

	ORIGINAL RESEARCH PAPER		Ophthalmology
HEADACHE IN CHILDREN: A COMMON DISABILITY IN OPHTHALMOLOGY OPD		KEY WORDS: Headache in children, refractive errors, myopia, paediatric ophthalmology, screen time.	
Dr. Ruma Das Debsikdar	Professor And Head, Department Of Ophthalmology, Silchar Medical College And Hospital		
Dr. Zeba Khan*	Post Graduate Resident, Department Of Ophthalmology, Silchar Medical College And Hospital *Corresponding Author		
Dr. Mohammad Saleem	Post Graduate Resident, Department Of Ophthalmology, Silchar Medical College And Hospital		
Dr. Tanveer Ahmed	Registrar, Department Of Ophthalmology, Silchar Medical College And Hospital		
Dr. Abhiri Dutta	Post Graduate Resident, Department Of Ophthalmology, Silchar Medical College And Hospital		
ABSTRACT	Aim: To describe the characteristics of headache in children and its association with refractive errors presenting to the ophthalmology outpatient department of a tertiary care center. Methods: This descriptive, questionnaire-based, cross-sectional study was conducted from January 2023 to January 2024 in a tertiary care hospital. A total of 200 children aged 6–18 years presenting with headache were enrolled. All participants underwent a headache-related questionnaire (22 yes/no questions in both English and the local language) and a comprehensive ophthalmologic evaluation including visual acuity, best-corrected visual acuity (BCVA), ocular alignment, slit-lamp examination, and fundus evaluation. Results: Of the 200 children, 60% were boys and 40% girls. Myopia was the most common refractive error (71%), followed by hypermetropia (16%) and astigmatism (13.2%). Nearly two-thirds of children had headache attributed to refractive errors (HARE). Myopia showed a statistically significant association with frontal headache of longer duration compared to other headache causes. Family history of headache was not significantly associated with HARE. Prolonged screen time emerged as an important risk factor. Conclusion: Refractive errors, particularly myopia, are a significant cause of headache in children. Routine ophthalmologic evaluation is essential in all paediatric; headache cases to enable timely diagnosis and management.		
	INTRODUCTION - Headache is one of the most common yet often under-recognized causes of disability worldwide, significantly affecting the physical, psychological, and social well-being of children ¹ . In the paediatric population, headaches not only cause discomfort but also interfere with routine activities, disrupt school attendance, and hinder participation in extracurricular and social engagements ² . This, in turn, contributes to a reduced health-related quality of life and can adversely affect academic performance. Among the various aetiologies of childhood headaches, refractive errors constitute an important and frequently overlooked cause ³ . The increasing accessibility and overuse of digital devices—such as smartphones, tablets, and computers—has resulted in prolonged near work, digital eye strain, and a higher prevalence of uncorrected refractive errors ⁴ . These visual problems may present subtly, with headache often being the only symptom, thereby complicating diagnosis ⁵ . Ophthalmologists frequently encounter children presenting with headaches. Recognizing the visual component in headache etiology is essential, as timely detection and correction of refractive errors can not only alleviate symptoms but also prevent further academic decline and improve overall quality of life ⁶ . METHOD - An institutional ethical committee approval was taken by respective partner organization, and the study was conducted from January 2023 to January 2024 in full accord with the tenets of declaration of Helsinki. It was a descriptive, questionnaire based cross-sectional study to describe the characteristic of headache in children		
	and its association with refractive error presenting to outpatient department in our tertiary care center. We enrolled 200 children aged between 6 and 18 years who presented with headaches to our Ophthalmology outpatient department. Inclusion Criteria - Age between 6 to 18 years and presenting with headache to the Ophthalmology OPD. Exclusion Criteria - Children with systemic illnesses, sinusitis and any other known to cause headache and history of recent ocular trauma and surgery. A comprehensive ophthalmologic assessment was performed, including evaluation of visual acuity and best corrected visual acuity (BCVA), ocular alignment, slit-lamp examination, fundus examination. And Specific opinion (ENT, MEDICINE AND PAEDIATRICS) was taken. For data collection each participant was given a headache-specific questionnaire which comprises of 22 questions with “yes” or “no” responses, presented in both English and the local language for better comprehension. For data analysis findings were tabulated, and the prevalence of refractive error among children with headache was determined. Association between headache characteristic and refractive errors were analyzed. The questionnaire used for the study consist of 22 questions with yes or no response written both in English and local understandable language.		

