers (105, or 70%) read at a distance of less than 30 cm, whereas 45, or 30%, read at the recommended distance. Regarding the place of reading, 4 (2.67%) of the 146 books were read in transport vehicles, while the majority were read at home (146/97.33). When it came to engaging in other close work, the majority of 80 people (53.33%) played video games, while 20 people (13.33%) used computers to play games or complete assignments. Most people (133, or 88.67%) who watch television regularly do so; only four people (2.67%), on the other hand, watch it solely while they are on vacation. The majority (128; 85.33%) of people watched television for more than three hours every day, while only 5 (3.33%) watched for no longer than an hour. There was no significant relationship between the respondents age, socio-economic status, education status of the child, religion, use of mobile phone, facing any difficulty of falling asleep.

In contrast in this study the findings revealed that demographic variable is highly significant with the level of 0.005 like gender (Chi square = 5.988, p value 0.005) residence (Chi square = 5.886, p value 0.005) education status of parent (Chi square = 19.824, p value 0.031) Siblings in the family (Chi square = 48.055, p value 0.000) hours of watching TV/mobile (Chi square = 23.032, p value 0.001) average sleep at night (Chi square = 13.37, p value 0.001) dietary pattern (Chi square = 12.356, p value 0.015) parents wearing spectacles (chi square = 14.578, p value 0.000) Siblings wearing spectacles (chi square = 34.700, p value 0.000) you have itchy eyes (chi square = 84.116, p value 0.000) Problem with watery eyes (chi

square = 51.083, p value 0.000) Ever had allergic conjunctivitis (chi square = 24.998, p value 0.000).

In yet another cross-sectional study conducted by Deshpande et al., (2011), A visually inspected structured questionnaire was distributed to 622 children between the ages of 10 and 16 who were enrolled in grades 5 and 10. Community medicine has a field department at the teaching hospital with a focus on tertiary care, where the study was conducted. Eye exams were performed on the pupils at the individual schools. The chi-square test was used to assess the relationships between ocular morbidities and variables such age, sex, father's educational level, job, socioeconomic class, and nutritional condition. An estimated 27.65% of people had ocular morbidities. Refractive errors and low vitamin A levels were the most commonly reported eye diseases. According to the findings, socioeconomic position, parents' educational and job backgrounds, and the prevalence of ocular illness were all significantly correlated (2 = 29.8, p 0.001). Ocular morbidity, however, did not significantly correlate with student gender (2 = 0.162, p = 0.687), household type (2 = 2.41, p = 0.121), or religion (2 = 6.77, p = 0.08). The study found that schoolchildren in rural north Maharashtra, India, had a significant frequency of eye illness. Refractive errors and inadequate vitamin A intake were the most frequently found vision issues. Regular student screenings will surely lower ocular morbidity and allow students to perform to their full capacity in the classroom by guaranteeing early detection, diagnosis, and prompt treatment of eye conditions. For school-aged children to increase their visual acuity, routine eye exams are necessary.

The study findings were supported by Gashaw Garedew Woldeamanuel et al., (2020)., In the Gurage Zone's eight elementary schools, a cross-sectional study was done. A final group of 1064 children, 589 boys and 475 girls, were chosen using a multistage selection method. Participants' visual acuity was assessed using Snellen charts, and sociodemographic data were collected using standardised questionnaires. 5.2% of people had vision problems. Age group of 13 to 18 years (AOR = 9.44, 95% CI = 3.83–23.25), school grade levels 5–8 (AOR = 2.97, 95% CI = 1.23–7.17), rural residents (AOR = 2.58, 95% CI = 1.22–5.54), monthly family income less than 2000 Ethiopian Birr (AOR = 2.87, 95% CI = 1.08–7.51), and parents with visual impairment (AOR = 2.16, 95% CI = 1.06 4.39).

Duraimurugan et al., (2020) found that among 14.9% (N = 63) of the participants' parents and 6.4% (N = 27) of the participants' siblings who had refractive error in their family. It demonstrates that 10.7% of research participants didn't participate in any extracurricular activities. Comparatively, 48.6% claimed to spend an hour or more each day outside, whereas 30.1% reported to just play outside for ten minutes each day. 57% of respondents to the survey watched television closer than 10 feet away, while 43% watched it further away. In comparison to a child who uses the same equipment for less time, a child who uses it for two hours or more is more likely to develop refractive error. This includes children who spend more than two hours watching television or using the computer.

Neeraj Singh et al., (2019), demonstrates that the competitiveness of the educational system at these institutions, as has been shown in other countries, is a substantial risk factor for myopia. Similar dietary practises, cultural norms, lifestyle choices, environmental factors like family genetics, and others may all have an impact on this. It's significant to note that children without myopia took part in outdoor activities for an average of almost 1.5 hours each day. Compared to research from other East Asian countries and intervention trials, children who spent more time playing outside had a decreased incidence of getting myopia for the first time. This result is consistent with other findings. 1234 children made up the population (n = 261; mean SD age, 11 2 years; mean SD age, 10.5 3 years; 52% boys). Men made up 59% of the population. The number of people with myopia was found to be 21.1%. Myopic spherical errors

of −1.94 and 0.92, respectively, were present in the mean and standard deviation. Ages 9 to 12 were shown to have a higher prevalence of myopia (45%; 95% confidence interval, 23 to 30.6; OR, 3.19 [2.13 to 4.76]) than younger children (27%; 95% confidence interval, 23 to 30.6). 21.1 to 28.8, P.01, 25% prevalence rate; 95% confidence interval. Males were less likely than females to develop myopia. Children who studied more than four hours a day had higher rates of myopia (P.008), as did children who played video, computer, or mobile games for longer than two hours a day (P.001). A protective benefit was seen in children who played outside for more than 1.5 hours each day (OR, 0.01 [0.00 to 0.06]).

The current study proposes conducting a one-month screening of schoolchildren to assess their visual acuity. To achieve this, it is essential to orient and train school teachers in identifying common eye problems, enabling for necessary treatment. Additionally, the teachers should raise awareness among schoolchildren about vision-related issues. One limitation of this research lies in its focus on school-based participants, which excluded non-school-going children from the sampling frame.

CONCLUSION

Participants may experience visual acuity issues due to various factors, including genetic predisposition. If left untreated, visual acuity problems can lead to refractive errors. The researchers used the Snellen Chart at a distance of 3 meters to assess visual acuity. To diagnose, follow up, and evaluate visual impairments, all aspects should be carefully considered and compared with the child's daily visual function. Timely treatment can reduce visual disability, especially if medical interventions can improve vision. Many respondents mentioned that they do not consume green leafy vegetables, carrots, or pumpkins. A significant number of respondents own a mobile phone and use it daily for 1 to 2 hours, often playing games. Additionally, some of them sleep less than 7 hours, which can also contribute to vision issues. Parents seem to be unaware of potential vision problems in their children. There is a lack of awareness and knowledge about common vision problems among children, young educated individuals, and productive populations. Addressing this lack of awareness among children, teachers, and parents is crucial, and promoting vision health education is urgently needed.

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