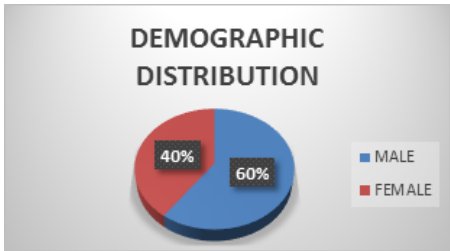
38

www.worldwidejournals.com

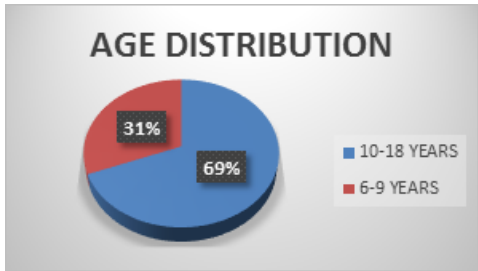
Question	Answer choices
1. What is the time pattern of your headache?	A. Sudden first headache B. Episodes of headache C. Daily headache D. Gradually worsening headache E. Mixture
2. How and when did your headache(s) begin?	
3. How often do your headaches occur, and how long do they last?	
4. Do you have more than 1 type of headache?	
5. Are there warning signs or can you tell that a headache is coming?	
6. Where is the pain located, and describe the character of the headache?	Location -- A. Front of head B. Whole head C. Nothing specific Character -- A. Throbbing B. Pounding C. Stabbing D. Other
7. Are there any other symptoms that accompany your headache (nausea, vomiting, dizziness, numbness, weakness)?	
8. Any history of visual obscurations/ diplopia during the headache?	A. Yes B. No
9. Any history of photophobia/ photophobia during the headache.	A. Yes B. No
10. Does the headache increase on bending / coughing?	A. Yes B. No
11. Do you experience abdominal pain during the headache?	A. Yes B. No
12. Is there any redness of eyes/watering/running nose/drooping of eyelid during the headache?	A. Yes B. No
13. What makes the headache better or worse? Do any activities, medications, or foods tend to cause or aggravate your headaches?	
14. What do you do when you get a headache, or do you have to stop your activities when you get a headache?	
15. How many hours of screen time would you be spending on a daily average? (including mobile, television, gaming devices and computers)	
16. Do the headaches occur under any special circumstances or at any particular time?	
17. Do you have other symptoms between headaches?	
18. Are you taking or are you being treated with any medications (for the headache or other purposes)?	
19. Do you have any other medical problems?	
20. Does anyone in your family suffer from headaches?	
21. Is there any family history of migraine/ stroke?	
22. What do you think might be causing your headache?	

RESULT:
 200 children were recruited and their data was analyzed and graphically presented.

A. Demographic Data –
 120 subjects were males constituting 60 % of the populations.



The population was divided into 2 age groups 6-9 yr and 10-18 yr.

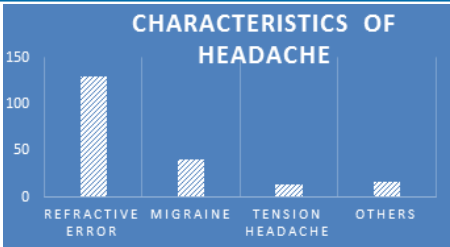


B. Association Between Headache Etiology And Gender:

	MALE	FEMALE	TOTAL
REFRACTIVE ERROR	80	50	130
MIGRAINE	26	14	40
TENSION HEADACHE	5	8	13
OTHERS	12	5	17

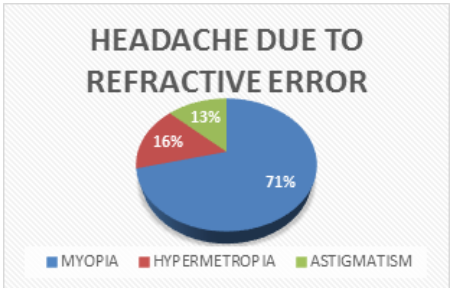
C. Characteristic Of Headaches- Associated With -

1. Refractive error - 130
2. Migraine - 40
3. Tension headache - 13
4. Other - 17



D. Headache Due To Refractive Error

1. Myopia - 142 (71%)
2. Hypermetropia- 32 (16%)
3. Astigmatism- 26 (13%)



E. Association Between Headache Type And Refractive Error

1. **Frontal Headache** – Most frequently observed in patients with myopia (57), likely due to accommodative strain and sustained near work.
2. **Holocranial Headache** – Common in myopia (35), but can also occur in other refractive errors such as hypermetropia (20) or astigmatism (17), especially with prolonged visual tasks.
3. **Positive Family History** – Strongly correlated with myopia (10), indicating a possible genetic predisposition.
4. **Excessive Screen Time (>2 Hours/day)** – Predominantly associated with myopia (78), potentially due to increased accommodative demand and digital eye strain.

	MYOPOIA	HYPERMETROPIA	ASTIGMATISM
FRONTAL HEADACHE	57	0	0
HOLOCANIAL HEADACHE	35	20	17
FAMILY HISTORY	10	1	0
SCREEN TIME> 2HOURS/DAY	78	15	1

DISCUSSION:

In the present study, nearly two-thirds of children presenting to our ophthalmology outpatient department with complaints of headache were found to have headache associated with refractive errors (HARE). This finding is consistent with previous research indicating that refractive errors are among the most common ocular causes of headache in the paediatric population. The high proportion of HARE cases in our cohort emphasizes the importance of ophthalmologic evaluation in any child with persistent or recurrent headaches.

A striking observation in our study was that the vast majority of affected children were adolescents. This age-related trend may be explained by increased academic workload, greater screen exposure, and reduced outdoor activities during adolescence, all of which have been documented to contribute to both the development of refractive errors—particularly myopia—and the exacerbation of ocular strain-related headaches. Several large-scale studies have similarly reported that myopia prevalence peaks in late childhood to early adolescence, coinciding with a surge in near-vision demands.

Among children with HARE in our study, more than two-thirds were diagnosed with myopia, while hypermetropia and astigmatism were less common. This predominance of

myopia aligns with global epidemiological trends, where urbanization, educational pressures, and excessive near work have driven a "myopia epidemic" in many parts of the world. Myopia-associated headaches are believed to arise from sustained accommodative effort, poor correction, or uncorrected refractive errors, leading to visual fatigue and frontal head pain.

Our data further indicate that children with HARE were significantly more likely to present with frontal headaches compared to those with headaches from other causes. The frontal localisation may be attributable to the involvement of extra-ocular muscle strain and accommodative mechanisms, which tend to manifest in the frontal and supraorbital regions. Moreover, the headaches in HARE cases tended to be of longer duration, suggesting that ocular strain produces a more chronic, low-grade discomfort rather than acute, severe pain seen in some neurological headache syndromes.

Interestingly, family history did not have a statistically significant association with HARE in our cohort. This may suggest that environmental and behavioral factors—such as screen time, near work, and lighting conditions—play a more substantial role in the headache–refractive error relationship than purely genetic predisposition, although genetics remain a strong determinant for refractive errors themselves.

A statistically significant association was noted between HARE and the presence of myopia, reinforcing the clinical observation that myopic children are more susceptible to visual fatigue–related headaches. This association is supported by prior studies, which have documented that correcting refractive errors, particularly myopia, can lead to substantial improvement or complete resolution of headache symptoms in many pediatric patients.

From a public health perspective, our findings underline the importance of integrating basic vision screening into pediatric headache evaluation protocols, especially in school-based health programs. Early detection and correction of refractive errors can not only relieve headaches but also improve academic performance, concentration, and quality of life. Furthermore, given the role of prolonged screen time as a potential risk factor, lifestyle modifications—such as adherence to the 20-20-20 rule, regular outdoor activity, and reduced digital exposure—should be emphasized in patient and parent education.

Recommendations:

Based On The Findings Of Our Study, We Propose The Following Recommendations For Clinical Practice And Public Health:

1. Comprehensive Ophthalmologic Evaluation:

All children presenting with recurrent or persistent headaches should undergo a thorough ophthalmologic examination, including refraction, ocular alignment assessment, and fundus evaluation, to identify and correct potential refractive errors.

2. Promotion Of A Healthy Diet:

A balanced diet rich in vitamins A, C, and E, omega-3 fatty acids, and antioxidants should be encouraged, as adequate nutrition supports ocular health and overall well-being.

3. Limitation Of Screen Time:

Prolonged use of digital devices should be minimized, especially in school-aged children. Parents and educators should promote breaks during screen use to prevent ocular strain and reduce headache occurrence as found in a study by Debsikdar et al (2024).⁷

4. Encouragement Of Outdoor Activities:

Parents should motivate children to spend at least 1–2 hours daily outdoors, as increased exposure to natural light has

been shown to reduce the progression of myopia and improve general health.

5. Implementation Of The 20-20-20 Rule:

Children should be educated to take a 20-second break to look at an object 20 feet away after every 20 minutes of near work or screen use. This simple habit helps relax accommodative muscles and prevent digital eye strain.

6. Use Of Lubricating Eye Drops:

For children experiencing dryness or discomfort due to prolonged near work or environmental conditions, preservative-free lubricating eye drops may be recommended to maintain ocular surface health.

CONCLUSION:

Refractive errors, particularly myopia, emerged as a significant cause of headache in children in our study. Given this strong association, a routine ophthalmologic evaluation should be incorporated into the assessment of all pediatric headache cases. Early detection and appropriate correction of refractive errors can lead to effective symptom relief, prevent recurrence, and improve both visual function and overall quality of life in the paediatric population.

REFERENCES:

1. Abu-Arafeh I, Razak S, Sivaraman B, Graham C. Prevalence of headache and migraine in children and adolescents: A systematic review of population-based studies. *Dev Med Child Neurol*. 2010;52(12):1088–1097. doi:10.1111/j.1469-8749.2010.03793.x
2. Arruda MA, Guidetti V, Galli F, Albuquerque RC, Bigal ME. Migraine, tension-type headache, and attention-deficit/hyperactivity disorder in childhood: A population-based study. *Postgrad Med*. 2010;122(5):18–26. doi:10.3810/pgm.2010.09.2200
3. Abdi S, Roper-Hall G. The role of uncorrected refractive error in headaches among school children. *Ophthalmic Physiol Opt*. 2007;27(5):517–520. doi:10.1111/j.1475-1313.2007.00402.x
4. Sheppard AL, Wolffsohn JS. Digital eye strain: Prevalence, measurement and amelioration. *BMJ Open Ophthalmol*. 2018;3(1):e000146. doi:10.1136/bmjophth-2018-000146
5. Reddy PA, Vasanth ST, Arumugam S, Ravi P, Sheeladevi S, Fathima S. Headache associated with refractive errors in school children. *Indian J Pediatr*. 2013;80(1):60–63. doi:10.1007/s12098-012-0786-5
6. Gupta R, Chauhan L, Sah RP. Impact of refractive error correction on academic performance of school children. *Nepal J Ophthalmol*. 2016;8(15):46–49. doi:10.3126/nepjoph.v8i1.16163
7. Debsikdar, R. & Bandyopadhyay, I. & Sarkar, S. & Ahmed, T. (2024). OCULAR MANIFESTATIONS OF PROLONGED SCREEN TIME IN PAEDIATRIC AGE GROUP: A QUESTIONNAIRE BASED STUDY. *PARIPEX INDIAN JOURNAL OF RESEARCH*. 14-16. doi:10.36106/paripex/2400524.